

JFQ

**The Persian
Gulf War —
Ten Years After**

**Principles of
Jointness**

Naval Innovation

**Japanese Self-
Defense Forces**

**Missile Defense
Attack Operations**

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Winter

If the Joint Chiefs of Staff could guarantee that any "one" of the Armed Services could by itself protect the nation, we would subscribe enthusiastically to the proposition of putting everything we had behind one Service. . . . But we cannot. No one weapon, or one Service, or one form of military action is considered sufficient to meet all our security needs.

—Arthur W. Radford



A Word from the



Chairman

AH-64As with Hellfire missiles, Desert Storm.

DOO

On January 17, 1991, at 0238 hours local time, AH-64 Apache helicopters fired volleys of Hellfire missiles and rockets, simultaneously destroying two early warning radar sites and paving the way for coalition aircraft to penetrate undetected deep inside Iraq. Minutes later, F-117 stealth fighters, ship-launched Tomahawk missiles, and cruise missiles launched from B-52s initiated paralyzing strikes around Baghdad. These separate coordinated attacks crippled Iraqi integrated air defenses as well as command and control capabilities. Thus began Operation Desert Storm, a 43-day war that culminated in the liberation of Kuwait after a 100-hour

offensive by coalition ground forces. These opening attacks of the Persian Gulf War are exemplars of the synergy of weapons systems. They highlight the value of having many different arrows in one's quiver and the effectiveness of jointness. Desert Storm reflected the technological superiority of the Armed Forces. More importantly, it was a showcase of the spirit, dedication, and professionalism of American troops.

The 10th anniversary of the Persian Gulf War provides an appropriate moment to examine the nature of an historic victory and profit from its lessons. In tandem with Just Cause in Panama,

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The cover shows M1A1 main battle tank under camouflage, Desert Storm (DOD). The front inside cover features A-10s, Seymour Johnson Air Force Base (U.S. Air Force/Raheem Moore), soldiers covering operations in Kosovo (982^d Signal Company/Drew Lockwood), marines being extracted during exercise (Fleet Imaging Center Pacific, Guam/Crystal Marie Brooks), and launching S-3B from *USS Enterprise* (U.S. Navy/Marlow P. Dix). The table of contents depicts Iraqis collecting debris allegedly fallen from sky (AP/Wide World Photos/Jassim Mohammed) and *HMS Inflexible* (National Archives). The back inside captures marine disembarking from assault vehicle (U.S. Navy). The back cover shows Korean war

memorial, Washington (Combat Visual Information Center/Robert J. Thayer); marines heading for Blue Beach at Inchon, September 15, 1950 (U.S. Army Signal Corps/Herbert Nutter), F-86 Sabre jets, December 1950 (U.S. Air Force History Office), soldiers atop M-26 tank awaiting North Koreans on Naktong River, September 1950 (U.S. Army Signal Corps/Thomas Marotta).

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A WORD FROM THE CHAIRMAN

(continued from page 1)

military performance during Desert Shield/Desert Storm was the culmination of a decade of reform in doctrine, training, and leadership development. The conflict validated changes in command and control introduced by the Goldwater-Nichols Act. It also marked a departure from the gradualist approach that characterized American participation in Vietnam. Rather than strike, then pause, as was tried unsuccessfully two decades earlier, the Gulf War was prosecuted vigorously from start to finish, with dramatic results. New weapons and equipment—precision strike munitions, stealth fighters, and information technologies—likewise demonstrated their potential and enhanced the effectiveness of applying overwhelming force.

The Gulf War also underscored the importance of diplomacy and interagency cooperation in dealing with regional and international security challenges. The establishment and maintenance of a coalition of 35 diverse countries under a U.N. mandate required deft diplomatic footwork. And diplomacy also played a major role during the conflict, exposing the intransigence of Saddam Hussein and dissuading Israel from responding to 40 SCUD missiles which struck the country.

Desert Storm demonstrated the significance of public backing for military operations

Desert Storm also demonstrated the significance of public backing for military operations. As a veteran of the Vietnam War, I was moved to see an overwhelming outpouring of support for our soldiers, sailors, marines, and airmen. The yellow ribbons, letters, and other acts of kindness were inspirational, and the support did not waiver as weeks turned into months. One lesson is that when leaders take the time to explain why risking lives serves national security interests, the people of this Nation will accept the dangers at hand and rally to the cause.

Yet a debate has developed over the conduct of the war and how the United States has dealt with its aftermath. Certainly declaring the cease-fire 100 hours into the ground campaign seemed judicious at the time. Iraq had been thoroughly defeated. However, we stopped before disarming all the Republican Guard, the best-equipped and most loyal element of Saddam's military and a pillar of strength on which his regime relies to

Marines during
Imminent Thunder,
1990.



this day. In hindsight, it is easy to argue that coalition forces should have marched to Baghdad, but that was not the declared endstate for the coalition. Indeed, continuing the ground campaign may have fractured the alliance and created complications for the future of the region.

Although the near-term threat to the Persian Gulf was contained, Iraq remains a challenge. Saddam refuses to comply with U.N. resolutions on weapons of mass destruction. It is troubling that Iraq's borders have again been redrawn, labeling Kuwait as a province. In addition, keeping Baghdad in check has become more complicated. International support for sanctions has declined because of factors such as the increased price of oil, the endemic poverty and public health crisis in Iraq, and the heightened tensions between Arabs and Israelis over Palestine.

Given the drawdown of the Armed Forces, coupled with readiness concerns, one question that has arisen during this 10th anniversary is whether the Nation could refight Desert Storm today. The military is 40 percent smaller than it was in 1990, while the million-man Iraqi army has gone from fourth largest to tenth, with 350,000 soldiers. If we were to engage Iraq again, the new war would not be a simple replay of Desert Storm. Although the U.S. military is smaller, it still has the best-trained, best-equipped, and best-led force in the world, and its capabilities have improved in many areas. We have maintained a strong partnership with member states of

the Gulf Cooperation Council. This has led to a stabilizing presence in the region with over 20,000 military personnel (3,000 soldiers, 10,500 sailors and marines, and 7,000 airmen). Ground, naval, and air units are dedicated to several important missions including maritime interdiction, no-fly zones, and air defense and ground security in Kuwait and Saudi Arabia. Also, the collective military strength of council members constitutes a much stronger deterrent force than it did in 1990.

The United States has prepositioned four brigade sets of equipment stored on the ground in the theater and afloat. This capability reduces deployment timelines to the region by weeks.

Precision strike capabilities have been improved, with weapons like the joint direct attack munition, a low-cost guidance/navigation system for conventional munitions including the MK-84 2,000-pound bomb. It makes two B-2 bombers capable of attacking the same number of targets in adverse weather as sixteen F-117 stealth fighters in good weather during Desert Storm.

To better employ precision strike capabilities, faster sensor-to-shooter links can now cut the time between acquiring a target and attacking it. We can more rapidly engage mobile targets, such as truck-mounted missile launchers, which proved difficult during Desert Storm even with spotters on the ground inside Iraq.



DOD (Scott P. Stewart)

F-117A during Desert Storm.

Desert Storm also revealed vulnerabilities inherent in force projection

But despite such improvements we should not be complacent. The pace of operations since Desert Storm, as well as the procurement holiday of the 1990s, has placed considerable stress on U.S. forces. With the pace and proliferation of technological advances, any supposed advantage

is at risk. Iraq and other potential adversaries continually study our capabilities and constantly seek to capitalize on our weaknesses, either real or perceived. They will try to counter any advantage with asymmetric

means, such as weapons of mass destruction and cyber warfare.

Desert Storm also revealed vulnerabilities inherent in force projection. First, the military still needs access to sea and aerial ports to build up and supply forces in-theater. In 1990, Saddam Hussein did not contest our entry into Saudi Arabia. We cannot assume that luxury in the future. The U.S. military must develop strategies and capabilities to rapidly overcome enemy port denial operations. Second, it took months to establish an offensive capability in-theater. We need more rapid force projection, including additional airlift and sealift assets.

Logistic support also must be streamlined. If lines of communication into and within a theater are in danger, we will be unable to amass the mountain of matériel that characterized Desert Storm. Integrating logistic information systems and developing real-time asset visibility across the military will enable rapid merger or transfer of supplies among individual service and functional component commands of a joint force. Capitalizing on emerging information technology will reduce logistic footprints in-theater, thereby decreasing both lift and security requirements.

Other advances in information capabilities must be exploited to improve interoperability by the services. Desert Storm was essentially a sequential application of core competencies. The goal is compressing the timeline for the application of force, fully developing total combat power much sooner in a conflict, to reap the benefits of the synergistic effects of the simultaneous application of force, much like the strikes on the opening night of the Gulf War.

U.S. Joint Forces Command—executive agent for joint experimentation—has a mandate to explore concepts and technology to turn the force envisioned in *Joint Vision 2020* into reality. This includes defeating anti-access strategies, capitalizing on information technologies to integrate operations and intelligence, merging command and control networks, streamlining logistic support, and speeding up sensor-to-shooter links.

Command and control must be brought into the 21st century by improvements in concepts and technology, taking full advantage of innovations in doctrine, organization, training, and leadership. Moreover, we must bolster the tactical and operational agility of joint force commands.

Finally, I salute the men and women who participated in Desert Shield/Desert Storm. I will never forget the third day of the ground campaign when I flew over VII Corps and saw hundreds of tanks and armored vehicles heading toward the enemy. Rooster tails of sand spewed high in the air behind the units going north. Following at breakneck speed was a five-ton truck flying a huge garrison flag, bigger than the truck itself, whipping in the wind. My only thought was: “Saddam, here comes the U.S. Armed Forces at their best, and we’re coming at you! I hope you know what you’ve gotten yourself into!” But he did not have a clue.

In the finest tradition of our military, those who fought in the Persian Gulf War demonstrated great skill, dedication, and bravery, contributing to a victory over a ruthless aggressor and proving to the world that America is a reliable ally that will put its sons and daughters in harm’s way for the cause of freedom and world peace.

During the 10th anniversary of the Gulf War we must look to ensuring stability of the region in the future. This demanding mission calls for diplomatic, political, and economic ingenuity. The Armed Forces will also play a vital role. Just as in 1990, we stand ready to face the task.

HENRY H. SHELTON
Chairman
of the Joint Chiefs of Staff

Letters . . .

INDO-PAKI DIALECTIC

To the Editor—On the fate of Kashmir, what "history shows" as Rahul Pandit would have it in his response to my article, "Nuclear Proliferation on the Indian Subcontinent" (*JFQ*, Spring 2000), is that the facts are not compelling for either side. Although I can understand why Dr. Pandit as a Kashmiri takes the matter of blame to heart, the U.N. resolution of 1948 warrants attention.

The truce agreement declares, "Pakistan will use its best endeavor to secure the withdrawal from the state of Jammu and Kashmir of tribesmen and Pakistani nationals not normally resident therein who have entered the state for the purpose of fighting" (Part II, A, 2). It also states, "when the commission shall have notified . . . India that the tribesmen and Pakistani nationals referred to in Part II, A, 2 hereof have withdrawn, thereby terminating the situation which was represented by . . . India to the Security Council as having occasioned the presence of Indian forces in the State of Jammu and Kashmir, and further, that the Pakistani forces are being withdrawn from the state of Jammu and Kashmir . . . India agrees to begin to withdraw the bulk of its forces from that state in stages to be agreed upon with the commission" (Part II, B, 1).

That Pakistan acted dishonorably in fulfilling its obligations under the truce can hardly be disputed. But, if Pakistan is to be believed, the hostilities that required the truce were a grassroots uprising by tribesmen, which included Muslims who lived in Kashmir, against abuses of a foreign power in an independent principality. Pakistan did not abide by the terms of the truce, ostensibly because it feared that Indian troops in Kashmir would fill the vacuum of power.

India was to withdraw in stages in consultation with the commission and not, as Dr. Pandit says, only after Pakistani forces departed. U.N. observers on the scene to monitor the truce could not convince either party to budge. Troops on both sides began digging in, and the cease fire line, which had also been the skirmish line, soon metamorphosed into what is the line of control today.

Kashmiri accession, which India cites to lay claim to the state, is also subject to argument. Pakistan charges that the provincial ruler never acceded while India claims that he did. Regardless of how historians read this event, the ruler cannot be rebuked if he promised to accede in exchange for protection. He was about to lose Kashmir and perhaps even his life. A dispassionate observer might well consider an agreement made under such duress unenforceable.

There is one aspect of this issue that is not subject to argument. An instrument of accession

does not exist. This is significant because the accessions of more than 500 princely states to India during the transition of British power were formalized with written documents.

If the clarification Dr. Pandit seeks is acknowledgment that Pakistan is worthy of blame for lack of progress in establishing a U.N. plebiscite, it is found in my article, which explicitly states that the issue is whether Kashmiris will be able to decide their own future. This is an outcome that continues to be blocked by militants on both sides of the line of control.

—CDR Kenneth R. Totty, USNR
U.S. European Command

SOLDIERS AND MARINES

To the Editor—I found it surprising to read in "Rethinking Army-Marine Corps Roles in Power Projection" by Brian Dunn (*JFQ*, Autumn 00) that "only 10 Army and 3 Marine Corps divisions span the globe to deal with various small contingencies." The Army has a total of 18 divisions and another two divisional headquarters that oversee separate brigades. These numbers do not include the independent cavalry regiments and separate brigades. The argument that only active forces are ready and available for deployment ignores the multiple deployments made by Reserve components in Desert Storm and over the last decade. Army National Guard divisions have deployed to Bosnia and will soon take over the mission completely. Similarly many units are deploying with minimal training. I know of a call up when soldiers were given two weeks notice before mobilization and deployed within 30 days. The era of the stay-at-home National Guard is over.

Dunn also errs in his comparison of Army and Marine divisions. They are simply not the same. Marine divisions are the ground component of the Marine Air Ground Task Force (MAGTF) and significantly larger than those of the Army. In fact, active MAGTFs are mini combined arms corps with separate ground, air, and support components.

Finally, one point Dunn does not address is the allocation of peacekeeping chores. Why is it that an Army with 18 divisions provides a division to Korea, brigades to Kosovo and Bosnia, and a battalion to the Sinai while the Marine Corps with four MAGTFs has no such commitments? The Army also provides several ready brigades. As that service continues to draw down, it is time to rethink roles and missions and get the Marines into peace operations.

—CPT Eric P. Michael, ARNG
Commonwealth of Virginia

To the Editor—In a recent article "Rethinking Army-Marine Corps Roles in Power Projection," Brian Dunn makes the case for the two services to revisit their traditional missions and to create a more complementary relationship. He advocates that the Marines "must abandon amphibious warfare as a core capability and embrace an expeditionary role based on urban warfare and air mobility to complement the role of the Army to fight heavy forces." On one hand, if Dunn is suggesting that turning from a traditional forcible amphibious entry capability (opposed landings like Iwo Jima and Okinawa), I tend to agree. On the other, if he is challenging the naval character and concept of operational maneuver from the sea, he is mistaking the objectives of transformation. The Marine Corps is in fact embracing the expeditionary role, as Dunn proposes, and part of that expeditionary role is a forward deployed capability—consistently with Marine expeditionary units, occasionally as Marine expeditionary brigades, and with the potential for Marine expeditionary forces. Forward deployment means being deployed aboard ships, and the Marine Corps will still use that medium to launch operational forces in new assault amphibious vehicles, the current inventory of transport helicopters, and ultimately the Osprey. At the same time Marine forces will be equipped with sea-based air support from Harriers, Cobra gunships, and naval fixed-wing fighter/attack aircraft.

Dunn also incorrectly states that "only two [MEUs] are routinely forward deployed." The Marine Corps routinely has three MEUs forward deployed in the Mediterranean, Persian Gulf, and Pacific. I dispute that MEUs offer "additional combat power, but not much." In most developing nations where America is arguably most likely to fight, I would venture that a Marine light armored reconnaissance company—with two 81mm vehicle mounted mortars, two mounted TOW missile launchers, eight 25mm machine guns, nineteen 7.62 pintle and coaxial-mounted machine guns (not to mention small arms)—does in fact add substantial combat power.

—Maj Patrick J. Carroll, USMC
Headquarters, U.S. Marine Corps

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Welcomes your letters and comments.

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The Persian Gulf Ten Years After

While military professionals tend to look askance when they hear the phrase that “generals always prepare to fight the last war,” the final battle serves as a guide for the future. Soldiers have always prepared for the next conflict by taking the measure of their last victory or defeat. During

this process those lessons which appeared vivid and unquestionable at the end of a war become the focus of debate as poised intellects and the gift of hindsight offer new meaning. The lessons of Operation Desert Storm have been subjected to the same type of scrutiny in the decade since 1991.

Ten years ago America led a coalition of 32 nations. The conflict arose when Iraq invaded Kuwait on August 2, 1990. Five days later, U.S. troops began deploying to Saudi Arabia as part of Operation Desert Shield. In November, the United Nations set a deadline of January 15, 1991, for the withdrawal of Iraqi troops. Saddam Hussein refused to comply. Desert Storm then

Getting to the Fight

The greatest challenge initially was balancing the force such that it could function for its intended purpose. Now, what do I mean by this? We have all the warlords who fully understand how many air wings you need, how many battleships and aircraft carriers and everything else, and how many Marine divisions and Army divisions you need. Everybody understands that, and they sit around discussing it; it's like they're arguing about a haircut policy. How long should the hair be cut? They'll all have an opinion. So you don't have to worry about that part. You just lay a requirement on them. The real challenge is balancing the force in the early stages and over time, so that you can go from a demonstrated commitment or decision to get involved (I'm talking now about the first weeks of August), to establishing a credible deterrent to enemy attack, and finally to generating overwhelming offensive power. In essence this entails the continuous evaluation of the mission, the enemy, all the troops involved, the time available, and the terrain over which you're going to fight. This process of evaluation is a very basic exercise that is done from the lowest force levels to the top.

—Lieutenant General John J. Yeosock, USA
Commander, Army Forces Central Command (1990–1991)

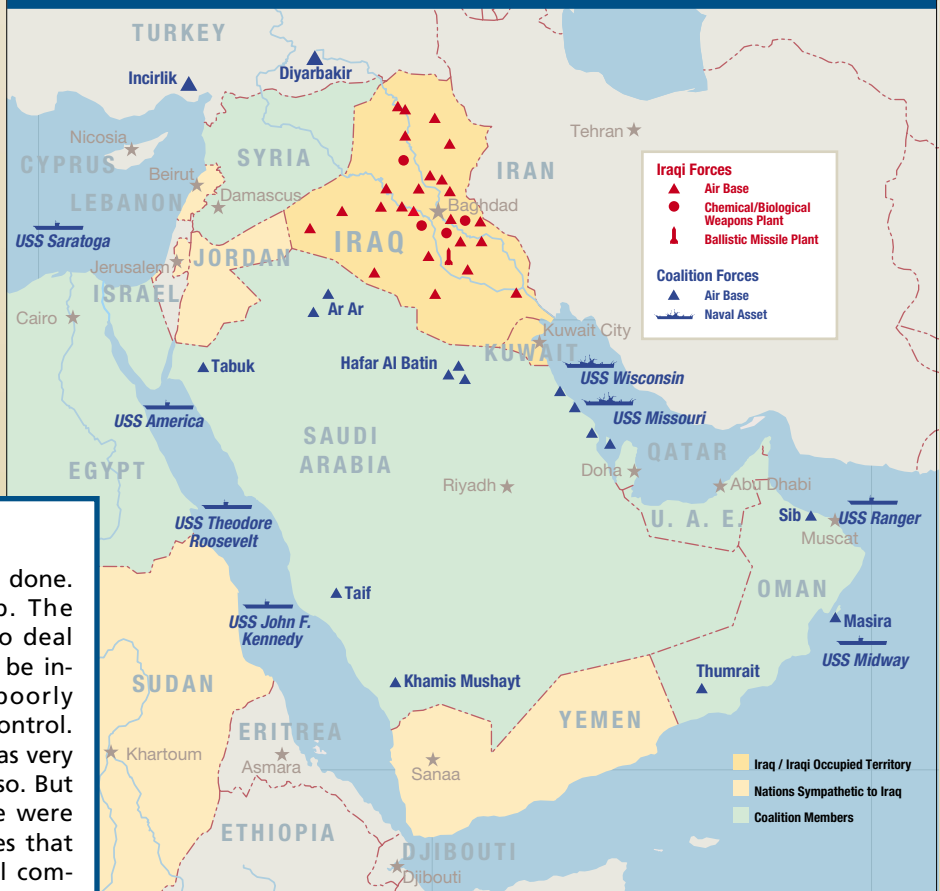


Refueling
F-16Cs.

DOD (E. Lee Corkran)

War

Map 1. Iraqi and Coalition Forces, January 15, 1991



Source: Mark Grossman, *Encyclopedia of the Persian Gulf War* (Santa Barbara: ABC-CLIO, 1995).

Organizing the Force

We knew what needed to be done. We knew how to lash up. The French were the hardest to deal with, not because they didn't want to be involved, but because they were so poorly equipped in terms of command and control. We had to work around them and it was very hard for a big navy such as ours to do so. But because we were such a big force, we were able to give everyone meaningful roles that were within keeping of their national command authority releases relative to the rules of engagement, and also to accommodate any differences of opinion that arose. We were able to work through those issues. For example, when [General] Sir Peter [de la Billière, British Forces Commander Middle East] expressed some concerns about the vulnerability of British minesweepers operating so far north so early, we put EA6s on top of them to make sure that there couldn't be a stray shot from shore . . . command and control at sea was exceptional. However, some countries are now falling way behind in our ability to lash up our command and control nets, and we've really got to work on that.

—Vice Admiral Stanley R. Arthur, USN
Commander, Naval Forces Central Command
(1990–1991)



Task Force 155 during Desert Storm.

U.S. Navy (William A. Ipsick)

Preparing for Battle

It's a matter of perspective, but the greatest challenge I had was simply to develop a plan of attack that would enable us to accomplish our mission and get as few marines and soldiers killed as possible in the conduct of that attack. The planning process was not an easy one because we believed from day one that there was a possibility that the Iraqis were going to use chemical weapons. So how do you breach a significant minefield? And while you're conducting your breach, how do you deal with the possibility that you might be attacked by chemical weapons?

The other issue I faced, which was one that even to this day is still rather distasteful to me, occurred within my own service. And it has to do with jointness, because in this case jointness worked. I was not at the table in Riyadh every night and the Marines in Washington were absolutely beside themselves because, supposedly, we were being left out of the picture. It was alleged in Washington that John [Yeosock] and Chuck [Horner] were conspiring against the Marines in some way. Of course, I knew that was not the case. Still, Headquarters Marine Corps in Washington said, "Boomer, you need to be in Riyadh, and if you aren't going to go there, then we are going to try to put another three-star in Riyadh" (we did have a very competent major general there the entire time).

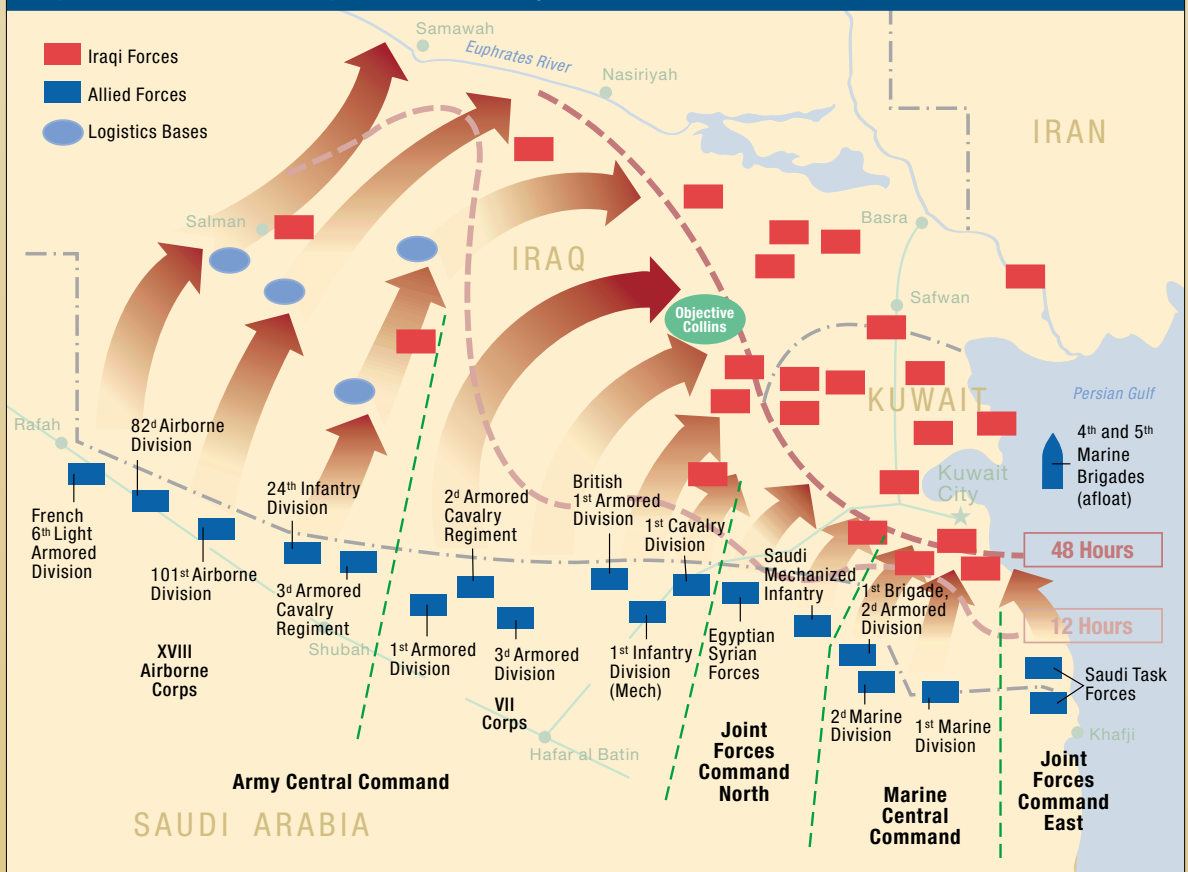
—Lieutenant General Walter E. Boomer, USMC
 Commander, U.S. Marine Forces Central Command (1990–1991)

F/A-18s aloft during Desert Storm.



DOD (Scott Stewart)

Map 2. Coalition Ground Operations, February 24–28, 1991



M1A1 tanks crossing desert in Kuwait.



DOD (Robert L. Reeve)

began on January 18 with massive air attacks. Coalition ground forces assaulted on February 24 and within four days encircled and liberated Kuwait, soundly defeating the Iraqi military. Though Baghdad agreed to the peace terms offered by the coalition, it failed to fully comply with weapons inspections. As a result, the United Nations continues to impose sanctions against the regime.

Analysts have disputed the decisiveness of the victory and the wisdom of containing Iraq. The debate continues as the defense establishment ponders the challenges posed by a new century.

This JFQ Forum contributes to the debate with six articles that assess what can be learned from the American contribution to the victory and postconflict efforts to strengthen security and stability in the region. The authors address a range of issues from the improvement of joint capabilities to rethinking national strategy.

JFQ

Learning from Victory

It's easy for me to say this, not being in the Army, but I think the Army—and I use that term in the collective sense—has a doctrinal problem with regard to headquarters. I think Army doctrine really never officially recognized Third Army as an echelon above corps. So Schwarzkopf had the corps commanders thinking they were doing something that was their responsibility, and then you had the division commanders—I just think we had too many staffs.

As the guy trying to interface with those staffs, I'd tell them that I needed their number one priority. I wouldn't bother John [Yeosock] with this, because John was having his gall bladder taken out, so I'd call [Brigadier General] Steve Arnold. What does the Army regard as its number one priority? I'd always get five number ones. Finally I just turned the job over to Lieutenant Colonel Bill Welsh, an Army officer in D.C., and I said, "You tell us what the number one priority is for the Army."

Army organizational doctrine needs to be reexamined. If I had my way, I would give the corps commander a couple of ivory-handled 45s, a set of goggles, a map with plastic on it, and a driver and a riding crop, and I'd send him out there and say, "Make it happen." And then I'd just let the divisions and the echelon above corps level do the planning.

—Lieutenant General Charles A. Horner, USAF
Commander, U.S. Central Command Air Forces (1989–1992)

Lessons of Desert Storm

By BARRY R. McCAFFREY



DOD (Brian Cumper)

M1-A1 tank rolling off Saudi transport, Desert Shield.

Our memories of the Persian Gulf War include CNN images of anti-aircraft tracers lighting the sky over Baghdad and smart bombs striking bridges and buildings. Americans recall the event as a stunning victory over a well-armed, brutal, but ultimately inept enemy achieved in a thousand hours. They believe that the war was just—

wrapped in the legitimacy of the United Nations—and checked a ruthless dictator and restored independence to Kuwait. The ambiguities of the Vietnam War were largely absent during Desert Storm. The conflict in the Persian Gulf was decisive and supported by the international community. Yet for the Army and Marine Corps it also distorted expectations on the cost of ground combat as well as the nature of modern warfare.

Victory was not secured after only a few days of fighting on land; it was

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fifteen years in the making. It was rooted in the lessons of Vietnam:

- war should not be entered into without full public support
- to gain that support, troops should be put into combat only when national interests are clear and can be convincingly explained
- once committed, both the Nation and the Armed Forces must be implacable.

Leaders took advantage of the decade and a half between Vietnam and Desert Shield to shape the U.S. military into the most lethal and disciplined fighting machine in the world. The commitment of resources to create this force paid enormous dividends. Undeniably, the reinvention of land-sea-air forces was largely driven by the need to deter or fight huge Soviet ground formations menacing Western Europe. But this sophisticated team was also extraordinarily effective in the desert.

During one hundred hours of ground combat, preceded by the most stunning air campaign in history, seven Army and two Marine combat divisions in concert with coalition ground forces

it took more than a decade to build the military that America watched with pride during the Gulf War

turned the fourth-largest army in the world into the second-largest army inside Iraq. This allied force used maneuver, deception, speed, and carefully targeted violence, which not only achieved its military objectives but saved lives and cut short what could have become a protracted struggle. The ground elements fought effectively and acted with compassion. This victory was possible because of a revolution in military affairs that was largely unseen by the American people until the lopsided victory in the Persian Gulf revealed its dimensions and power.

People's War

Compared to any other force deployed by the Nation over its history, the soldiers, sailors, marines, and airmen who fought in Desert Storm were better educated (over 90 percent were high school graduates), more capable physically, better trained (through



General Schwarzkopf and staff during victory parade.

DOD (Rob Jenson)

high-tech force-on-force, live-fire exercises as well as battlefield simulations), and more prepared for the operational environment faced in battle. Compared to the force of the late 1970s the contrast is stark. From 1976 to 1981 the Army routinely missed recruiting goals. Morale, readiness, and training were marginal and drug abuse, crime, and maintenance problems were high.

Every service struggled with grave declines in readiness.

It took more than a decade to build the military that America eventually watched with pride during the Gulf War. Improved pay, benefits, and facilities contributed to the sense that serving in the Armed Forces was worthy of the best and brightest. Cutting-edge technology was crucial. But rebuilding the noncommissioned officer corps, forming a physically fit force, creating a disciplined military culture, and rejecting drug and alcohol abuse that sapped professional strength throughout the ranks after Vietnam was even more important.

Research and development in the 1980s enabled the defense industrial base to develop and field revolutionary systems designed to overwhelm Soviet weapons and tactics. Critics derided

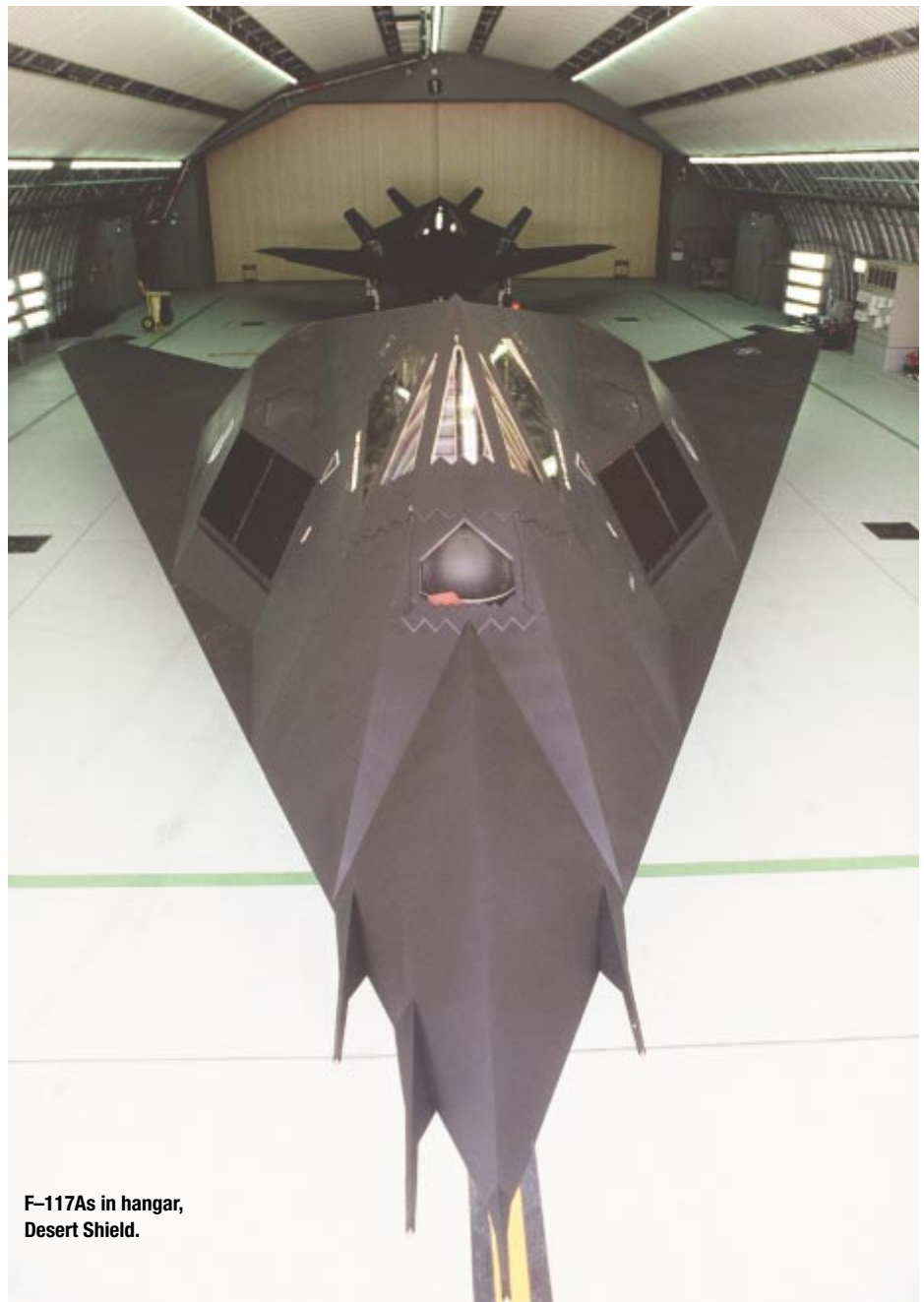
many of these systems in the years before the Gulf War. Some defense skeptics, for example, doubted the survivability and utility of the Bradley fighting vehicle. The Abrams tank was regarded as unreliable and unsupportable because of its fuel consumption. Several advanced weapons and other systems—including the sea-launched cruise missile, F-117 stealth fighter, and many night vision devices and electronic warfare capabilities—had never been used in combat and had undergone limited operational testing. Some criticized this hardware as too complex and prone to failure under harsh conditions. The Soviets were routinely cited as the model of a more rational military-industrial process. Such cynicism proved unfounded as coalition hardware proved equal to the task.

However, U.S. forces in Desert Storm could have won the conflict decisively even if they had swapped their equipment with the Iraqi military. This view reflects a deeply ingrained, experience-based belief. Effectively employing sophisticated matériel requires demanding, results-oriented training. In contrast to the American approach, Iraqi training during the Desert Shield buildup was almost as pathetic as its strategic leadership.

Thoughts of Battle

Doctrine plays a unifying role in the employment of people, resources, and time. History demonstrates that brave soldiers with excellent equipment can be paralyzed and defeated if lacking in doctrine to integrate and leverage their advantages. The humiliation of France by the *Wehrmacht* and *Luftwaffe* during the opening moves of *Blitzkrieg* in World War II makes that point. Prior to Desert Storm, the services invested years integrating their warfighting doctrine. That collaboration produced forward-looking, offense-based strategies that exploited American strengths and enemy weaknesses. In the early 1980s, for example, the Army moved from a reactive and static combat doctrine known as active defense to AirLand Battle, which focused on maneuver flexibility, synergy, and violence. The change in doctrine paralleled improved leadership training throughout the Army. AirLand Battle stressed bold, coordinated ground and air offense and exploiting battlefield initiative, which provided a decisive advantage during the hundred-hour maneuver that characterized the attack of Desert Storm.

A crucial factor in improving doctrinal initiatives was that commanders and units practiced and honed concepts under realistic conditions. Beginning with top gun air combat school by the Navy, the services developed state-of-the-art, force-on-force training and exercises linking doctrine and new systems under realistic conditions. Such training produced leaders whose individual and collective success (and promotions) were based on demanding and fully transparent exercises. The Army National Training Center at Fort Irwin, Air Force Red Flag at Nellis Air Force Base, Marine Air Ground Combat Center at Twentynine Palms, and Navy instrumented sea warfare training in the Caribbean allowed warfighters to make fatal mistakes in a realistic battle lab instead of combat. At joint training centers, combat leaders underwent a painful learning process that often damaged their egos but saved lives in war. A training atmosphere of candor, rapid feedback, and defined outcome standards was critical.



F-117As in hangar,
Desert Shield.

DOC (Hans H. Delfner)

An Unsettled Legacy

Are the battlefield lessons that contributed to the success of Desert Storm relevant ten years later? Military leaders have frequently been accused of preparing to fight the last war. If this were the case at the moment, the Gulf War template would offer a wasted intellectual exercise at best and a prescription for defeat on some future battlefield at worst. Focusing doctrine on

past successes can blind commanders to rapidly evolving asymmetrical threats which may target predictable U.S. military doctrine, leadership, and equipment in the future.

Some argue that the focus of doctrine on European armored combat left the United States with a force that had little application to post-modern war.

13th Public Affairs Detachment (Richard Puckett)

technology, and a culture based on trust, respect, and personal growth.

Developing, acquiring, and fielding combat systems requires making assumptions on next generation threats that will shape resource commitments and future doctrine. Today military research and development is conceptually adrift. The mayhem and brutality of modern violence are functions of nonstate militias, truck bombs, chemical weapons, cruise missiles, diesel submarines, high-speed missile boats, mines, and large amounts of Cold War hardware flooding arms bazaars. Billions of dollars in drug money and international criminal activity contribute to this lethal mix.

The equipment-technology doctrine cycle must be driven by requirements for transportation and logistics to deploy to the continental United States. Joint forces must be ready to fight on arrival. New threats to international security can't be resolved by sea-launched precision weapons and airpower based at home. Today the Nation has essentially the wrong force structure for the missions at hand. It requires new concepts, additional resources, and a revitalized strategic political consensus to build capabilities geared for both warfighting and peace operations.

Here the lesson of the Gulf War is that substantial funding, research and development, and procurement are crucial for the national defense posture. The challenge is preserving the existing infrastructure while developing the next generation of doctrine, training, and weapons. The procurement cycle for some major systems is 15 years. There will be serious overlap with older combat systems that must be maintained even though more recent versions have been developed and gradually integrated. Nevertheless, these systems are aging. The M-1 tank entered the inventory in the early 1980s and the F-15 fighter went into service in 1975. Incremental improvements in many battlefield systems have given the United States preeminent capabilities. But the Pentagon must look beyond contemporary technology and force structures and identify what is needed to dominate the battlefield of tomorrow.

The military today is being tasked with broader security missions. It is expected to tackle challenges ranging from peacekeeping to the proliferation of weapons of mass destruction. Providing humanitarian aid, combating terrorism, and confronting international drug cartels and organized crime are among the support duties. So what does the future hold?

First, people requirements have not changed significantly. The Armed Forces will continue to need a substantial number of personnel (1.5 million)—and tactical leaders with the motivation, skills, and mental agility to

the ability to assimilate real-time combat data and sort out vital information will be critical to success

operate decisively in a complex, confusing, and dangerous international arena. As combat equipment becomes more sophisticated, broadly educated, literate, and highly trained people will be needed to operate and maintain it. Violent conflict will require global reach, rapid decisionmaking, and expanded notions of battlespace with digital, space-based information systems. At the same time, overwhelming levels of raw intelligence from a range of sensors could lead to paralysis rather than decisive action. The ability of leaders to assimilate real-time combat data and sort out vital information will be critical to success.

The political sensitivity of future battlefields will be driven by their increasing transparency to high-tech media oversight, requiring leaders to function under challenging conditions despite intense scrutiny from international news sources and hostile political actors. Near instantaneous global communication creates a political-military environment in which tactical decisions by even junior noncommissioned officers can shape national strategy. Furthermore, advanced combat systems will put increasingly lethal, simplified weapons and targeting capabilities into the hands of enemy and friendly small-unit leaders.

These operations will not be run successfully from either Washington or a unified commander's war room. The Armed Forces must continue to recruit and train capable people and imbue them with a level of judgment previously expected only of mature servicemembers.

America produces vast numbers of young men and women with great physical courage and leadership ability. Professionals of this caliber will not remain in the military simply for high pay, dual-income opportunities, large quarters, or predictable home-station time. Neither will they leave the service of their country because they fear death or injury in combat. However, they will be unforgiving if denied the combat edge and confidence generated by demanding and realistic training, first-class

Launching Tomahawk missile from USS Mississippi.



Two principles of national security will be critical in maintaining military dominance while anticipating requirements. First, the Armed Forces must be prepared for the worst-case scenario: high intensity conflict against well equipped and determined enemies. Substantial forces fielded by modern nation-states still pose the most significant, though least likely, threat to national interests. Prior to the Gulf War most militaries were organized around this core commitment. This strategy worked. The United States prevailed in Desert Storm and during the Cold War. The price of failure in a possible high-intensity conflict means we must not allow our focus to drift from such large-scale threats.

Second, systems must be developed that are relevant to realistic scenarios for deployments from the United States to distant battlefields. The Armed Forces can't count on enemies to allow a six-month buildup like Desert Shield. A greater investment is needed in capabilities to deliver decisive force anywhere in the world on short notice. Major sea-based, pre-positioned equipment is vital. However, the deployability of ground and air systems is also crucial. Capability must be transformed from a forward-deployed ground force—backed by

CONUS-based assets—to a CONUS-centered air-ground force with global air and sea-delivery reach.

Washington also must rethink what seems to be a self-defeating requirement that each force deployment be articulated to the American people through an exit strategy. This concept has been an unmitigated disaster. Events in the Persian Gulf reaffirmed the wisdom of committing troops to warfighting or peace missions only when the Nation is determined to achieve its purpose—whether that entails bloodshed or a fifty-year presence as in the case of NATO. The elevation of the notion of exit strategy to the

Joint strike fighter approaching Patuxent River.



Naval Air Station Patuxent River (Vernon Pugh)

status of a strategic principle signals weak commitment. It may also ensure that time and initiative are ceded to a potential enemy.

Overmatching Force

The doctrine produced to defeat the Warsaw Pact proved itself in Desert Storm. It stressed offensive initiative and coordinated day-night employment of advanced combat systems. The battle doctrine was well suited to high intensity operations conducted against the brutal, rigid, and poorly led Iraqi forces. In preparing for high-intensity conflicts of the future, the principles of AirLand Battle doctrine remain valid. Though refinements in existing doctrine are needed because of technological advances, the fundamentals of joint, synchronized offensive are unlikely to change.

Over the last decade the Armed Forces have conducted various operations around the world as part of humanitarian, counterterrorist, counterdrug, and peacekeeping missions.

DOD (Heideritz)

These security responsibilities challenged the military to develop new doctrine for contingencies at the lower end of the operational continuum. Involvement in multinational peacekeeping and peace-enforcement is likely to remain a requirement.

Postulating the employment of remote lethal targeting technology to wage war—followed by the unopposed deployment of peacekeepers—has given rise to the hopeful but misplaced belief that future wars can be fought

history suggests that the denial of military experience increases the long-term suffering inherent in combat

with little or no loss of American lives. But absolute dependence on high tech in pursuit of a bloodless war may introduce at least two flaws into warfighting doctrine. First, it will limit the ability to respond to the full range of possible conflicts. There is also danger in communicating to potential enemies that the direct employment of ground combat troops in favor of other options is foreclosed. The military can't protect both Americans and innocent populations abroad by adopting zero-casualty force protection as an operational priority. There are causes for which our soldiers should be willing to fight and die.

A second danger resulting from a misguided belief in bloodless conflict comes from turning abstract notions of battlefield fairness or proportionality into an operational imperative. America has a strong sense of fair play and justice for all. It abhors human suffering, a virtue which is among its greatest strengths. However, blindly applying fairness and balance on the battlefield is inimical to national security. History suggests that the denial of military experience increases the long-term suffering inherent in combat.

Any military that limits itself to narrowly calibrated proportional force is an organization in search of defeat. The Armed Forces do not go off to war to put up a good fight; they go to win.

They do not attack in kind; they attack with every type of force to break enemy will and defeat it. By prosecuting warfare aggressively, one not only limits losses but shortens the conflict and thus lessens the suffering of noncombatants and often enemy forces themselves.

The Armed Forces must act in accord with international law. They must respect the rights of prisoners and noncombatants. They are accountable to the American people and scrutinized by the media. Like political leaders who must explain the justness of a cause, military leaders should inform the public on strategies used to protect national interests. But when the Nation goes to war, commanders are entrusted with the lives of American men and women. Leaders from the President down to a fire leader bear responsibility for achieving objectives while safeguarding lives.

The military must strive to employ its forces to maximal advantage in prosecuting complex missions. However, critics argue that the services remain parallel and noncomplementary and that they are characterized by

parochial doctrines, which generate turf battles over resources.

The dominance of expensive, high-tech equipment will require a higher quality of training for joint forces. To obtain the maximum benefit from advanced technology, an equivalent long-term resource commitment to troop and leader training, education, and career development is needed.

To accomplish the range of missions the Armed Forces are likely to face, training must be both tailored and flexible. It will require assets commensurate with the complexities of warfare. Simulations and virtual battlefields will become preferred methods of joint training. The existing force structure often will not allow matching forces to contingencies. Joint commanders must deal with the operational expectation that units may be sent anywhere any time for various missions. Realistic, rigorous joint and combined arms training will have to produce cohesive teams that can adapt to rapidly changing operational environments.

Though strategy, force structure, and technology may differ in the future, the principles on which the Desert Storm force was built should continue to serve us well. The lessons of the Gulf War related to personnel, equipment, doctrine, and training must be applied to the challenges the Nation will face by virtue of having the world's greatest military. Leaders will need the agility to respond to threats faster and more competently. America must continue to bear the burdens of peace operations, humanitarian aid, economic containment, counterterrorism, illegal drugs, et al. Its military must prepare for violent engagement against major organized forces that might threaten Southwest Asia, Japan, Korea, Thailand, or Israel. The United States must also provide support for multinational military engagement designed to keep sea and air routes open for the global free-trade community, maintain access to energy supplies, and defend vital global interests. **JFQ**



DOD (Brian Cumper)



The Joint Force

Live fire exercise in Kuwait, 2001.

AP/World Wide Photos (John McCormico)

A Decade, No Progress

By DOUGLAS A. MACGREGOR

Ever since the passage of the Goldwater-Nichols Act, the gaze of Congress has been firmly fixed on the need for jointness. The conviction that 21st century operations will involve land, sea, and air forces is buttressed by the perception that technological advances combined with the genius of the American military will transform the Armed Forces into an information age joint organization.

In theory, jointness is the means through which the National Command Authorities achieve unity of effort from diverse service competencies. Yet for many members of the military, the idea of jointness presents a Pandora's box of unattractive possibilities. Parochialism, not cooperation, remains the watchword despite the common deference to jointness. Although Congress has argued for years that increased jointness will produce a more efficient and effective military, Desert Storm together with the demise of the Soviet Union did not alter service attitudes. Operations against the former Yugoslavia offer further evidence that the single-service American way of war

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has changed little since the Persian Gulf War, leading Eliot Cohen to observe that there are “four single-service warfighting establishments.” These points notwithstanding, funding a Cold War legacy force, with its origins in the experience of World War II, may no longer be possible. It is not an accident that a budget of \$300-plus billion is critical to maintaining services that are downsized versions of the same military that mounted Desert Storm. This is significant because jointness, transformation, and fiscal reality are on a collision course.

After the Storm

Victory in the Persian Gulf led senior leaders to insist that ground and air operations against Iraq were joint. In reality there was little evidence for such a claim. Even though the Commander in Chief, Central Command, prescribed a chain of command and organized joint forces, operations largely conformed to World War II. Single-service warfighting organizations waged Desert Storm with only broad strategic guidance. Therefore it is not surprising that the services sought to exploit success to validate their doctrine, organization, and equipment.

unwavering faith that extended bombing could have won the Gulf War did not advance the cause of jointness

On the ground, the superior performance of the Army, especially in the culminating battles on February 26–27, should have afforded a strong argument in favor of a highly trained, superbly equipped force consisting primarily of combat troops organized and postured for rapid deployment in a new joint warfighting framework. Instead the Army of the Cold War simply got smaller.

Victory in the Persian Gulf became the Army rationale for preserving the status quo. None of its initiatives since the war, to include *Force XXI*, *Army after Next*, *Strike Force*, or the current *Army Transformation Initiative*, challenged the ten-division structure, the warfighting paradigm, or the institutional policies and mobilization



Intelligence analyst at Fort Bliss, Roving Sands '00.

1st Combat Camera Squadron (Jim Varhegyi)

practices of the Cold War. Integrating the enormous and increasingly precise firepower of the Navy and Air Force with landpower should have figured into joint doctrine and postwar force design by the Army. Despite the potential for jointness in the Air Force expeditionary force concept, without basic changes in Army combat organization, the idea of organizing ground and air forces to operate in tandem did not translate into jointness.

The unwavering faith of the Air Force that extended bombing could have won the Gulf War by airpower alone did not advance the cause of jointness in that service. Instead, Instant Thunder, the air operation against Iraq, became simply a model for the future. Strategic airlift took second place to the F-22, the post-war centerpiece of operations by the Air Force. That regime security could be more important to Baghdad than a conventional strategy did not enter the analysis. Later, when formidable ground combat power was needed early to operate with airpower within a joint framework in the crisis over Kosovo, it was unavailable.

Naval forces were more circumspect in the wake of the Gulf War, because participation by the Navy had been significant in terms of numbers, platforms, and aircraft, but relatively modest in terms of actual warfighting. Another reason for self-examination was that in 1991 no other navy could challenge the Nation for control of the seas. Since recapitalization is expensive and time-consuming, the most intense soul-searching of any service is ongoing there. This was evident in the behavior and thinking of senior naval officers in the context of jointness.

Admiral Paul Miller, the first Commander in Chief, Atlantic Command (the forerunner of Joint Forces Command), became a champion of adaptive force packaging—repackaging land, sea, and air forces in units tailored for specific missions. His reconfiguration of carriers in the Haitian intervention that replaced air wings with Army air mobile troops and the concept of nodal warfare in littorals created possibilities for naval power in joint operations. Vice Chairman of the Joint Chiefs, Admiral William Owens, not only fostered experiments by placing Army tactical missile systems on ships, but organized the Joint Requirements Oversight

USS Coronado
off Hawaii,
Strong Angel.



U.S. Navy (Peter Jones)

Council to promote jointness. Such institutional developments led the Navy into uncharted waters.

With a tradition of living on the strategic periphery, the Marine Corps moved more quickly than the Army to refocus on new forms of small-scale conflict. Recognizing that technology could enable smaller formations to be decisive, the Marines examined concepts for employing forces in Sea Dragon and Urban Warrior. Such exercises involved new operational concepts as well as the organizational structures to execute them. For the most part, notions of jointness extended only to the Navy, and despite innovations, the Inchon paradigm that dominates Marine Corps thinking and organization for combat did not substantially change.

The Marine Corps can argue persuasively that it already fields a JTF which integrates land, sea, and air resources—the Marine air-ground task force. Hence any efforts to increase

jointness that might reduce service autonomy and remove control over fixed-wing aviation or other assets are treated with suspicion. In addition, the Marines are among the most strident critics of the ramifications of the Goldwater-Nichols Act on training and officer development.

Jointness and CINCs

While the services struggled with jointness, CINCs discovered the way that the services responded to the pressures of joint operations under the control of unified commands. Clearly the services link specific weapons and communication systems to activities regarded as most vital to their missions. Therefore they seek to optimize the integrated performance of systems according to their needs rather than those of the joint community. As a result, as unified commands attempt to integrate

and apply service-optimized systems, they discover that service optimization produces suboptimum performance within the joint operational framework.

These points notwithstanding, knowing the joint task force will be the instrument of choice on the operational level, CINCs have pressed for increased joint training. General John Sheehan, USMC, who succeeded Miller, promoted joint operational level training and succeeded in bringing component headquarters to Suffolk, Virginia, for interoperability training. Even though service-based headquarters are not organized, trained, or equipped to command and control joint forces, this represented a step toward genuine joint operations. Sheehan could not change the practice of forming JTFs from single-service component headquarters. The services would not tolerate joint command and control structures or standing JTFs as replacements for single-service structures. In the battle between service and joint warfare, the former won.

The services grasped the revolutionary potential of emerging strike systems but would not abandon the World War II paradigm of service dominated command and control that obstructs the seamless integration of components with new air, space, and missile capabilities. In this regard, *Joint Vision 2010* and *Joint Vision 2020* are simply bumper stickers for single-service programs and do not prevent competing service requirements from dominating joint integration efforts.

Admiral Harold Gehman, while Commander in Chief, Joint Forces Command, raised the issue of competition between joint and service experimentation in 1998 as follows:

When it finally gets down to it, this is going to be a choice of resources and doctrinal issues. My intent is, and my charter is, and my resourcing is that I will be funded and manned and equipped to go out and get just as good an argument, with just as much research and development, and just as much analysis, and just as much field trial and wargames, that the joint way of doing something is just as good or better than the service way of doing it.¹

Global Hawk during first flight, 1998.



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A few years later, just before retiring, Gehman cited the constraints on accelerating transformation and recom-

as Kosovo demonstrated, innovation depends on organizational focus over a sustained period

mended that his successors serve for up to eight years to outlast bureaucratic opposition and implement change. But as Kosovo demonstrated, innovation depends on organizational focus over a sustained period rather than any personal attempts to guide change.

The Balkans Experience

NATO strikes lasted for 78 days before Serbia agreed to pull its forces from Kosovo. The reasons for this decision were more self-evident than realized at the time. The withdrawal of support by Moscow under great pressure from Washington left Belgrade without assistance in its bid to retain control of Kosovo. Simultaneously, destruction of its meager economy, with

an output in 1998 that was less than two-thirds of the economic activity of Fairfax County, Virginia, made resistance useless without Russian aid. Belgrade could not retain Kosovo without such support. Serb women and children would starve or freeze. Finally, Moscow warned of a possible U.S.-led ground offensive.

At the same time, the Alliance faced grave obstacles in its mission to expel Serbian forces from the area. Although unmanned aerial vehicles (UAVs) found some excellent targets, for example, rules of engagement required double or triple confirmation before strikes. That made it difficult to develop an effective decision cycle because of the fear that a mistake at 15,000 feet would jeopardize air operations.

In the intelligence arena, the time needed for remote command centers to get information to pilots from other than Air Force sources was too long. The Air Operations Center (AOC) system proved too cumbersome to rapidly disseminate critical data to pilots on their way to target areas.

Army and Air Force systems were unable to quickly fuse and disseminate the pictures from joint and single-service intelligence, surveillance, and reconnaissance sources in the Combined Air Operations Center (CAOC) in Vicenza during a fast-paced conflict. In part this was a consequence of information overload, as well as the structural orientation of service systems.

The command and control structure also did not integrate service staffs and organizations in a single Kosovo engagement zone operations structure under the supported commander, the joint force air component commander (JFACC). Operation Allied Force was directed by a JFACC staff, not a combat operations, combat plans, and strategy staff. The JFACC/AOC organization did not reflect that JFACC was the supported commander. AOC required ground liaison officers from the Army who would have worked for the air component commander and advised on effectively attacking enemy ground forces. Moreover, launching NATO air strikes against Yugoslavia in March 1999 began the largest UAV deployment by Western forces since the Gulf War. Linking UAVs to CAOC via satellite illustrated the value of an effective joint system for coordinating operations with service air platforms and distributing imagery across services. The fact that most UAVs (except Air Force Predators) belonged to ground units raised questions on joint management, control, and direction of these vehicles. Without a joint operational architecture embracing theater forces, such questions were largely reduced to a fight among services for control and were not resolved.

A top-heavy Army command and control headquarters could not conduct joint operations. It declined to send representatives to JFACC targeting board meetings. That a corps headquarters with more than 500 officers, noncommissioned officers, and soldiers was necessary to coordinate a 5,000-man task force within the framework of an Air Force-based JTF reflected the rigidity of the existing Army multi-echelon, single-service command and control structure.

The Army refused to incorporate attack helicopters in air targeting orders. The approaches of the Air Force deliberate planning process and the Army movement-to-contact method collided. If operations went as planned, the Army would have sacrificed electronic warfare as well as other air defense countermeasures routinely provided to Air Force pilots. These diverse approaches left the joint commander with no alternative to inefficient sequential service operations.

Because naval aviators lacked adequate target-imaging systems to drop laser-guided bombs from F-14s and F-18s during training flights, they learned in combat. Naval aircraft hit less than half of their laser targets in Serbia, and thus Navy participation in joint operations was constrained.

The Joint Chiefs mobilized enough equipment, intelligence, surveillance, and reconnaissance for two wars to carry out the bombing campaign. For example, every joint surveillance aircraft instructor was called upon, disrupting training for years. Kosovo also had a significant effect on real-world missions. With key assets such as tankers and electronic jammers rushed to Kosovo, the Air Force had to

in the absence of a joint operational framework, defeating an enemy will be expensive and time consuming

temporarily shut down no-fly operations over Northern Iraq. It reported the need for a period of six months to reconstitute forces after the conflict.

Service oriented operations also impeded joint logistics. While Albania lacked a deepwater port, its coastline favored joint logistics over the shore (JLOTS). But that did not occur. JLOTS has suffered from a shortage of funding and a paucity of realistic exercises for years, yet a sustained offensive depends on strategic sealift. U.S. forces were thus unprepared for anything other than the air campaign.

Although the military exists in a class by itself in the case of strategic



Marines operating simulation system, Urban Warrior '99.

Fleet Combat Camera Group, Pacific (Chris Desmond)

mobility, the Kosovo experience demonstrated an overreliance on strategic airlift, which in turn is dependent on a robust in-theater infrastructure that was inadequate in the Balkans. But little was done to exploit alternative means to move men and matériel. Army rotary assets could have moved equipment from ship to shore. Despite success with this type of joint operation in Haiti, it was not attempted in Kosovo.

Operations against Serbia demonstrated that the American way of war has changed little since 1991. The application of a single arm—air and missile power—allowed the enemy to adapt to the single threat—to hunker down and wait out the bombardment. Assumptions on omniscient surveillance technology in connection with battlespace knowledge and information dominance also turned out to be fallacious. In spite of enormous U.S. and NATO superiority in every category of technology, allied battlespace awareness was often manipulated by the enemy. Strikes on decoys indicated that the Serbs let daytime reconnaissance flights see real targets and then

replaced them at night, or that U.S. target analysts misinterpreted the information received.

Technologies developed since Desert Storm should have decreased decision cycle times and increased the ability to achieve battlefield effects more efficiently and effectively by employing all service capabilities during the Kosovo air campaign. But joint command and control concepts and procedures did not fundamentally change, and U.S. forces were unable to exploit opportunities offered by new technology. In Operation Allied Force, commanders and staffs from the services were not postured to exploit information opportunities. Effective procedures began to emerge by the end of the air campaign, but they should have been in place at the start. What is more, the distrust between ground and air commanders evident in 1991 persisted during the 1999 air campaign.

Shaping the Force

In the absence of a joint operational framework that integrates air, space, and missile power with ground combat forces, defeating an enemy will

1st Combat Camera Squadron (Jeffrey Allen)F-15E after mission,
Allied Force.

be expensive and time consuming—if it happens at all. Service components must be organized to fit into JTFs without intervening or redundant layers of command and control. Redefining service force modules as the lowest level at which operational units can accomplish core competencies is vital. At the same time, JTF headquarters must contain sufficient expertise from all services to make the deployment of redundant single service command and control unnecessary. Current service transformation programs do not address this need.

Enemies may attempt to strike early to outpace a U.S. military response and act decisively with weapons of mass destruction to deny access. Accordingly, service operational concepts and command and control structures that obstruct jointness will have a profound impact. As implied above, jointness is not an end in itself but rather a means to cope with the uncertainty and rapidity of change in a turbulent strategic environment.

If information superiority and battlespace dominance are the organizing imperatives that can determine how the services will fight in the future, then new joint operational concepts and joint-capable organizations are keys to success. Transformation that occurs without joint influence

and oversight will not change the single-service warfighting establishments.

The strong links between weapons procurement, doctrine, and organization for combat puts this problem into sharp relief. For instance, if the Navy buys joint strike fighters and new carriers, it is likely to operate in basically the same manner in fifty years as it does today. Moreover, this means that if joint control was exerted over service research, development, and acquisition, transformation to new structures for warfighting can occur. Unfortunately, service target information systems are being funded and the Armed Forces operate redundant assets. To date, the Joint Requirements Oversight Council, Joint Staff, and U.S. Joint Forces Command have been unable to overcome this predicament and replace the World War II paradigm with one that shapes decisions on force design and acquisition. Service control of funding and influence in shaping such decisions remains unchanged.

The recent initiative to organize a core JTF is notable because it addresses many problems that resurfaced during the U.S.-led air campaign in Kosovo. As James Blaker has observed, “This is

a good idea, but we need to move to standing joint task forces. Everyone says it is not good to go to war with a pick-up team. This is a step forward.”² Yet organizing a standing JTF risks failure if it ignores the fact that when service specific visions for warfighting, backed by extensive plans for weapons modernization, are not included in joint plans, the influence of the joint community is marginal. After all, the building blocks of JTFs must be modules based on core competencies that reside inside the services.

Bureaucratic power does not shift voluntarily. Civilian leadership in the Pentagon, White House, and Congress is essential to the future of jointness. Until legislation as monumental as the National Security Act of 1947 is enacted to restructure the defense establishment within the context of reform, nothing of substance will occur. Lectures, demonstrations, and expressions of support by senior officers have not and will not yield tangible results to advance jointness and rationalize the allocation of increasingly scarce funds in the years ahead.

Perhaps the skepticism voiced by Alfred Thayer Mahan that no service can reform itself is valid. Change must come from outside to transform the military and realize authentic jointness. Otherwise the Nation could suddenly find that the Armed Forces are manning an expensive high-tech Maginot Line that will inevitably be outflanked. **JFQ**

NOTES

¹ Elaine Grossman, “As Lead Experimenter, Gehman Expects to ‘Duke it Out’ with Service Chiefs,” *Inside the Pentagon*, vol. 14, no. 48 (December 3, 1998), p. 2.

² Robert Holzer, “Stability at Top Is Critical to JFC’s Pentagon Clout; Also Calls for a Standing JTF Headquarters,” *Defense News*, vol. 15, no. 35 (September 4, 2000), p. 1.

A Network-Centric Solution

USS Missouri preparing to launch attack, Desert Storm.

Naval Operations in the Persian Gulf

By NORMAN FRIEDMAN

The Armed Forces seem on the verge of adopting a radically different network-centric style of warfare, even though few coalition partners appear willing to follow suit. It may be that the fit between network-centric and conventional warfare is poor but that the new operational style offers such benefits the United States will feel compelled to press ahead. However, conventional

but less sophisticated forces can offer valuable adjunct capabilities. Considering future operations in light of the Navy experience in Operation Desert Storm suggests practices for harmonizing the employment of platforms based on disparate levels of technology.

Netted Picture—Unfettered War

Network-centric warfare relies not only on organic sensors but on a tactical picture created by integrating intelligence products. With this picture, executors can synchronize actions without requiring minutely detailed

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operations orders, attacking targets over the horizons—that is, beyond the reach of organic sensors. Thus dispersed forces can dominate large areas. Given situational awareness offered by the netted picture, decisions can be taken quickly and precisely. In addition, network-centric warfare envisages the use of relatively small numbers of precision weapons to deal with key targets as an alternative to the usual practice of attrition warfare.

What is rarely appreciated outside the Navy is that its forces have long operated in network-centric ways. Their experiences may therefore answer the coordination questions network-centric warfare raises. A shared tactical picture is not new. During World War II, U.S. and British fleets respectively developed combat information centers and action information

during Desert Storm the coalition placed a naval group at the north end of the Persian Gulf

centres, which gathered tactical pictures using on-board sensors and off-board data. With such centers the issue became how well the picture could be disseminated. Though the efforts were primitive by the standards of today, they were adequate at the time. Combat information centers, for example, enabled the Navy to destroy enemy aircraft in the Battle of the Philippine Sea—the famous turkey shoot.

Computers automated the process of assembling the picture to show more potential tracks (targets), and the associated digital link made dissemination possible in near real time. Thus computers and data links—a revolution in naval affairs of the 1960s—determined the extent to which ships could cooperate tactically. Submarine contacts could be prosecuted without interlocked computers since, as the adage goes, antisubmarine warfare (AWS) is “awfully slow warfare.” However, air defense was another issue. Not only did ships have to be warned as soon as threats were detected; the netted picture was also the only reliable source of identification.



DOD (John Bouvia)

Digital tactical computers went to sea in the 1960s to receive, display, and exploit a shared (netted) tactical picture in a naval tactical data system. Other NATO navies, most prominently the British and Dutch, developed parallel systems. The picture was shared with a standardized digital channel, link 11.

This enabled dispersed formations to operate together in what a network-centric tactician would call a self-synchronous fashion.

Although netting was conducted over a small area, and the content of the netted picture was limited, the result was a clear predecessor of current concepts. Several other NATO navies either adopted the American tactical net or developed their own. From the mid-1970s the Navy extended tactical concepts to create and disseminate a worldwide shipping tactical picture, initially to support Tomahawk missile strikes. The primary link was an ultra high frequency satellite channel.

The requirement for network-centric warfare is twofold. First, the platform needs a means of receiving the link carrying the picture. Because links have a finite capacity, the picture is usually transmitted as updates. Second, the platform needs a computer to store updates and form them into a coherent tactical picture for decisionmakers. In the naval system the computerized tactical picture is integrated into weapon systems so that decisions

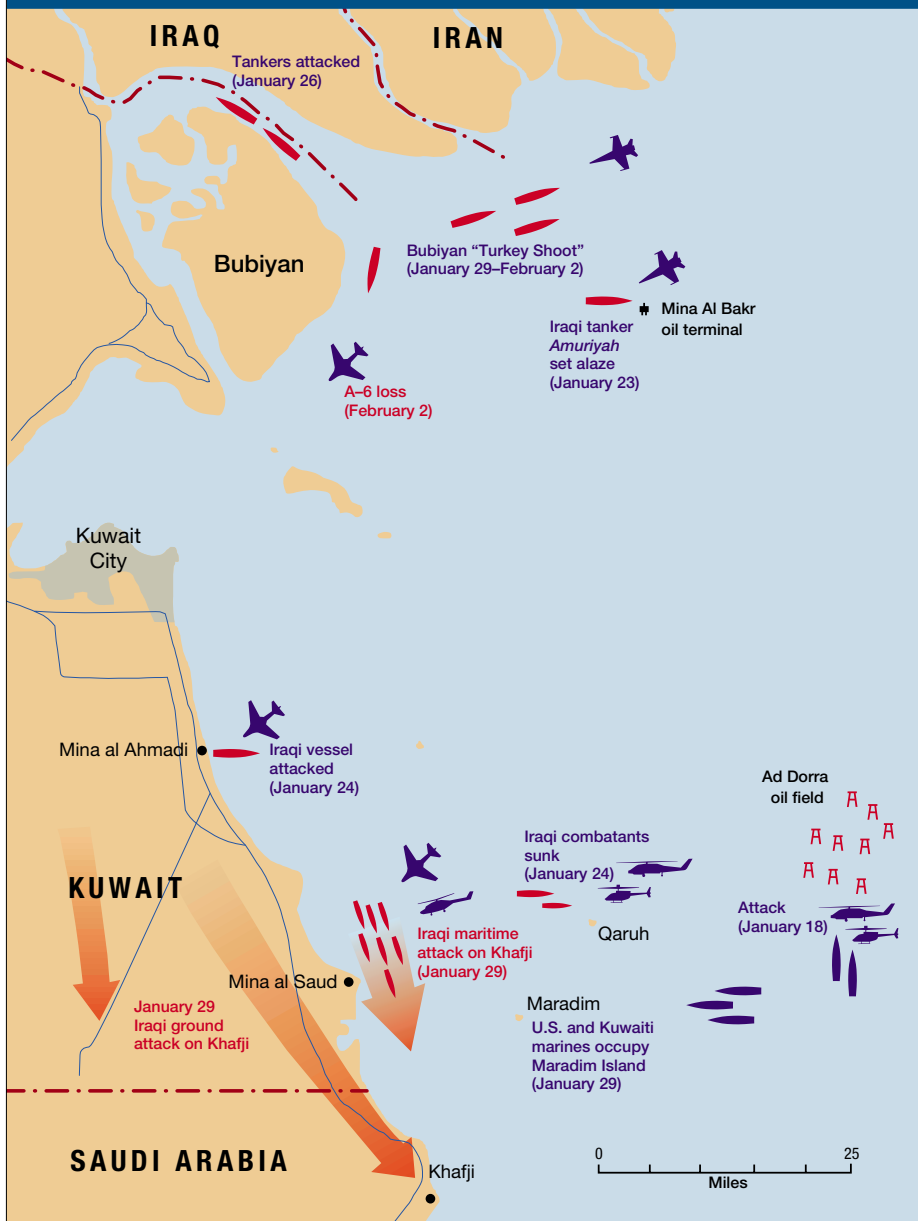
based on the picture are implemented by the computer carrying the picture. For example, targets are assigned to weapons depending on tracks (targets) carried by the computer. Since the computer carries identification data, it can avoid friendly-fire accidents by refusing to engage a friendly track.

Aircraft often provide the main striking power of a modern navy. A fleet has relatively few planes so losses to friendly fire are serious. On the other hand, aircraft are deadly threats because they can launch stand-off anti-ship missiles. Therefore enemy planes must be engaged as far away as possible while friendly aircraft are identified quickly. By linking the engagement decision with identification, as given by the netted picture, a fleet can preserve its striking power. As a result, NATO ships with link 11 can cooperate tactically. Ships without it or some equivalent capability cannot. For example, whatever the advantages of combining Russian and NATO ships for a foray into the Third World, the fact that the Russian navy uses a different command structure and data link militates against exposing their warships to intense air activity. They would be too likely to shoot down friendly aircraft.

Coalition War in the Gulf

During Desert Storm the coalition placed a naval group at the north end of the Persian Gulf, where it was regularly overflowed by allied aircraft returning from strikes against Iraq. The group was also in the path that Iraqi

Figure 1. Operations in Northern Gulf (January–February 1991)



Source: Edward J. Marolda and Robert J. Schneller, Jr., *Shield and Sword: The United States Navy and the Persian Gulf War* (Washington: Naval Historical Center, 1998).

aircraft would take to attack U.S. carriers, a source of many coalition strike aircraft. The ships also conducted mine countermeasures in the northern Persian Gulf.

Although many countries contributed warships, only NATO and Australian ships, sharing the data link and associated tactical doctrines, operated in the air defense zone of the northern Gulf. Even then there were problems.

The airspace was also covered by land-based missiles (such as Hawks), which were not linked to the same tactical picture as ships. Mine countermeasure craft were not connected into any computerized tactical picture though they carried anti-aircraft weapons. Fortunately, Iraqi aircraft flew few sorties. The coalition air force was protected largely by a rigid rule that surface-to-air weapons were not to be used. The principal exception was the defense of

USS Missouri by *HMS Gloucester*, which shot down an incoming Iraqi missile.

Moreover, the Gulf War saw a network-centric operation on a larger scale, the international embargo directed at Iraq-bound shipping entering the Arabian Sea. An embargo may appear to be a low-tech operation, yet a small number of ships must intercept craft over a wide area. Each must be cued to meet targets well beyond the horizon, which practically defines network-centric warfare. Given a limited number of frigates and destroyers, it was difficult to ensure that all ships carrying contraband would be intercepted.

It was also important to link intelligence with ship location data because the Iraqis hoped to create an embarrassing incident to force the West to abandon the embargo. In fact Iraq did attempt such a ruse. A merchant ship, *Ibn Khaldoon*, carried baby food, and included pregnant women on board. Other crewmembers had video cameras. When marines went aboard the ship, they were to be filmed attacking women only to find baby food. Once the videotape was released to the world, the United States would be seen interfering with provisions intended for innocents, not conducting a military operation. Under the baby food, however, was contraband ammunition. Because the marines knew about the cargo and how to react, the camera captured what was beneath the deceptive layer. How and why the marines knew is the stuff of network-centric warfare, in which diverse information is fused to create the tactical picture for decisionmakers.

In support of the embargo, the ship-tracking system took account of available intelligence to identify every ship and fused information from all sources into a single, integrated picture usable by decisionmakers on the spot. Because the shipping picture was immense, it was not transmitted in one burst. Instead, like tactical data links, users got a series of updates which their computers assembled into the needed picture. Thus the user requirements included a satellite dish and modem as well as a powerful enough computer.

When the shipping tracker was devised in the 1970s, it seemed nothing short of a carrier could support the computer and display hardware, which were assembled in the tactical flag command center. But the power of computers had outstripped specifications for the center. Commercial equipment could execute the software intended for the centers. Largely through the initiative of Rear Admiral Jerry Tuttle, an off-the-shelf system was adapted as the heart of the joint operational tactical system (JOTS). Quite aside from Tomahawk targeting, the world shipping picture had enormous value to any ship commander. In that role there was no need to integrate JOTS into ship weapon systems.

the joint operational tactical system is an application of network-centric ideas

Not only could it be installed easily; it could be adapted to desktop computers, designated tactical computers largely because of this application.

JOTS is an application of network-centric ideas; for the fleet, it was one of the first uses to go beyond tactical nets. The system, which provides frigates and destroyers with the world shipping picture, passed its operational evaluation in mid-1990 before Iraq overran Kuwait and the United Nations declared an embargo. JOTS typified a new kind of defense system, software that runs on a standard, virtually stand-alone commercial computer. The software was easily reproduced and the computers were on the shelf. Thus it was simple to provide the system to enforce the embargo. It pictured not only shipping but command messages, like link 11. It became the main command tool for the embargo. Those users who had never seen JOTS found that it enhanced their systems, and indeed JOTS and successor systems are widely used by NATO navies.

Lessons Revealed

What does the experience of the Persian Gulf War reveal about network-centric warfare and coalition partners?



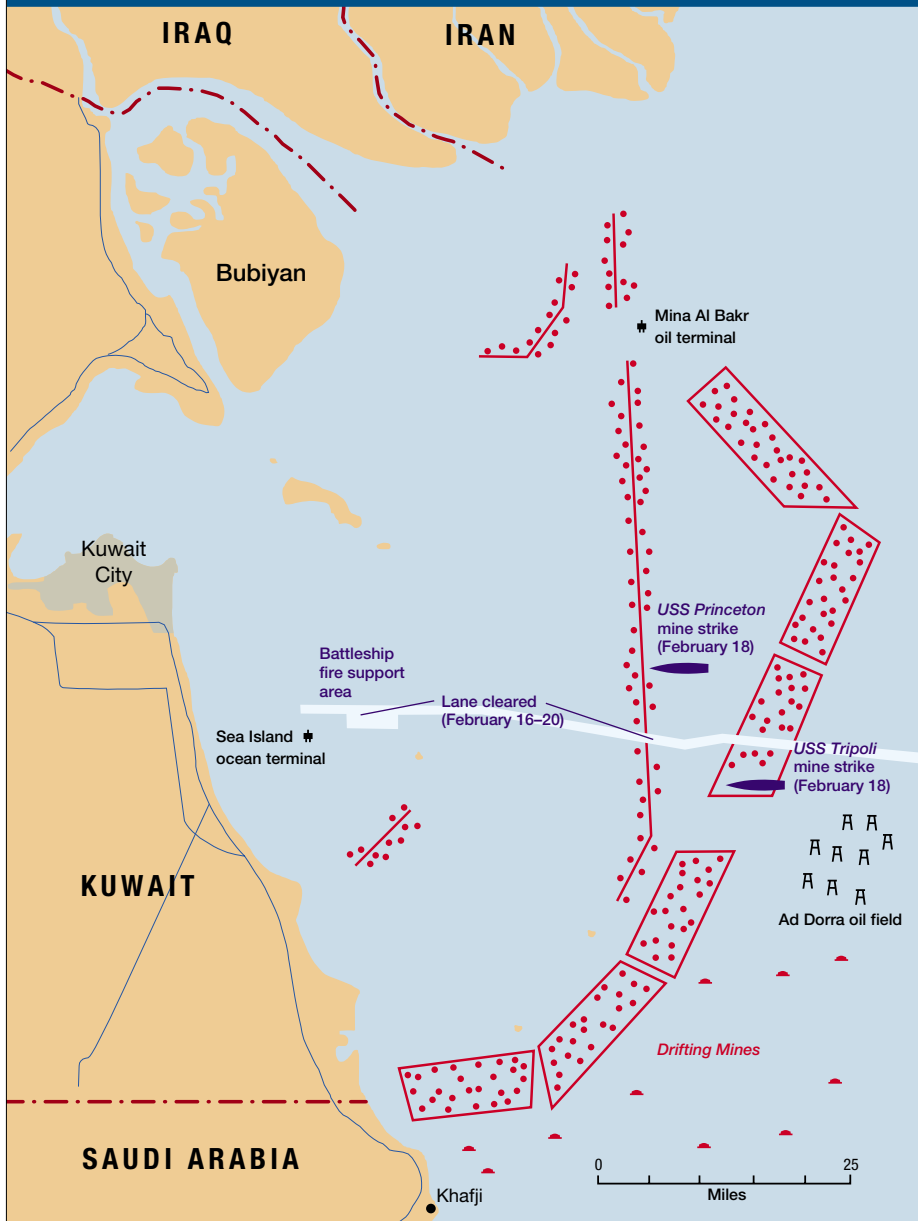
U.S. and French warships moored at Manama.

DOD (Paul J. Page)

The Navy approach to combat operations is not a universal concept. Most militaries operate with tight coordination among closely-packed units. Lower-level commanders receive detailed instructions because excessive initiative may lead to disaster. Navies have the luxury of allowing greater initiative because their units are often dispersed. Their tactical pictures, at least

at sea, are far simpler than those ashore. For example, in the 1960s when the Navy introduced a computer tactical picture, a typical capacity was 128 tracks—128 ships and aircraft on the screen and in memory, no more. Even that was a major advance on earlier British systems that displayed as

Figure 2. Mine Clearing Operations (February 1991)



Source: Edward J. Marolda and Robert J. Schneller, Jr., *Shield and Sword: The United States Navy and the Persian Gulf War* (Washington: Naval Historical Center, 1998).

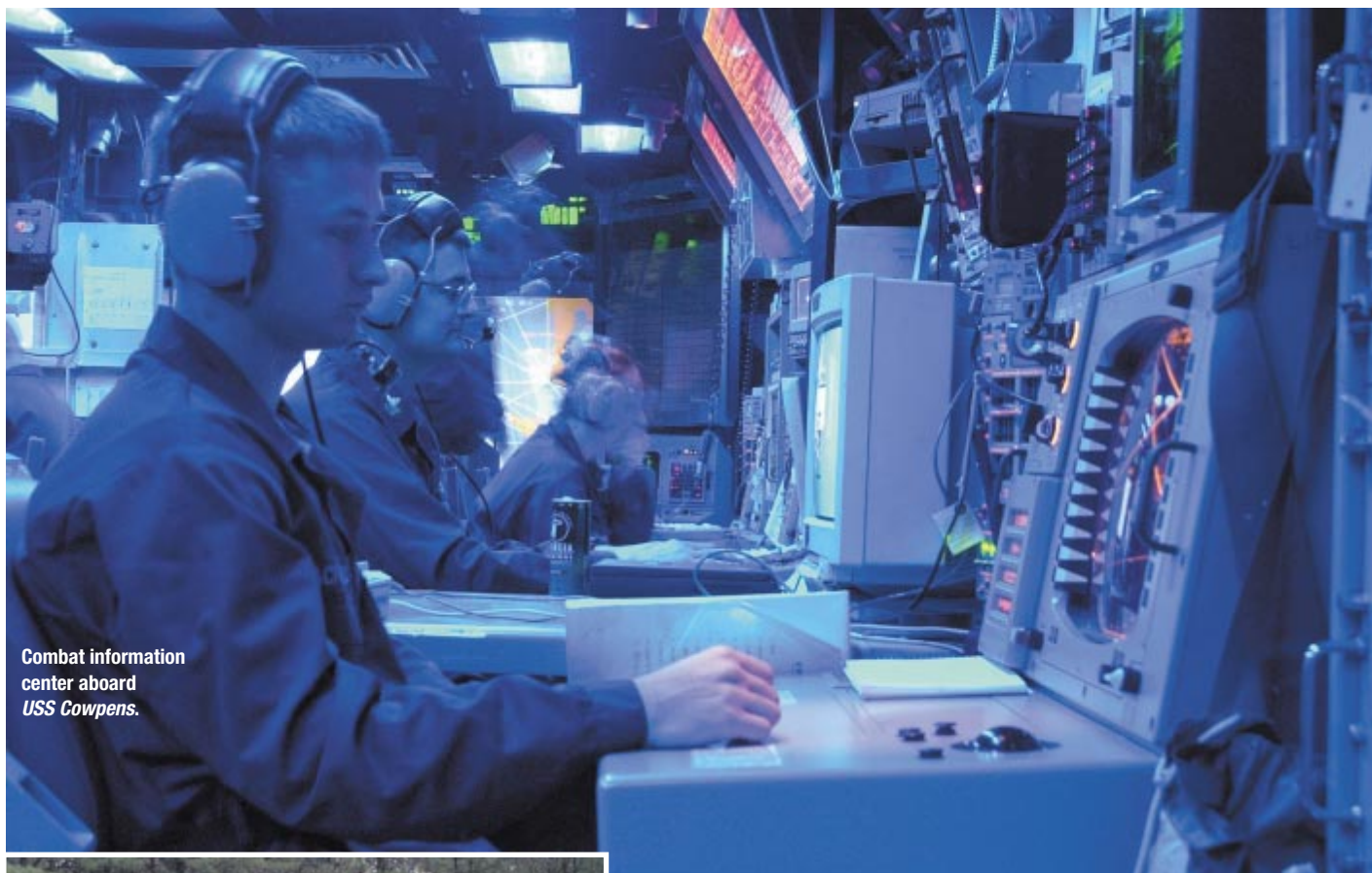
few as 24 tracks. As the Navy moves in-shore, the number of vessels and aircraft which its ships see and track increase, so the standard today is approximately 4,000. That pales in comparison with requirements for land warfare, where tens of thousands of vehicles may appear within a divisional area of responsibility.

Therefore, for ground forces network-centric operation means developing a credible tactical picture on the basis of which small dispersed units can fire over-the-horizon. It is not clear how such forces cooperate with traditional militaries with densely packed units that develop firepower not from sensing but from sheer mass. It is not even apparent that network-centric forces retain the same tactical vocabulary, not to mention the same tactics.

The naval net is closely related, if only in spirit, to network-centric concepts being applied by the Army and Air Force. It integrates a tactical picture with combat control. In the Army digital battlefield concept, for example, the picture is used as a medium of command and basis for combat planning. It changes the style of combat from a concentrated mass of units on a well-defined line to a dispersed mass offering mutual support over considerable distances. Even suitable weapons for the Army are shaped by the ability to engage unseen targets.

The real challenge, however, may come not from creating a network-centric land force, but fielding one to work with conventional armies. Dispersed units are individually vulnerable because of their small size. That is entirely acceptable given mutual support and reductions in friendly fire expected on the basis of the shared picture. However, that vulnerability makes it difficult to work with a conventional force, which might be more prone to targeting errors. That is not too different from the situation of NATO versus non-NATO navies. The same may be said of air forces whose numbers are shrinking as they gain capabilities through, among other things, netting via the joint tactical information distribution system/link 16.

The same challenges for data linkage exist in combining multinational forces. In the case of NATO, extensive distribution of the crucial naval data link was completely natural because the link was needed for the wartime operations anticipated by the Alliance. But the post-Cold War world is more ambiguous. Coalitions are formed for a given operation and are unlikely to survive beyond its end, as seen in Desert Storm. If such operations require access to shared tactical pictures via encrypted data links, how can access be shared in a conflict but not afterwards? The picture really determines how network-centric forces fight. Access may enable a country to corrupt the key data in future conflicts when not a coalition partner. But providing a computer terminal while retaining physical control at all times would not



Combat information center aboard USS Cowpens.

Fleet Combat Camera Group (David C. Mercel)



Tactical communications system, Grecian Firebolt '99.

55th Signal Company (Francisco L. Romo)

with fast incoming targets—the more systems must share the same volumes of responsibility in the air. They must also share the same tactical picture. Wide-spread distribution of link 16, the joint tactical information distribution system, should go far in solving this problem, but only for the United States and some of its allies.

slope. Integrating forces that are adapted only in part to network-centric systems requires disabling the unadapted portion and also inserting a bridging capability to compensate for diverse technology. JOTS illustrated that some advantages of network-centric warfare can be gained by forces that are not specially adapted to it. The system was almost a pure information terminal that did not have to be physically integrated in ship combat systems. Commanders could look at shipping pictures and shape their actions. It was a simple system that worked. The Navy example offers a proven method for the rapid integration of high and low tech forces. **JFQ**

enhance the cohesion of coalitions, which presents a dilemma.

Like past conflicts, the Persian Gulf War revealed that joint and combined integration often is essential. Air defense did not depend on the location of the platform, but rather on its common pictures of air activity. The longer the reach of existing missiles—probably an inevitable result of providing them with enough energy to deal

Achieving network-centric solutions for integrated land, sea, air, space, and special operations forces will prove an even greater challenge and require innovative, low cost, and readily adaptable technology

Extending the common picture to joint forces assigned to a temporary or ad hoc coalition is problematic. Network-centric warfare can be a slippery

Storm Over



A-10 providing close air support.

the Desert

DOD (H.H. Deffner)

A New Assessment

By BENJAMIN S. LAMBETH

Even before the first bomb fell, some observers believed the air campaign held the promise of winning the Persian Gulf War. But overall there was rampant uncertainty over whether airpower could assure the outcome without a major ground offensive that might entail a notable loss of life. Computer models using traditional assumptions about attrition warfare

predicted allied casualties in the thousands. The final authorizing order from the President to the Commander in Chief, Central Command, acknowledged that losses could reach 10 percent of fielded coalition ground forces.

Despite such concerns, the consequences of initial air operations on shaping the war could not be denied. Opening attacks against command and control facilities and integrated air defenses proved uniformly successful, with some 800 combat sorties launched at night under radio silence against important targets. Only one

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coalition aircraft was lost—a Navy F/A-18—presumably to an infrared missile from a MiG-25. Over the next three days, the air campaign systematically struck targets on the strategic and operational levels, gaining unchallenged control of the air and freedom to operate with near impunity against enemy airfields, ground forces, and other assets.

When a cease-fire was declared five weeks later, most observers acknowledged the roles of all elements of the coalition, albeit with interpretations largely drawn along service lines. However, the prevailing view was that Desert Storm was the apotheosis of airpower. The only question that remained was whether the conflict pointed to the predominance of airpower in future wars and thus to a need for a new way of viewing military operations.

The conflict has been thoroughly documented. The *Gulf War Air Power Survey*, modeled on the strategic bombing survey after World War II, contributed an analytical point of departure for examining the campaign. The facts are not in dispute, but their meaning remains contentious.

Unprecedented War

Control of the air over Iraq was essentially achieved during the opening moments of Desert Storm. In contrast to the tentativeness of Operation Rolling Thunder against North Vietnam, virtually every target category in the master attack plan was hit on the first night—simultaneously to maximize shock effect. That made the

early air control operations were quintessentially strategic, depriving Iraq of both defenses and situation awareness

opening round of Desert Storm the largest air offensive since World War II.

Early air control operations were quintessentially strategic, depriving Iraq of both defenses and situation awareness. Perhaps the clearest indication of what air dominance meant was

B-52G taking off during Gulf War.



DOD (Chris Purnam)

found in the relative rate of allied combat aircraft losses. Sortie rates remained roughly constant throughout the six weeks of fighting. Yet the coalition incurred nearly half of its aircraft losses (17) in the first week as low-level operations were needed to penetrate Iraqi air defenses, which had not been fully neutralized. Another eight were downed in the final week as low-altitude operations were resumed to support the ground campaign. Losses were largely due to optically-tracked anti-aircraft artillery and infrared surface-to-air missiles (SAMs), which could not be located from the air.

Suppressing enemy air defenses (SEAD) and early neutralization of the Iraqi air force were the most acclaimed airpower achievements. Yet they only secured a buy-in condition for enabling airpower to demonstrate real leverage: engaging an enemy

wholesale with virtual impunity through precision standoff attacks. This point is key to understanding the capability that airpower revealed for the first time during Desert Storm.

Three factors allowed airpower to draw down Iraqi forces sufficiently so the ground offensive could advance, secure in knowing that the enemy was badly degraded. First, the SEAD campaign freed aircraft for operations at

medium altitude unmolested by either SAMs or fighters. Second, the eleventh-hour introduction of joint surveillance target attack radar system (JSTARS) aircraft permitted commanders to identify fixed and moving objects on a large enough scale to make informed force commitments and execute lethal attacks against ground force targets, day or night. Third was the realization during battlefield preparation that infrared sensors and laser-guided bombs could find and destroy dug-in tanks. All these factors gave U.S. airpower an unprecedented edge in joint warfare against ground forces.

The air campaign highlighted the fact that airpower embraces not only Air Force capabilities but Navy and Marine assets as well as Army helicopters and missiles. The first impact on opening night was not a precision weapon delivered by a stealth fighter but a Hellfire missile launched from an attack helicopter against an air defense site. Airpower harnesses all combat and combat support elements of the Armed Forces, including space and information warfare, that exploit air and space. Accepting that air warfare involves every service is an initial step toward properly assimilating the changing role of airpower.

The argument between land and air warriors over who deserves more credit for the victory is like arguing

AH-64s and OH-58s at forward operating base.



F-14As during Desert Storm.



DOD (Dave Parsons)

DOD (Dean Wagner)

over which blade of the scissors cut the paper. Because of battlefield preparation by airpower, U.S. forces suffered only 148 killed and 458 wounded out of a half million deployed. For much the same reason, less than 2 percent of the 220,000 rounds of tank ammunition shipped to the theater was fired in combat.

Looking Forward

As effective as coalition aircraft proved from the first night, it is misleading to conclude that such a display of airpower should be expected in the future. The coalition was extremely fortunate with respect to entry conditions. U.S. Central Command (CENTCOM) had five and a half months to plan, build up, and train in theater. It was not a come-as-you-are war.

Operationally, the desert was an ideal environment for airpower, though distances to target and foul weather were complications. Although effective if used properly and with determination, applying airpower over Bosnia and against Serbia proved to be much more challenging than it was against Iraq. And the future holds more, not fewer, cases like the Balkans.

In addition, Desert Storm was facilitated by an unusual degree of international cooperation. A firm U.N. Security Council mandate authorizing the use of all means necessary to eject Iraq from Kuwait, a broad-based multinational coalition, and Soviet diplomatic support were all essential. Moreover, the coalition enjoyed a basing infrastructure that left little to be desired, thanks largely to the U.S. military assistance provided to Saudi Arabia over four decades. But had allied aircraft not been based within a reasonable operating radius, the air campaign would have unfolded quite differently. The United States cannot always count on such cooperation.

The Bush administration enjoyed strong domestic support during the Gulf War, including backing by an initially reluctant Congress. In addition, there was the advantage of a strategically and tactically inept enemy which failed to move against Saudi Arabia early in the buildup. What is more, Iraq misjudged everything that mattered: whether the United States would go beyond words and muster the staying power and domestic support once committed, allied cohesion,

much of the post-Gulf War debate over airpower involves attacks against center of gravity targets

the stance of Moscow, the effects of modern airpower, the strength of defensive fortifications around Kuwait, and the prospect of drawing the coalition into attrition warfare with high casualties. In sum, the operational setting of the conflict was uniquely congenial to airpower.

Worst Case Scenario

The Desert Storm model breaks down quickly in the case of Korea, where the Army and Air Force have powerful needs for mutual respect because of interdependence. Although airpower would surely be a key, no war fought there would allow the luxury of fewer than 200 casualties. North Korea would presumably fight for its survival and resort to weapons of mass destruction. Moreover, with over 500,000

AV-8Bs refueling on USS Nassau.



DOD (Scott Allen)

armed combatants on both sides poised for immediate action along the demilitarized zone, there would be close ground combat from the start.

Airpower would likely assure allied ownership over North Korea following the outbreak of a full-fledged war and reduce losses by blunting an armored attack, drawing down enemy theater missiles and artillery, and gaining situational control by forcing opponents to remain underground. It could engage in so-called *bunker plinking*, although many North Korean facilities are sufficiently secure from air attack below ground that land forces would need to dig them out. But airpower would be unable to defeat an armored and mechanized infantry invasion alone. It could not simply combat enemy ground troops for forty days while the other side did nothing. On the contrary, there would be plenty of fighting for all allied force elements.

Overall the generous fortune the coalition enjoyed in Desert Storm warrants a measure of humility as well as caution in drawing any conclusions. For example, because Iraqi fighters never intruded into Saudi airspace, coalition early warning, reaction time, and interception capabilities were never truly put to the test of aerial combat.

Center of the Debate

Much of the post-Gulf War debate over airpower involves whether attacks against center of gravity targets, defined as leadership and infrastructure assets in and around Baghdad, significantly shaped the outcome. But this obscures the question of the real contribution of airpower by falsely bifurcating the air campaign into strategic and theater dimensions. There was a clear distinction in Desert Storm between efforts to achieve coalition objectives quickly and painlessly and concurrent attempts to affect the ability of Iraq to make further trouble in the postwar world. This second goal involved taking full advantage of an ongoing effort to diminish Iraq's capacity as a regional power.

Airpower in Desert Storm has been most criticized for its less than resounding performance on the second count. Yet it is an inappropriate yardstick for measuring effectiveness. It was on the critical but less appreciated first count—prompt air dominance and the systematic destruction of fielded forces on the ground—where airpower met the preconditions for winning the war. Aside from the controversial infrastructure attacks (no more than 10 percent

Iraqi MIG-25 destroyed during Desert Storm.



DOD (J. Otter)

of strike sorties in the war), what mattered most was the direct use of airpower for the declared mission of liberating Kuwait.

Over time the Persian Gulf War has become seen as less than a towering strategic success. Many objectives were unattained. Moreover, a debate has arisen over the decision to terminate the ground offensive at the 100-hour mark, when ground and air campaigns started to make the most of exploitation. Yet as an exercise in applying force, the operation was anything but inconclusive.

Hardware Victory

Some maintain that technological magic accounted for the lopsided coalition victory. That view reflects what has been described as the pervasive technological utopianism of American culture, which holds that all problems can be solved by the proper technological solutions. Yet that is likely to prove a hollow argument once history has the final word.

The technological edge that the coalition exercised made an important difference. Silver bullets with effects disproportionate to their numbers included F-117s, AGM-88 high-speed

antiradiation missiles, APR-47 threat radar emission sensors on F-4Gs, laser-guided bombs, and JSTARS aircraft, among other systems. Without these capabilities, the war could have proven far more protracted and costly.

However, the euphoria over technology must be qualified. Two points made by Les Aspin, while Chairman of the House Armed Services Committee, warrant mention: "One, the equipment worked and was vindicated against its critics. Two, we know how to orchestrate its use in a way that makes the sum bigger than all the parts." The second point is no less critical. Though F-117s were indispensable in achieving tactical surprise and early control of the air, for example, the force multiplier of particular note was the way in which coalition assets were synergized.

High technology was pivotal, but was not the single determining factor. The training, motivation, leadership, tactical expertise, and other attributes demonstrated by all the services were important to the outcome. One need only consider the demanding task of getting 400 fighters airborne and marshaled at night in radio silence, refueled several times, and flying under tight timelines without a missed tanker connection, let alone a midair collision

or other catastrophic accident, to appreciate how crucial aircrew skills and the ability to adapt under stress were to the success of the air campaign.

Desert Storm confirmed what high-tech weapons, coupled with competent leadership and good training, can do against less-endowed forces. Yet ultimately the war was not about systems or technology, although some weapons and combat support systems were star performers. It was more about consensus building and the formulation of national goals, diplomacy and leadership in pursuit of those goals, and planning and coordinated action by professionals in employing military power, notably airpower, to achieve them once negotiations and economic sanctions failed. Insofar as Desert Storm heralded a revolution in the American way of war, it was the fusion of all these ingredients in a winning combination. **JFQ**

Airpower

and a Decade of Containment

By PAUL K. WHITE



AWACS aircraft at Saudi air base.



Tracking Iraqi fighters in no-fly zone.

39th Communications Squadron (Matthew Hannen)

1st Combat Camera Squadron (Sean M. Worrell)

Before the Gulf War, Iraq had one of the largest and most powerful militaries in the world. With 750,000 men under arms, 5,800 tanks, 3,850 artillery pieces, and 650 combat aircraft, Iraq wielded political and military influence throughout the region. But Operation Desert Storm left that military in shambles. Iraq lost 2,633 tanks, 2,196 artillery pieces, and 300 aircraft. Some

15,000 to 20,000 Iraqi soldiers died, 120,000 to 200,000 deserted, and 86,000 were captured. A policy of containment, supported by U.N.-imposed sanctions and inspections backed by a strong military presence, has prevented Iraq from significantly rebuilding its forces and threatening its neighbors.

And yet ten years after Desert Storm, Saddam Hussein is still in power and Iraq continues to challenge America and the international community. He has instigated four military crises since the coalition victory and has continuously forced the United

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Iraqi tank on Basra-Kuwait highway.



DDO

States to react militarily and diplomatically at tremendous fiscal and political cost. The use of airpower, whether by demonstrations, enforcing no-fly zones, or air strikes against select targets, has been the primary response to

a direct challenge to Kuwait resulted in Operation Vigilant Warrior in 1994

provocations by Baghdad. Because of a perception of limited liability and a high probability of success, airpower is increasingly the weapon of first resort. After a decade of continuous engagement, how effectively has coalition airpower restrained Iraq?

Boxing Saddam

The United States and the United Nations instituted a broad policy of containment after Desert Storm. The objectives were to keep Saddam Hussein weak politically and limit his military ambition by supporting opposition groups inside Iraq and in neighboring states, constrain attempts to rebuild conventional forces, prevent the building or acquisition of weapons of mass destruction, and carefully monitor and if necessary degrade the

Iraqi economy to accomplish these objectives. Accordingly, the Security Council passed Resolution 687 in 1991 to support such measures.

To the surprise of many observers in the West, the Iraqi regime did not

self-destruct. The victory prompted immediate uprisings by Kurds in northern Iraq and Shi'as in the south. Baghdad responded with

helicopter attacks which resulted in an international demand for the coalition to intervene. U.N. Resolution 688 provided the rationale to establish no-fly zones: to prevent Saddam from attacking his own people and contain his military. The first zone was instituted in northern Iraq by Operation Provide Comfort (later Northern Watch) in April 1991, then in the south by Southern Watch in August 1992. Washington took on the job of containing Iraq to both enforce U.N. resolutions and live up to the mission statement of U.S. Central Command: to promote and protect U.S. interests, ensure uninterrupted access to regional resources and markets, and assist regional friends in providing for their own security and regional stability.

Containment depends on various tools: a lethal forward presence with a threat to use force, a rapid response capability through pre-positioned equipment, an active sanctions and weapons inspection regime, enforcement of no-fly and no-drive zones, and bilateral security relationships with area partners.

Crises in Review

Iraqi forces have tested U.S. and U.N. resolve on four occasions since Desert Storm. The first followed the downing of a MiG-25 that had penetrated the southern no-fly zone in late 1992. Saddam then moved surface-to-air missile (SAM) batteries into southern Iraq and continued aircraft incursions in the no-fly zones. After allied pilots reported that SAM radars were targeting fighters, President George Bush issued an ultimatum that Iraq remove the missiles or risk retaliation. When the demand was ignored, coalition forces reacted in January 1993 with air strikes into the south, cruise missile attacks, and then more air strikes. On January 19, the day before President Bill Clinton was inaugurated, Iraq announced a unilateral cease-fire.

In this first crisis Saddam learned that coalition forces would use airpower to enforce U.N. resolutions. At the same time, the strikes were limited and the targets had little value; thus he also learned that the United States was reluctant to risk the lives of its servicemembers or Iraqi civilians to achieve its political and military goals.

A direct challenge to Kuwait resulted in Operation Vigilant Warrior in 1994. On October 7, some 20,000 mechanized troops of the Republican Guard reportedly moved within thirty miles of the Kuwaiti border, where 40,000 Iraqis were already stationed. The United States threatened to mount a preemptive strike on Baghdad if the Iraqis did not withdraw and also immediately began to deploy thousands of ground troops, heavy armor, and hundreds of fighters. Saddam moved the newly-arrived forces north of the 32^d parallel and the crisis was ended by October 15.

This crisis led to U.N. Resolution 949, which established a no-drive zone in southern Iraq. The massive and



timely deployment of additional coalition troops demonstrated the seriousness of American intentions to defend Kuwait. Iraq probably expected a slow buildup like Desert Shield. But the speed and determination of U.S. deployments surprised and intimidated Baghdad and may have deterred an incursion. However, the United States spent billions of dollars responding to the threat while Iraq risked little.

The third crisis, Desert Strike, was a response to a skillful attack against the Patriotic Union of Kurdistan in Irbil. Iraqi forces surrounded the city, smashed the Kurdish forces, and destroyed a protracted covert operation funded by the Central Intelligence Agency to destabilize the regime. American officials vowed retaliation and in September 1996 launched two waves of cruise missiles against targets in southern Iraq. In addition, the United States announced the unilateral extension of the southern no-fly zone to the 33^d parallel, depriving Iraq of two air bases and moving the zone closer to Baghdad. Saddam began aggressively rebuilding air defenses damaged by cruise missile



Damaged Kurdish town in northern Iraq.

DOD (Theodore J. Kontares)

strikes as more allied fighters were deployed. SAMs engaged coalition aircraft during the following weeks, but tensions subsided and the crisis was over by mid-November.

This confrontation was a victory for Iraq. Weakened by economic and political turmoil, Saddam performed some internal housecleaning. He settled a grievance with a Kurdish faction and annihilated U.S. intelligence-gathering efforts in the north. He also drove another wedge into coalition strategy as Turkey and Saudi Arabia decided not to allow air strikes from their territory (hence the cruise missile strikes) and France suspended its participation in Southern Watch. The attack on Irbil also highlighted the limits of containment in the north. Because of its distance from land- and carrier-based assets and the inability to employ forces in Turkey, the coalition had few options to stop the attack on Irbil other than an all-out assault on Baghdad.

The fourth crisis, culminating in Operation Desert Fox, resulted from inspection incidents that nearly led to U.S. and coalition air strikes in November 1997 and in February and November 1998. In all three instances Saddam instigated confrontation by halting or hampering inspections, accusing U.N. team members of espionage, and demanding an end to U-2 reconnaissance flights. In each case, air strikes were averted at the last minute by concessions on both sides, but constant cheat and retreat tactics by Iraq were wearing thin. By December 1998 U.S. forces had increased their presence in the region in preparation for an armed response. On the evening of December 16, with an impending vote to impeach President Clinton, Operation Desert Fox commenced.

The President ordered a series of air strikes that lasted four nights. For the first time since Desert Storm, the targets included Republican Guard units and facilities in downtown Baghdad. In seventy hours the coalition flew 650 sorties against 100 targets and sustained no casualties. A total of 415 cruise missiles were launched, including 325 Tomahawk missiles fired by the Navy and 90 heavier cruise missiles from B-52s. The strikes hit 80 percent of their designated targets, which analysts calculated set back the Iraqi ballistic missile program by up to two years.

Low-Level Attrition

The weeks following Desert Fox proved that the operation had a decisive impact. Saddam lashed out at perceived enemies inside and outside the country, called for the overthrow of several neighbors, and threatened bases in Turkey, Saudi Arabia, and Kuwait that facilitated aircraft flying no-fly zone patrols. Following a familiar pattern, Iraq announced it would fire on coalition aircraft that entered its airspace, including no-fly zones, and offered a bounty to air defense units that shot them down. In late December, F-15s and F-16s patrolling the northern no-fly zone responded to the launch of a SA-3 missile near Mosul with a series of almost daily cat-and-mouse confrontations between SAM operators and coalition aircrews.

ten years after Desert Storm, the United States finds itself in a stalemate

In reaction to this challenge, the United States altered the rules of engagement. Previously, aircraft responded when threatened by missiles, artillery, or radar illumination, against the site making the threat. By mid-January 1999, the coalition was prepared to respond to any threat with a pre-planned course of action. A perceived threat could be an aerial no-fly zone incursion by Iraqi fighters or target tracking radars. The allied response evolved from a reactive to preemptive approach. Pentagon officials said air strikes would continue as long as no-fly zone patrols were contested.

Ten years after Desert Storm, the United States finds itself in a stalemate. Air strikes still occur almost weekly, a humiliating reminder that Iraq does not have sovereignty over 60 percent of its airspace. Yet Baghdad undoubtedly continues to develop weapons of mass destruction unhampered by U.N. inspectors. The Armed Forces have struggled with readiness and retention problems due in large part to an increased and unrelenting operations tempo. Public fatigue, humanitarian concern for civilians, Iraqi oil, and the absence of viable opposition groups



Sailors conducting maritime interdiction operations.

USS The Sullivans (U.S. Keefer)

have left policymakers with fewer options, making the no-fly zones the cornerstone of containment.

Saddam's Strategy

Reactions to air strikes by Iraq since Desert Storm follow a pattern. During military action, the Iraqi military braces, accepts the blows with little resistance, and waits out the attacks. Then Saddam announces publicly that any aircraft entering the no-fly zones will be shot down, followed by clashes between SAM or anti-aircraft systems and planes on patrol. He reacted the same way after each air strike, including claims of success. Some speculate that his response is an attempt to remain defiant, proving to the Iraqi army and the people of the region that he is not cowed by the Western powers with their prowess and technology.

The sight of a coalition pilot on CNN, being paraded through the streets of Baghdad, could have great impact on the American psyche and will to sustain air operations. Iraq has the capability to shoot down coalition aircraft. On occasion it has shown surprising situational awareness. Even though its air defense forces continue to be hampered by antiquated weapons and lack of training, it is an able adversary. As the period since Desert Fox has demonstrated, Saddam seems prepared to occasionally risk elements of his air defense system to bring down a U.S. fighter. Baghdad is also willing to prompt air strikes for propaganda purposes, particularly when civilian casualties are involved.

Tomahawk lifting off
USS *Shiloh* during
Desert Strike.



U.S. Navy

It would be a mistake to underestimate the continuing threat.

The safety record during enforcement of the no-fly zones has been phenomenal. Coalition aircraft have flown more than 280,000 missions with only one loss in hostile territory since Desert Storm, a French Mirage which crashed near Irbil after engine failure in June 1992. Rescue forces quickly retrieved the pilot without incident. But Saddam believes that the odds are in his favor and that eventually the allies will lose a fighter, either by a fortuitous intercept or aircraft malfunction. The extraordinary emphasis placed on limiting both friendly and adversary casualties, as evidenced in Kosovo, reveals U.S. vulnerability on this subject. How the Nation reacts to an aircraft being downed will be crucial in dealing with Saddam Hussein.

Airpower and Containment

Analysis of a decade of peace operations yields clear conclusions on the utility of airpower and prospects for regional stability. The concept of no-fly zones emerged as a new dimension of airpower following Desert Storm, specifically because of U.S. objectives in Iraq. The zones have exerted a constant, credible military threat against Saddam. The risk of retaliation by air strikes has been key in preventing Saddam from threatening

his neighbors. In addition, coalition air presence provides intelligence, reconnaissance, and early warning information on Iraqi forces.

The concept of no-fly zones has matured and expanded since their first use to protect Kurds and Shi'as. Their enhancement by creating the southern no-drive zone gave no-fly zones greater utility in reducing the Iraqi threat to Kuwait and Saudi Arabia. In effect, the zones have evolved from protecting oppressed minorities to defending border nations.

International sympathy for Iraqi civilians makes a repetition of Desert Fox improbable. It is also highly unlikely that a revived U.N. weapons inspection program will be effective in the near future. Continued enforcement of the no-fly zones and retaliatory air strikes allow the coalition to maintain the status quo of a beleaguered containment policy.

Containing Saddam is one issue, but deterring him from further misadventure is another. He took power and has retained rule largely through force. In such a regime, the personal survival of a dictator and his immediate political base is paramount, so external threats aimed at the welfare of the population have little effect. Similarly domestic public opinion and economic

sanctions have limited impact. History indicates that deterrence must be immediate and direct. Damage must not be aimed at the values of a people but at its ruling elite. That is why Desert Fox threatened Saddam while retaliatory air strikes have not.

It is clear that no-fly zones, already the longest sustained military operation since Vietnam, will continue until there is a change in containment policy or the regime in Baghdad. Saddam has proven himself a resilient adversary. He continues to exploit opportunities presented by changing world opinion, increasing sanctions fatigue, and diplomatic blunders. It is not beyond possibility that the United States, out of a lack of domestic and international support, could simply allow the containment policy to gradually fade, much like dual-containment toward Iran. But as one senior U.S. official remarked in October 1994:

This is not over. I think Saddam will try to find a way to say to the United States and the international community that neither we nor he can win the game according to its existing rules, so that we must change the rules and give him what he wants.¹

At the same time, despite flaws, containment has preserved national interests. Persian Gulf security has been maintained as has access to regional resources and markets. America must be prepared to stay the course, much as it has done in Korea for fifty years. In the absence of viable alternatives, containment, now more than ever dependent on the U.S. aerospace advantage, has proven to be a policy that works.

JFQ

NOTE

¹ Nancy Gibbs, "A Show of Strength," *Time*, vol. 144, no. 17 (October 24, 1994), p. 17.



Marking Gulf War anniversary in Baghdad, January 2000.

AP/Wide World Photos (Ali Hayder)

Postwar Strategy: An Alternative View

By TED GALEN CARPENTER

The attack on *USS Cole* in the port of Aden was a reminder of the dangers inherent in the U.S. role as a stabilizer in the Persian Gulf. Even though the region was regarded as strategically relevant during the Cold War and increased in military prominence after the overthrow of the Shah of Iran in 1979, America did not establish a significant ongoing presence

until the events of 1990–91. Today the Navy typically keeps a carrier battle group in the area. Dozens of planes patrol the no-fly zones over Iraq from bases in Saudi Arabia, Turkey, and Kuwait. Military equipment is prepositioned in several countries. Overall, there are normally some 20,000 personnel in the region, with tens of thousands ready to deploy to the theater if a serious crisis arises.

Such a sizable presence supports the policy of isolating two so-called rogue states, Iraq and Iran. This objective has existed in substance since the

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M1A1 tank at check point in Kuwait.

Fleet Combat Camera Group, Pacific (Jeff Viano)

and embark on a renewed program to develop nuclear weapons. After air strikes in December 1998 responding to Iraq's decision to expel U.N. weapons inspectors, that justification was abandoned, but no alternative rationale has been clearly articulated.

The hardline policy toward Iraq is unraveling. International support has steadily eroded. Desert Fox, the air campaign in December 1998, was conducted by American and British aircraft with other coalition members blunt in opposition. Criticism of U.S. policy has grown and the coalition has shrunk to the United States, Britain, Kuwait, and at times Saudi Arabia. The most recent blow came in October 2000 when Turkey dispatched a new ambassador to Baghdad and secured an agreement to pump more Iraqi oil across their common frontier.

Interests Ignored

Defenders of U.S. policy invariably emphasize two justifications beyond facilitating arms inspections: protecting access to oil supplies and

defenders of U.S. policy emphasize protecting access to oil supplies and preventing Iraq from acquiring weapons of mass destruction

preventing Iraq from acquiring weapons of mass destruction. While both justifications have superficial plausibility, they are flawed.

Economists as disparate as Milton Friedman and James Tobin point out that the oil rationale was unsound at the time of the Gulf War and is still erroneous today. Despite the modest price spike that has occurred since spring 1999, world prices for oil, adjusted for inflation, remain below peak levels of the late 1970s and early 1980s. Moreover, the current hike—reflecting a rapid economic recovery in East Asia and resulting increases in energy consumption combined with the temporary ability of the Organization of Petroleum Exporting Countries to restrain production—is likely to be relatively short-lived. Advances in discovery and extraction technologies suggest that

the trend of lower prices will likely resume and perhaps accelerate.

Although preventing Iraq from getting nuclear, biological, and chemical weapons is a more serious objective, it is also suspect. Iraq is not alone in its ambitions. U.S. intelligence agencies admit that some two dozen nations possess or are acquiring chemical weapons, and at least a dozen have biological weapons or will soon, including several neighbors of Iraq. After tests by India and Pakistan in 1998, it is clear that eight nations, including Israel, are nuclear-weapons states, and several others are only a screwdriver-turn away. That raises the question of how many wars of nonproliferation the United States is willing to fight.

It is unlikely that Iraq would use such weapons against the United States. Baghdad has neither long-range bombers nor intercontinental ballistic missiles. Besides, Saddam knows that any attack with weapons of mass destruction would result in a counter-strike. Likewise Iraq would be reluctant to use weapons of mass destruction against Israel, because that country reportedly has 150 to 300 nuclear warheads. Saddam may be brutal and devious, but he has shown no suicidal impulses. If America managed to live with the likes of Stalin and Mao who had nuclear weapons, it should be able to deal with a relatively small and weak Iraq.

The more probable danger is that a free-lance terrorist (perhaps with the encouragement of Iraq) might detonate nuclear, biological, or chemical weapons in the United States. But a policy of coercion against Iraq makes such an incident—and the prospect for thousands of casualties—more likely rather than less. America is widely perceived, especially in the Islamic world, as a bully that abuses a population which has suffered from the U.S.-led embargo. That perception might feed the rage of terrorists and create incentives to inflict massive American casualties at home.

final years of the Bush administration. For most of the Clinton years it was characterized as dual containment. The policy now reveals signs of fraying. Control of Iraq receives most of the attention from pundits and overwhelming support from Congress and the American people despite less than stellar results. Indeed, to the extent that criticism exists, it tends to be that the Clinton administration was not harsh enough. Yet a look at the record casts doubt on the wisdom or sustainability of either component of dual containment.

Dubious Record

For almost a decade an economic embargo and intermittent bombing have devastated the Iraqi populace while failing to dislodge Saddam Hussein. The country's per capita income is less than a fourth of prewar levels, and infant and early childhood mortality rates have soared. Throughout most of this period the explanation for inflicting misery on innocent civilians was that such pressure was needed to compel the regime in Baghdad to cooperate with weapons inspections. Otherwise Iraq may rebuild its chemical arsenal



USS Cole after terrorist attack in Aden.



F-15 taking off from Doha international airport, Qatar.

U.S. Air Force (Frank Rizzo)

USS Cole (Lyle G. Becker)

Annulling Containment

The United States should end its role as Saddam's jailer. It should especially question why Baghdad's neighbors are not sufficiently alarmed at the alleged threat to support a coercive policy. If states in the region are not unduly worried, it is not clear why the United States—thousands of miles away—should feel threatened. Pursuing a policy that is unneeded and increases exposure to retaliation is not justified strategically.

For Iraq the elements of a containment policy are already being run

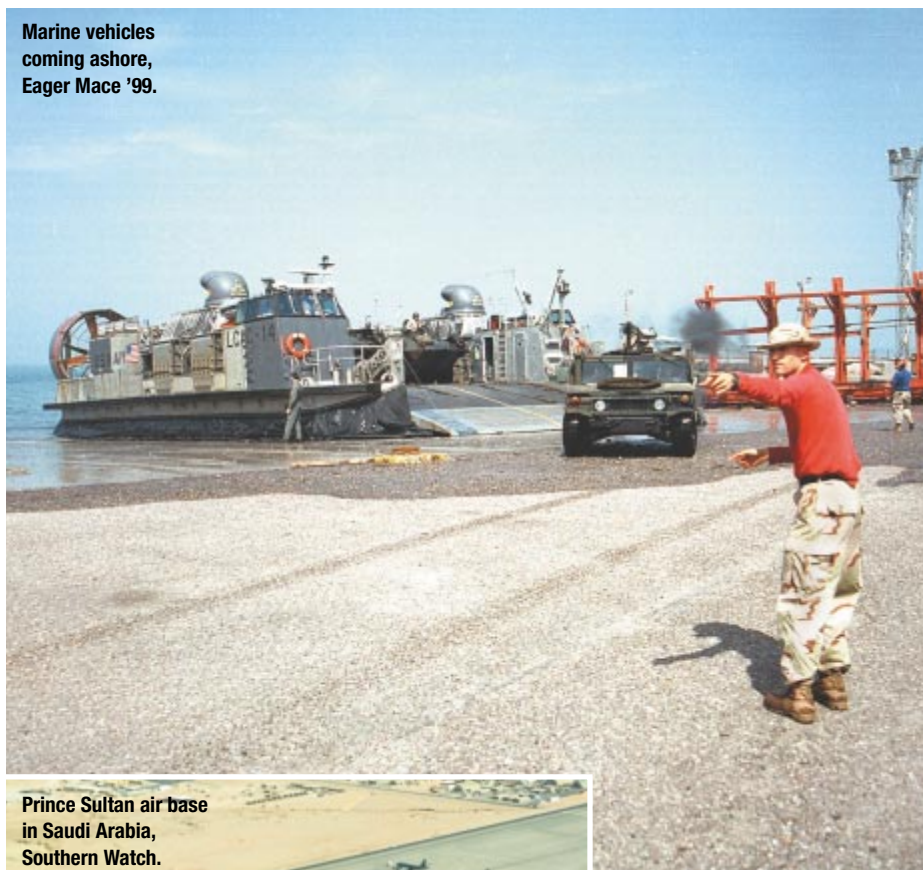
by its neighbors. Even in 1990–91, some observers tended to exaggerate Iraqi capabilities and minimize those of neighboring states. But as the outcome of the war demonstrated, the military was more an extension of Saddam's domestic repression apparatus than an effective fighting force.

Today the disparity is more dramatic: Iraq's neighbors—Jordan, Kuwait, Iran, Saudi Arabia, Syria, and Turkey—have 1,990 combat aircraft while Baghdad has 400. They have 12,600 tanks to Iraq's 2,200 and 1.68 million active military personnel to Iraq's 429,000. And those figures do not begin to account for qualitative disadvantages confronted by Iraq. Pilot training, for example, has been minimal and sporadic for years, and spare parts for aircraft and other systems have been in such short supply that as

many as half the planes are not operational. Both its aircraft and tanks are increasingly obsolete. Two other countries, Iran and Syria, have similar problems—but not to the same degree—and the remainder have been modernizing forces as the Iraqi military has deteriorated.

In sum, neighbors of Iraq have the wherewithal to contain another episode of Iraqi aggression. Indeed, military forces exist for a local balance of power that would prevent any state from exercising hegemony. Lacking are diplomatic and institutional mechanisms for bilateral and multilateral cooperation. As long as the United States is determined to remain an international gendarme, other states will have fewer opportunities to explore alternative security measures.

Marine vehicles coming ashore, Eager Mace '99.



13th Marine Expeditionary Unit, Combat Camera (Don L. Maes)

Prince Sultan air base in Saudi Arabia, Southern Watch.



1st Combat Camera Squadron (Sean M. Worrell)

installing democracy would entail nation building of indefinite duration that would dwarf efforts in Bosnia and Kosovo

probably have to dislodge him. Optimists argue that so-called Iraqi democratic opposition in exile—especially the largest umbrella group, the Iraqi National

Congress—can achieve the task with minimal assistance from Washington. That apparently was the logic that motivated Congress to pass the Iraq Liberation Act and funds to support efforts to undermine the regime. But few knowledgeable analysts take the opposition seriously.

General Anthony Zinni, USMC (Ret.), a former Commander in Chief, Central Command, commented that anti-Saddam forces are rife with factionalism and show little independent initiative. Indeed, the Iraqi opposition

is an assortment of groups which run the gamut from Marxist revolutionaries to Islamic fundamentalists. Thus far, the principal goals of these groups appears to have been bickering and raising funds rather than waging a liberation struggle against Baghdad.

The above realities underscore the first major problem with a commitment to oust Saddam. Not only would American troops be required to install a new government, but they would have to protect it from authoritarian elements and cultivate democratic institutions strong enough to survive the eventual departure of occupation forces. Otherwise, another dictator—a new Saddam—would emerge, and America would face a renewed threat to peace and stability in the Persian Gulf region. Installing and preserving democracy would entail nation building of indefinite duration that would dwarf efforts in Bosnia and Kosovo.

The unpromising prospects for a stable Iraqi democracy should dissuade those who argue that U.S. forces should have swept on to Baghdad in 1991 and who ponder ways to rectify

that supposed error. But there are other equally daunting problems. Most notably, there is the issue posed by a persistent regional secession movement, the Kurds in the north. If Saddam were removed either by Iraqi insurgents operating under U.S. sponsorship or by direct U.S. military action, America would have to decide whether to preserve the territorial integrity of Iraq or give its blessing to secessionists. Both options have downsides. To hold together a post-Saddam Iraq would not be easy. Attempting to force Kurds to remain under Baghdad's jurisdiction could provoke ferocious resistance. It could lead to the unenviable task of explaining to the American people why U.S. troops were dying in campaigns to suppress the aspirations of movements that sought to throw off the shackles of Iraq's Sunni elites. Yet endorsing an independent

Strategic Options

As frustration over containment has mounted, there are growing calls to shift the emphasis to ousting Saddam Hussein from power. No matter how gratifying the thought of removing such a thug may seem, such a course of action is fraught with difficulties. It would likely make America responsible for the political future of Iraq, entangling it in an endless nation-building mission beset by intractable problems.

Barring a coup against Saddam Hussein by one of his equally brutal and corrupt cronies, U.S. forces would

Kurdish states has drawbacks. The United States would have to preside over the dismemberment of Iraq, which Sunnis and others in the Islamic world would resent, and which would also eliminate a major regional counterweight to Iran.

Moreover, an independent Kurdistan would create a vexing issue for Ankara. A Kurdish republic would be a political magnet for Kurds in Turkey—more than half of those in the region. Ankara has waged a bloody war for over 16 years against a Kurdish faction in the southeast. Turkey would find its difficulties multiplied if these rebel forces had sanctuary in a neighboring state, and their incursions would violate international law.

This situation would not matter if the United States had not declared that peace and stability in the region was a vital national interest. Attempting to stabilize one of the most politically turbulent parts of the world has already proven to be frustrating and an open-ended commitment.

The other component of dual containment is especially detached

from reality and has come under increasing fire from foreign policy experts. The triumph of reform elements in Iran's recent parliamentary elections presents both a new opportunity and a new urgency for the United States to abandon its policy of isolating Tehran. If America can deal with a Stalinist North Korea, it should certainly be willing to confer with a quasi-democratic Iran. Secretary of State Madeleine Albright made conciliatory remarks that were a step in the right direction, but more needs to be done.

A decade after the Persian Gulf War, the United States finds itself in a strategic cul-de-sac. If the current policy is continued, there is little more than the depressing prospect of a mission with no clear objective and steadily eroding support from regional powers and principal allies in Europe and elsewhere. America is itself largely alone in its attempts to isolate Iran. Support for containing Saddam is somewhat greater, but it too is ebbing. If Washington does not adjust its strategy soon, it may find itself in the worst possible position. Allies and client states would still want to maintain U.S.

military presence as insurance against regional aggression. Yet those same parties are likely to undermine major portions of U.S. policy by trying to further normalize relations with Baghdad and Tehran. Such hedging might make sense for them but offers few benefits for Washington.

There is a way out of this apparent dead end, but it requires dramatic change. It will mean ending the policing of the Persian Gulf and acting as permanent regional stabilizer. It will require adopting a lower-profile role and relying on the emergence of a formal or informal regional balance of power to maintain a tolerable degree of stability. It may require accepting occasional short-term spikes in oil prices if turbulence occurs. Most difficult, it may mean accepting further proliferation of weapons of mass destruction. The Middle East-Southwest Asian area would not have remained untouched by proliferation in any case, as the emergence of Israel, India, and Pakistan as nuclear powers has confirmed. Relinquishing the U.S. role as regional policeman may increase the pace of proliferation marginally, but that is all.

Adopting a much lower military profile and relying on a local balance of power is not without risk. But it is a decidedly better option than continuing a policy noted for its unattainable goals and eroding support. It will also reduce the danger of having forces on the front lines of a violent region. **JFQ**



U.N. weapons inspectors leaving Baghdad.

AP/Wide World Photos (Peter Dejong)

Inspecting facilities at
Inchon, October 1950.

Principles of Jointness

Naval Historical Center

By ROBERT C. RUBEL

Despite all the attention given to jointness since World War II, there is no comprehensive theory that underpins the concept in doctrine. This is unusual in light of the large body of literature on operational art. Most military practitioners find operational art inherently joint, yet it has not been linked theoretically to jointness. Joint Publication 1, *Joint Warfare of the U.S. Armed Forces*, offers a list of joint principles, but these are mostly exhortations and fall short of constituting a theory.

The reason for this state of affairs is not hard to fathom. As one observer has put it:

In the course of research and analysis, I also gained a sense of why jointness has rarely been treated clinically.

In peacetime, the bewildering maze of operational detail, legislation, doctrine, technology, personalities, factions and formal organizations has made jointness many things to many people. Since as a subset of war, jointness in combat lies in the realm of chaos, it is no more tractable to numerical reductionism, logical formats, or formulae than the arts, sculpture, or the weather. Like schools of thought in art, the intensity of partisanship on issues of jointness has sometimes approached the level of emotion held toward foes in war, for it touches closely on the critical bonding and cohesion that lie at the heart of military institutions, and their predisposition to see the world in "them-us" terms.¹

In such a highly charged environment few people can be objective enough to develop theory.

An evaluation of the relevant literature reveals a fragmented approach to joint theory. There is a tendency to focus on theater warfighting or activities on the Pentagon level. This is unsurprising because the two environments are so

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M-1 tank near Cernica, Kosovo.



55th Signal Company (William Montoya)

different. Joint principles are normally considered in terms of support of other activities. But when the literature attempts to address underlying factors, two principles emerge repeatedly, either explicitly or implicitly.

Merging services into unified organizations (such as joint force commands) can compensate for weaknesses in one service through the strengths of others—the principle of complementarity. For example, the Air Force can provide the Army more air defense than ground forces can provide for themselves. For the enemy to defend against one service it must become vulnerable to others; hence the dilemma. For example, to throw a mobile operational reserve against a ground thrust would require moving. This would make the reserve vulnerable to attack from the air and thus pose an unsolvable problem.

Taken together, these principles define what synergy means in military terms. Combining elements of two or more services is more effective than simply tallying their respective numbers. Joint doctrine seems to be based on such principles, and Joint Pub 1 and Joint Pub 3, *Doctrine for Joint Operations*, prescribe synergy and presenting an enemy with dilemmas.

it would be better to have proactive jointness—the ability to achieve effective cooperation prior to a fight

Although these principles represent the benefits of joint operations, they do not explain how jointness is achieved or how much is enough. In various ways many observers advocate the hierarchy principle, which holds that the degree of jointness (or cooperation among the services) is inversely proportionate to the number of command echelons. Flatter organizations are more prone to effective internal cooperation. This principle is embedded in doctrine in the form of the joint task force, which is the principal method of operational command and control in theater—despite its ad hoc nature—precisely because it makes operational organizations flatter.

A related principle, which can be termed the necessity principle, states that jointness tends to increase in the face of an enemy on the lower echelons of command. One analyst noted that “the supreme lesson of the Pacific War . . . [is] that true unity of command can be achieved only on the field of battle.”² Conversely, the least jointness is exhibited in peacetime at the higher echelons.

There is nothing surprising about the necessity principle, but it raises a point that seems to reach the heart of the matter. Even though creative improvisation and willingness to put mission interests ahead of parochial interests when engaged in battle are laudable, they should not constitute policy. In other words, rather than waiting until forces are locked in combat, it would be better to have proactive jointness—the ability to achieve effective cooperation prior to a fight. But proactive jointness is an inherently top-down policy matter in peacetime and thus is inhibited by the hierarchy principle since all echelons from the Joint Staff on down get involved.

Striking a Balance

The literature also deals with the question of how much jointness is enough and how much is too much. Two ideas seem to be at work here. The first is the cohesion principle. Students of war almost universally state that joint arrangements which disrupt unit cohesion negate benefits by reducing morale and efficiency. The level on which jointness disrupts cohesion is usually thought to be the upper tactical level (division, battle group, wing, Marine expeditionary force). However, the necessity principle seems to indicate that lower levels have successfully integrated. The Cactus Air Force in the Solomons during World War II integrated squadrons from different services into a cohesive fighting group.

It is worthwhile distinguishing between synchronization and integration. There appears to be great advantage in having tactical units self-synchronize with units of other services. However, integration—attaching elements of one service to another—is fraught with hazards. First, logistics can

F-16s during exercise
at Kunsan air base,
Korea.



U.S. Air Force (Jerry Morrison)

out of joint

become so cumbersome that formation efficiency is reduced despite the additive effects of the attached element. Second, depending on when units are attached, training (or lack thereof) will be similarly inhibiting. Thus the applicability of the cohesion principle seems situation dependent.

A second limiting factor is diversity. Some decry the potential for strategic monism if the services were truly unified; so the diversity principle states that competition of ideas leads to more stable strategy development. This idea has merit on several counts. First, history is replete with episodes in which a person or organization dominated national or theater strategy to the detriment of other interests. The United States is a pluralistic democracy, and its strategy must be discourse-based and represent the interests of all stakeholders. Second, if it was embodied in a general staff, jointness might lead to programming decisions that eventually painted the military into a strategic corner. Moreover, the sad history of the integration of the Canadian Forces which underwent true unification is universally cited as an example of too much of a good thing when it comes to overcoming parochialism.

Inter-service strife among the services should not be tolerated. Congress, in the Goldwater-Nichols Act, underscored that competition could only be accommodated in the context of available resources and on certain levels of command. Between 1947 and 1986, the diversity and hierarchy principles combined, without the influence

of necessity, to override the complementarity principle. Congress finally supplied the necessity.

Cohesion seems to lose relevancy in ascending the chain of command while diversity loses relevancy in descent. CINCs and JTFs dwell in the middle where cohesion and diversity meet. A joint force commander can choose between two styles of command with regard to the principles: a coordinator who rationalizes the possibly competing plans of component commanders or an orchestrator who uses a staff to develop an operational plan and then issues unambiguous orders. General Norman Schwarzkopf, USA, appears to have been a coordinator during the Gulf War, leaving service components to develop their plans (in the context of a general strategy) and then taking the necessary minimum steps to de-conflict them. By contrast, General Douglas MacArthur was an orchestrator. The Inchon landing was a detailed operational maneuver imposed on unwilling subordinate commands by his staff. A coordinator will maximize diversity and therefore unit cohesion while an orchestrator will minimize diversity and risk tactical cohesion in the interest of orchestration. The trick is knowing which command style is appropriate.

This can lead to the conclusion that the degree of desired jointness is situation dependent. Although these principles provide some general ideas on jointness, they do not offer clear guidance on which circumstances demand integration. But other principles, although speculative, are based on observed facts and trends.

Marines on range at Capo Teulada, Italy.



U.S. Marine Corps (Matthew D. Kell)

New Concepts

The preparation principle, a corollary to the necessity principle, asserts that the greater the expected necessity for speed of command in operations, the greater the required degree of proactive jointness. A fundamental tenet of *Joint Vision 2020* is that the future operational environment will require greater speed of command. This implies a need for self-synchronization of lower echelons and thus the services must invest in command, control, communications, computers, intelligence, surveillance, and reconnaissance interoperability down to unit level.

Networking of combat units has a profound effect on how the preparation, cohesion, and diversity principles apply to military operations. Networked units permit a swarming style of war in which commanders have substantial discretion in the constantly updated intent of JFCs. Sound doctrine is critical to such operations, so that dimension of preparation is central. But networking allows both creativity and changes of plans on the fly, so highly structured training is less useful. Because networked units are not as dependent on fixed formations for mutual support and more dependent on information sharing, the cohesion principle changes dramatically. There may be little need for formal attachments, and units collaborate based on emerging common operational pictures. Moreover, network-enabled swarming requires adherence to a basic rule set (doctrine) but permits and even demands considerable latitude in decisionmaking for local commanders, so the diversity principle will change.

Joint strategies and operational concepts that require tight orchestration should be subjected to centralized planning and control—the orchestration principle. There may be a time and place for diverse inputs on strategy, but once a decision is

JFCs must avoid situations that jeopardize success in one environment to evade risk in others

made diversity is an evil. Desert Storm illustrated this principle. The Marines were supposed to conduct a fixing attack in the center while VII Corps mounted a flanking attack to surround and annihilate the Republican Guard. Yet Schwarzkopf did not closely control the Marine rate of advance and their rapid attack forced the Iraqis into head-long retreat before the Army could close the trap.

The triphibious principle (a term coined by Winston Churchill to fix the need to understand the combined action of land, sea, and air forces) is the inverse of the dilemma principle. It holds that JFCs must avoid situations that jeopardize success in one environment to evade risk in others. The land, sea, air, space, special operations, and information warfare environments are connected by this principle. A prime historical example was Guadalcanal, where Admiral Ernest King sent the Marines ashore before attaining adequate sea and air control.

The parallel strategies principle comes into play when risk is reduced by executing multiple simultaneous strategies (such as air combined with ground or maritime) only to the extent that their effects are additive and do not significantly attenuate their respective effects and execution.



Emergency response on
USS Dwight D. Eisenhower.

U.S. Navy (Justin Thomas)

This is a combination of the complementarity and dilemma principles writ large. Joint doctrine does not address this issue but leaves the door open for it, and it is a source of doctrinal friction between the Air Force and other services. The Marine Corps, for example, depending on its own aircraft for tactical fires, is loath to chop air assets to the joint force air component commander (JFACC) since losses in one air campaign may impede ensuing amphibious or ground maneuver operations. JFCs must have the authority, objectivity, and courage to decide on a principal operational strategy, but also the vision (based on education) to value the benefits and hazards of a multi-pronged strategy.

Two issues have been unaddressed by any principle so far. The first is micromanagement. Some contend that increasing connectivity and flatter organizations will lead to centralized control. There appears to be no governing principle in the literature or historical record. Abraham Lincoln tried to micromanage the Union Army with the telegraph and express riders while George Bush left his coalition commander in a guidance vacuum during cease-fire talks after Desert Storm despite the availability of satellite telephones and fax machines. The proper degree of management seems to be governed by personalities and is not amenable to simple rules.

The second unaddressed issue is deciding who should hold joint command. This issue is currently governed by the quasi-principle that a

joint force commander should be from the service supplying the preponderant force. There is some sense to this, but it does not guarantee that the most fit person gains command. There is the concern that an officer from one service cannot be trusted to make strategic decisions concerning the core fighting capability of another service's main forces. The Navy, for example, refused to assign fast carriers to General MacArthur in World War II, assuming that an Army officer could not make competent decisions about risking those assets. Most recently, the Army assigned a three-star general to command a relatively small helicopter detachment in Albania to ensure that the Air Force JFACC would not misuse the aircraft.

The answer to these problems is not found in principles or rules of thumb. Rather it seems to reside in nurturing joint institutions. U.S. Joint Forces Command, as the joint force trainer and integrator, and the National Defense University should be centers of excellence that develop joint operational theory and doctrine. This system would refine joint education and training to the point that all officers eligible for joint command would be adequately prepared and the preponderance of forces policy would suffice. Conversely, if joint officer development was sophisticated, capabilities and personality could decide the joint commander, not uniform color. In such an environment, where higher echelons had great confidence in local commanders, counterproductive micromanagement would be less likely.

Theory provides a common vocabulary for debating complex issues. This may not resolve every argument, but it enables parties in a debate to understand their differences. Moreover, theory begets theory. The first step toward a clinical examination of jointness will stimulate further work. Progressive theoretical work might help prevent reinventing the wheel by successive generations of officers. Cyclic attempts to promote jointness reflected in part by the necessity principle would be disrupted and progress would ensue. **JFQ**

NOTES

¹ Roger A. Beaumont, *Joint Military Operations: A Short History* (Westport, Conn.: Greenwood Press, 1993), p. xv.

² Louis Morton, "Pacific Command: A Study in Inter-service Relations," *The Harmon Memorial Lectures in Military History, 1957-1987* (Washington: Office of Air Force History, 1988), p. 152.

HMS Queen Elizabeth with USS New York in foreground.



Naval Innovation

National Archives

From Coal to Oil

By ERIK J. DAHL

Technology is often cited as a key aspect of the revolution in military affairs and a decisive factor in military operations today. A study of the transition by the Royal Navy from coal to oil, stimulated by First Lord of the Admiralty Winston Churchill and Admiral Sir John (Jacky) Fisher, reveals a more complex story. Although technological change was a great success—every navy soon switched to oil—it did not constitute a strategic advance for Britain. It was an achievement that represented a grave

risk to a nation which possessed large coal reserves but no oil. This example suggests how technological innovations alone do not spark a revolution in military affairs.

Twilight of a Technology

When Churchill went to Whitehall in 1911, coal was still the primary source of power for naval vessels. The Royal Navy had adopted oil for submarines and destroyers, and in most ships it was sprayed on coal to increase its combustion. But coal remained the principal fuel, especially for larger vessels like battleships. It was widely available, especially in Britain, where Cardiff coal mined in Wales was preferred by navies worldwide. Coal was accepted by marine engineers,

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**HMS *Illustrious*,
coal-fired cruiser
launched in 1896.**



and Britain had a global network of coaling stations. In addition, coal was inert and thus supplemented armor by reducing damage from shells exploding in coal storage bins.

But coal also had disadvantages. Moving it from shore to ship, and aboard ship, was dirty and strenuous work that required extensive manpower. As Churchill noted, “the ordeal of coaling ship exhausted the whole ship’s company. In wartime it robbed them of their brief period of rest; it subjected everyone to extreme discomfort.”¹ It was virtually impossible to refuel at sea, meaning that a quarter of the fleet might be forced to put into harbor coaling at any one time. Providing the fleet with coal was the greatest logistical headache of the age.

Oil offered many benefits. It had double the thermal content of coal so that boilers could be smaller and ships could travel twice as far. Greater speed was possible and oil burned with less smoke so the fleet would not reveal its presence as quickly. Oil could be stored in tanks anywhere, allowing more efficient design of ships, and it could

be transferred through pipes without reliance on stokers, reducing manning. Refueling at sea was feasible, which provided greater flexibility.

Oil erased the drawbacks of a solid fuel. As Churchill noted, “the advantages conferred by liquid fuel were inestimable.” But he also recognized that a switch would be difficult to implement: “To change the foundation of the navy from British coal to foreign oil was a formidable decision in itself.” Finding and securing sources of oil threatened to be the most difficult part of the venture:

*The oil supplies of the world were in the hands of vast oil trusts under foreign control. To commit the navy irrevocably to oil was indeed to take arms against a sea of troubles. . . . If we overcame the difficulties and surmounted the risks, we should be able to raise the whole power and efficiency of the navy to a definitely higher level; better ships, better crews, higher economies, more intense forms of war power—in a word, mastery itself was the prize of the venture.*²

Opposing the transition was the weight of naval tradition, magnified by loss of the strategic advantage of large coal supplies in Britain. This position was voiced in 1904 by Lord Selborne, the First Lord of the Admiralty: “The substitution of



National Archives

German battleship *Posen*, powered by mixing coal and oil.

the Royal Navy regarded the shortage of trained sailors as its worst long-term problem

oil for coal is impossible, because oil does not exist in this world in sufficient quantities. It must be reckoned only as a most valuable adjunct.”³

Supporting change was Admiral Fisher, the First Sea Lord from 1904 to 1910, and friend and advisor to Churchill during his tenure as First Lord of the Admiralty. Fisher, who dominated the Royal Navy in his day, was renowned for many

innovations in administration and engineering, including *Dreadnought*-class battleships. An early supporter of oil as fuel, he wrote in 1902, “It is a

gospel fact . . . that a fleet with oil fuel will have an overwhelming strategic advantage over a coal fleet.”⁴ Fisher admitted with pride that he was known as an “oil maniac” as early as 1886.⁵

Fisher described such advantages as the ability to replenish at sea and the smaller amount needed to produce the same amount of energy as coal. He reported that a new Russian battleship burned oil alone and that “at one stroke, oil fuel settles half our manning difficulties! We should require 50 percent less stokers.”⁶ Personnel savings were also critical to the Royal Navy, which regarded the shortage of trained sailors as its worst long-term problem.

Although Fisher was unable to push the senior service over the precipice during his tenure as First Sea Lord, he found Churchill an important ally since their first meeting in 1907. When Churchill became First Lord, Fisher wrote to a friend describing Churchill in the extravagant terms common in his correspondence: “So far every step he contemplates is good, and he is

brave, which is everything! Napoleonic in audacity, Cromwellian in thoroughness.”⁷ Fisher regularly peppered Churchill with advice on a variety of naval matters.⁸

One requirement, Fisher told Churchill, was that the *Queen Elizabeth*-class battleships be built as a fast division, able to outmaneuver and cross the T of the German fleet. In 1912, Fisher wrote to Churchill, “What you do want is the super-swift—all oil—and don’t fiddle about armour; it really is so very silly! There is only one defence and that is speed!”⁹

The war college was asked how much speed a fast division would need to outmaneuver the German fleet. The answer was 25 knots, or at least four knots faster than possible at the time. Churchill concluded, “We could not get the power required to drive these ships at 25 knots except by the use of oil fuel.” This was enough for him.

Queen Elizabeth-class battleships were built to burn oil only. Once this decision was made, Churchill wrote, it followed that the rest of the Royal Navy would turn to oil:

*The fateful plunge was taken when it was decided to create the fast division. Then, for the first time, the supreme ships of the navy, on which our life depended, were fed by oil and could only be fed by oil. The decision to drive the smaller craft by oil followed naturally upon this. The camel once swallowed, the gnats went down easily enough.*¹⁰

But building oil-fired ships was only part of the exercise; it was also necessary to secure a supply and solve storage and transport problems. To meet these challenges Churchill established a royal commission. With Fisher as chairman, the commission eventually published three classified reports confirming the benefits of oil. It judged that ample supplies of oil existed but urged that a storage capacity be built in peacetime to ensure sufficiency in time of war.

The final step was finding a source, and toward that end a delegation went to the Persian Gulf to examine oil fields. Two companies were the likely choice of supply: the powerful Royal Dutch Shell Group and smaller Anglo-Persian Oil Company. After considerable maneuvering, and largely through Churchill’s encouragement, the government decided to maintain competition in the oil industry and ensure supplies by investing directly in Anglo-Persian. The government acquired 51 percent of company stock, placed two directors on its board, and negotiated a secret contract to provide the Admiralty with a 20-year supply of oil under attractive terms.



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HMS Inflexible on Hudson River, 1910.

Military-Oil Complex

Other factors were involved in the switch to oil beyond the efforts of Fisher and Churchill. Private industry helped develop ships and engine designs. As Hugh Lyon wrote, “The use of oil fuel would not have been possible without the pioneering work of such British firms as Wallsend Slipway on the design of suitable and economic burners. The Admiralty did do some research itself, but the main bulk of the investigations that were conducted in Britain were the work of private industry.”¹¹ This argument is similar to that advanced by William McNeill, who described the period from 1880 to World War I as a “runaway technological revolution.” It was largely the result of “command technology” in which government planners urged industry to innovate. In the case of the Royal

Navy, for example, the Admiralty—largely due to Fisher—set specifications for engineers but did not actually design the ships and guns.

The growing oil industry also played an important part. Peter Padfield sees the efforts of private firms, especially Anglo-Persian, as “a good example of the way in which British command of the sea, exercised through her world system, allowed her to exploit commercial opportunities which in turn increased her command.”¹² Padfield argues that Anglo-Persian, acting as part of the British Empire, pushed the switch to oil, which drove the Royal Navy to seek higher speeds.

Although Fisher and Churchill had close personal and professional relations with senior oil executives, their correspondence reveals that military and strategic concerns, and not commercial motives, were at the root of the switch. Fisher, for example, worked closely with leaders of major companies but rejected offers to sit on corporate



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U.S. Fleet, Guantanamo Bay.

widespread experimentation and development of fuel oil had shown the technology was feasible

boards. He also did not have favorites, praising and supporting each competitor at different times. The Burmah Oil Company, for example, was an early supplier to the Admiralty, beginning in 1904 when Fisher was First Sea Lord, and was the forerunner to Anglo-Persian. Fisher also wrote flattering accounts of the chiefs of Anglo-Persian's arch-rival, Shell, including a description of Henri Deterding as "Napoleonic in his audacity and Cromwellian in his thoroughness."¹³

Race to the Future

Beyond the efforts of the main actors and pressures of industry and commerce, it appears that several broader historical factors in the years leading up to World War I made the time right

for Britain to adopt oil. One factor was the growing Anglo-German naval race. But just as critically, by this time several decades of widespread experimentation and development of fuel oil had shown that the technology was feasible. It appeared Britain ran the risk of being left behind.

The Italian navy led the way in experimenting with oil starting in 1890, and by 1900 most of its torpedo boats were oil burning. The mixed-firing method of spraying oil on coal was routine by the early 1900s, and a liquid fuel board in the United States recommended using oil as a stand-alone fuel in 1904. The first oil-burning American destroyer, *USS Paulding*, was commissioned in 1910, and by 1911 the *USS Nevada*-class battleship was planned for solely oil as fuel.

By 1912 oil technology was relatively well understood. But there was no particular race to develop oil-fueled warships, and in 1914, despite the advantage of oil, only America joined Britain in moving far in that direction. The United States had ample supplies. But Fisher received regular reports that the Germans were developing oil.

**HMS Dreadnought
underway.**



National Archives

To innovate and maintain a lead over an enemy was Fisher's goal. He cautioned Churchill in 1912: "The luxuries of the present are the necessities of the future. Our grandfathers never had a bathroom . . . you have got to plunge for three years ahead!" A letter from Fisher demonstrates both his concern over German developments and excessive rhetoric:

The one all pervading, all absorbing thought is to get in first with motor ships before the Germans! Owing to our apathy during the last two years they are ahead with internal combustion engines! They have killed 15 men in experiments with oil engines and we have not killed one! And a . . . fool of an English politician told me the other day that he thinks this creditable to us.¹⁴

This combination of concerns expressed by Fisher—that development was inevitable, an enemy was working on it, and Britain must stay in the lead—had been present in the earlier development of the *Dreadnought*-class battleship. In 1910 he wrote "Like the planet Neptune, the discovery of the dreadnought was inevitable, but luckily we saw her in the heavens before the other chaps and got our unparalleled lead! Thank God!"¹⁵

Ironically, Fisher's information was faulty in the case of oil, and Germany did not develop oil as quickly as Britain or the United States. Germany used mixed firing in a major combatant for

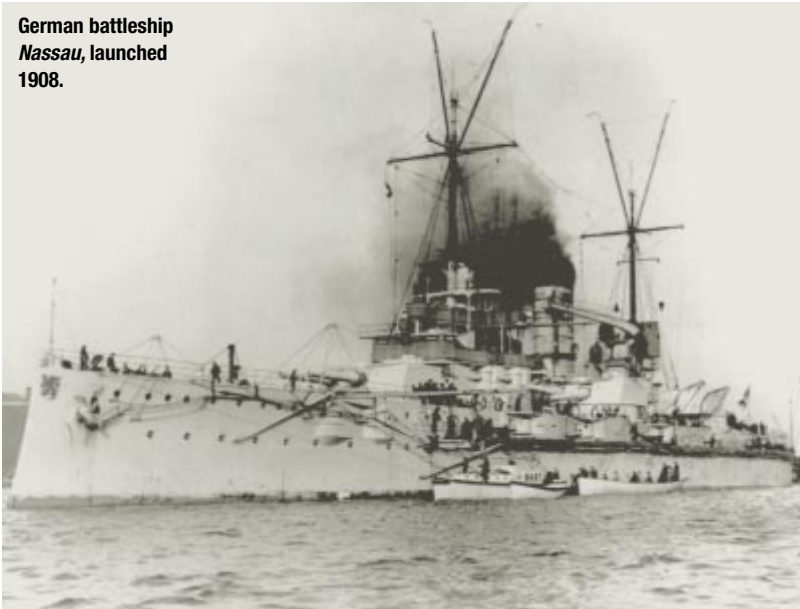
the first time in 1909 and did not use all-oil firing for surface combatants until after World War I. Nonetheless, it was a combination of the general level of oil development and the threat of German advances that pushed Britain to change despite the loss of the coal advantage. The transition itself quickly became recognized as the right decision, and the new fuel became universally used in naval design in a few years. In 1919 *Jane's Fighting Ships* announced that "the geared turbine and 'all oil' fuel system have secured a distinct success."

Fortunes of Conflict

Although the British navy did gain a speed advantage, particularly since Germany did not develop oil until after World War I, the change did not appear to be a deciding factor in the conflict. At the same time, the Royal Navy suffered from oil shortages, particularly in 1917 when attacks on submarine tankers began to tell. For a time British ships were forced to stay in harbor as much as possible and destroyers were held to a speed of 20 knots.

The switch to oil neither sparked a naval revolution nor delayed Britain's naval decline. In part its historical significance may have been overshadowed by development of the dreadnought. It

German battleship
Nassau, launched
1908.



National Archives

may also be that World War I gave little opportunity for innovation, and by World War II every navy had adopted oil, neutralizing gains. This explained, as Michael Handel stated, why technological advantages may be short-lived. “The general availability of new technologies to all participants in a war cancels out the advantage that might otherwise be realized from greater knowledge and control. When both sides have telephones, radios, radars, high-speed computers, or [remotely piloted vehicles], no one has the advantage (that is to say, when all other things are equal).”¹⁶

Moreover, limitations may relate to a common complaint leveled by historians, that Fisher focused on the material over the strategic. He is blamed on one point in particular. Paul Kennedy, discussing the loss of ascendancy by the Royal Navy over the army before World War I, explained that “energetic and farsighted though the First Sea Lord was in so many ways, he was no great strategist and had crushed all moves to create an effective naval staff.”¹⁷

The transition from coal to oil was symptomatic of the broader limitations of leadership of the navy by Fisher and Churchill: it was a significant innovation but not a strategy. It improved the warfighting capability of the Royal Navy but didn’t change the way wars were fought.

The transition from coal to oil in the Royal Navy came about through a variety of factors. Fundamentally, it was a technological phenomenon waiting to happen. Britain, the United States, and a few other nations had been experimenting with

oil, and its advantages were generally known. In the event, Britain and the United States made the change at about the same time. But in Britain the strategic risks were great enough to require the skill of both Fisher and Churchill to accomplish the change. The Anglo-German naval race—particularly reports that Germany was developing oil as fuel more quickly—provided the final impetus. **JFQ**

NOTES

¹ Winston S. Churchill, *The World Crisis*, Vol. 1 (New York: Scribner’s, 1923), p. 134.

² *Ibid.*, pp. 133–36.

³ P. K. Kemp, ed., *The Papers of Admiral Sir John Fisher*, Vol. 1 (London: The Navy Records Society, 1960), p. 81.

⁴ Arthur J. Marder, ed., *Fear God and Dread Nought: The Correspondence of Admiral of the Fleet Lord Fisher of Kilverstone*, Vol. 1 (London: Jonathan Cape, 1952), p. 220.

⁵ John Fisher, *Records* (London: Hodder and Stoughton, 1919), p. 202.

⁶ Marder, *Fear God*, p. 235.

⁷ *Ibid.*, p. 430.

⁸ *Ibid.*, p. 402.

⁹ *Ibid.*, p. 426.

¹⁰ Churchill, *The World Crisis*, pp. 133, 136.

¹¹ Hugh Lyon, “The Relations Between the Admiralty and Private Industry in the Development of Warships,” in *Technical Change and British Naval Policy 1860–1939*, edited by Bryan Ranft (New York: Holmes and Meier, 1977), p. 49.

¹² Peter Padfield, *The Battleship Era* (New York: David McKay, 1972), p. 203.

¹³ Fisher, *Records*, p. 201.

¹⁴ Marder, *Fear God*, p. 426.

¹⁵ *Ibid.*, p. 332.

¹⁶ Michael Handel, *War, Strategy and Intelligence* (London: Frank Cass, 1989), p. 21.

¹⁷ Paul M. Kennedy, *The Rise and Fall of British Naval Mastery* (London: The Ashfield Press, 1976), p. 234.

Chiyoda participating in Pacific Reach '00.



U.S. Navy (Terry Cosgrove)

Jointness in the Japanese Self-Defense Forces

By FUMIO OTA

Prior to World War II the Japanese imperial army and navy lived a cat-and-dog existence. They individually reported to the emperor and there was no organization to coordinate their efforts. Their perceived threats and strategies were also different. The army had traditionally looked north toward Russia while the navy focused on America, especially after the Russo-Japanese War. Both services maneuvered for larger shares of the budget. Even

war did not bring them closer together. The navy never informed the army of its crushing defeat at Midway, and the army was preparing to build its own submarines by the end of the war because it did not trust the navy.

After the conflict Japan drew from experience and established the self defense force (SDF). The National Defense Academy, established in 1953, adopted a joint education system. The joint staff council coordinated ground, maritime, and air staff offices. Joint training included command post exercises, maritime transportation of ground forces, and maritime and air exercises. A central procurement office managed acquisition for ground, maritime, and air self defense forces.

Not all the lessons of the interwar period and World War II were thoroughly learned. Joint-

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**USS Kitty Hawk
in South China Sea.**



U.S. Navy (Alex C. Witte)



U.S. Navy (Justin Preoux)

**U.S. and Japanese
sailors aboard
USS Kitty Hawk.**

ness among the services was not fully developed. Threat perceptions and strategies still differed. The ground self defense force (GSDF) continued to primarily look north, while the maritime self defense force (MSDF) tended to focus on sea lines of communication, extending southeast and

southwest from Japan. Each service built its own communication system, target symbols, and message formats. As a result, they could not communicate among themselves on common secure voice devices. The air self defense force (ASDF) did not share any early warning information from E2Cs, originally a U.S. Navy aircraft, with MSDF ships afloat. The ASDF data link system was incompatible with the MSDF data link 11. The services literally had their own languages; for example, coastal areas were the *beach* to GSDF and the *surf* to MSDF.

Recent efforts to improve jointness in the Japanese self defense forces offer an opportunity to look ahead and identify ways that these initiatives can contribute to combined operations.

Renewal of Purpose

Jointness problems are being resolved for several reasons. First, Japan’s security partner, the United States, has stressed integrated operations since passage of the Goldwater-Nichols Act in 1986. Because each service maintains high levels of interoperability with its American counterpart, especially MSDF, many joint assets such as a tactical command and control system and message text format have been introduced. Consequently,



3rd Marine Division, Combat Camera (Jason D. Ingersoll)

Marines and Japanese soldier during Forest Light.

every service exchanges messages using a common format. Both MSDF Aegis destroyers and ASDF airborne warning and control system (AWACS) aircraft are equipped with the U.S. joint tactical data link system, allowing the services to establish data communication with each other. If Japan deploys ballistic missile defense, which is

because of constitutional constraints, SDF has no experience in overseas operational deployments

currently under study, jointness among the SDF services will advance further in terms of command, control, communications, computers, intelligence, surveillance, and reconnaissance because such defenses will require integrating AWACS aircraft, Aegis platforms, Patriot missiles, and other assets.

Second, the services have begun to tackle similar issues, which was not always the case during the Cold War. The new defense guidelines adopted by Japan and the United States also have led to a common perception by all the services of potential threats to the region.

Third, the legal basis for jointness within SDF has improved. The joint staff now has more authority and responsibility. For example, amendments to the defense agency establishment law, enacted in March 1999, have resulted in improvements in coordination of SDF components when the need arises for integrated operations in response to a crisis such as large-scale disasters.

Fourth, joint operations have gradually increased. Because of constitutional constraints, SDF has no experience in overseas operational deployments. Since the Cold War, however, Japan has participated in several peace operations. For

example, during operations in Cambodia in 1992 GSDF civil engineers, MSDF transport and supply ships, and ASDF C-130s deployed together. All the services also contributed in Mozambique in 1993, Rwanda in 1994, and the Golan Heights from 1996 to the present. Domestically, SDF has conducted many natural disaster relief operations jointly, including the Hanshin-Awaji earthquake and the Mount Unzen and Mount Usu volcanoes. The first field training involving each service in Japanese-U.S. joint and combined exercises was held on Iojima and adjacent areas in 1998. It covered varied multiservice operations including landings and aerial descents. MSDF destroyers joined ASDF in providing air cover while GSDF patrolled the coastline along the Sea of Japan. The exercise built on joint exercises over the last 15 years, and many valuable lessons have been learned and implemented. Moreover, joint doctrine has existed since 1968 and is continuously under review and revision.

Fifth, the benefits of joint professional military education are becoming apparent. It began for senior officers in the early 1950s. The National Institute for Defense Studies, an organization of equivalent standing to the National Defense University in Washington, has educated both military and civilian students from other agencies since 1953. The Joint Staff College was opened in 1961 for graduates of the Japan Defense University, who are now key players in their services and on the joint staff council with the retirement of officers with exclusive army or navy backgrounds.

Future Challenges

Despite major advances in jointness, unresolved issues remain. The Japanese coast guard, with 517 ships and 70 aircraft, is not integrated into the armed forces. Although the Coast Guard in the United States maintains a close relationship with the Navy, there is no compatibility between counterparts in Japan. Disparities involve communication equipment, weapons, ammunition, and training. But this stovepipe situation is changing. The two services recently began to conduct joint exercises. The MSDF destroyer *Amagiri* participated in a review of coast guard ships for the first time in April 2000.

Another issue is combined operations. Japan and the United States have been conducting exercises since their alliance began. Each service normally conducts various exercises with their opposite number. But a single service rarely trains with multiple services from another country. Combined cross-service exercises must be developed.

Japanese helicopter landing on *USS Blue Ridge*.



U.S. Navy (Kurt Eischen)



U.S. Marine Corps (John A. Giles)

Combined memorial ceremony, Iwo Jima.

For instance, GSDF and its American counterparts, the Army and Marine Corps, have collaborated since the 1980s. MSDF has drilled with the Navy since the 1950s. ASDF has held combined exercises with the Air Force since the 1970s. But MSDF did not exercise with the Air Force except for large-scale joint and combined workouts until 1995. In that year an MSDF escort division conducted a cross-service drill with U.S. aircraft from 35th Operational Group on two occasions. MSDF exercised antiair warfare and air control while the Air

Force conducted ship attacks. Japanese participants gained significant experience and Americans had a unique opportunity to sharpen cross-service skills.

Combined exercises resulted from a friendship between the commanders of 35th Operations Group and the MSDF escort division that had begun when they were members of the same seminar at the Industrial College of the Armed Forces in early 1990s. That bond has opened the door for future training opportunities and illustrates the value of international military educational programs. But the experience also indicates that exercises are too important to be left to personal relationships. They must be an integral part of a bilateral program.

The International Dimension

Combined exercises benefit both Japan and the United States. For MSDF, it is a chance to hold simultaneous omnidirectional/multi-threat, anti-air warfare exercises in an electronic warfare environment with experienced U.S. pilots. In addition, such events offer opportunities to improve interoperability in communication and information exchange. For the U.S. military, interoperability is key to cementing relationships with allies and friends. Training is important to creating trust and confidence. This is strong evidence that more joint and combined training is needed.

Combined operations have been the subject of conferences and publications in recent years. At a gathering on “Military Coalitions and the United Nations: Implications for the U.S. Military” held at the National Defense University in 1993, Admiral Paul David Miller, then Commander in Chief, Atlantic Command, spoke about a revolution in defense multinationalism and suggested that teamwork, interoperability, and functional connectivity were key to operational success. Regional cooperation and constructive interaction have been incorporated in the military canon, for example, in Naval Doctrine Publication 1, *Naval Warfare* (1994): “We must maintain our ability to conduct day-to-day operations with other services and other nations.” This emphasizes the importance of teamwork in a joint and multinational environment.

There are many types of combined exercises. The possibilities include antiair warfare with U.S. ships and Japanese fighters, mine warfare involving American aircraft and Japanese forces, and U.S. naval gunfire support for Japanese troops. Other Asian allies could adopt the U.S.–SDF experience as a training model. There may also be applications for such efforts in Europe, where there are no policies on combined cross-service training. NATO has combined exercises where all services are involved and transnational service exercises among the same service components.

Many countries have undergone arms reductions and force drawdowns since the Cold War. Moreover, exercise opportunities have decreased. Consequently, militaries are looking for creative ideas to overcome training shortages and technological shortfalls. Additional transnational threats are emerging; thus forces must respond transnationally as well. Combined joint exercises are part of the solution.

JFQ

A Systems Approach to



USNS Pollux in Pusan for Foal Eagle '98.

55th Signal Company (Christina A. Horne)

Readiness Reporting

By JOHN C.F. TILLSON

There is general agreement that readiness reporting is flawed and does not accurately reflect operational requirements in the post-Cold War era. Readiness reporting has improved somewhat in recent years. Unit reports—known as the global status of resources and training system—have seen incremental changes that have increased the ease and precision of reporting by the services. Moreover,

in response to the provisions of the Goldwater-Nichols Act, the Chairman has initiated a system that includes quarterly reports from CINCs, combat support agencies, and services. This report, the joint monthly readiness review, addresses overall readiness in two major areas—current day-to-day preparedness and readiness to execute a major theater war or other scenario envisioned in national security strategy. In 1993, the Secretary of Defense established the Office of the Under Secretary of Defense for Personnel and Readiness and the Office of the Deputy Under Secretary for Readiness to oversee preparedness. The Secretary

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U.S. Army (Raymond A. Barnard)

Mission rehearsal at Joint Readiness Training Center.

also formed the Senior Readiness Oversight Committee, chaired by the Deputy Secretary and with members from the Office of the Secretary, Joint Staff, and services, that meets monthly to review reports from the Chairman as well as other readiness indicators. At the direction of Congress, the Office of the Deputy Under Secretary of Defense for Matériel Readiness and Logistics was created in the Office of the Under Secretary for Acquisition and Technology. Institutionalizing readiness reporting and responsibilities has resulted in enhanced appreciation of readiness issues in the program review process.

Perhaps the most critical problem is that the current system does not measure the capability of the Armed Forces to accomplish the missions established in national security strategy. Instead it focuses on one or two major theater wars and a limited set of tasks associated with those missions, forcing CINCs, agencies, and services to focus their reporting on narrow functional areas that do not address the full range of operational tasks. For example, reports by CINCs and agencies cover eight functional areas that correspond to staff organization. These do not deal with readiness as it relates to performing specific tasks essential to accomplishing missions. Similarly, service reports focus on six enablers that do not correspond to congressionally mandated responsibilities (Title 10 functions) that represent key tasks for which all the services are responsible.

Essential elements are not being reported. For example, joint and service component headquarters, most joint units, and most large units such as corps, battle groups and fleets, air wings, and numbered air forces are omitted. Nor do reports cover

critical support facilities such as seaports, supply depots, and training centers. Overall the system lacks comprehensiveness and is unable to indicate readiness to execute strategy.

On one hand, to address the lack of specificity, DOD should collect more data, and on the other, given the amount of the data already reported, perhaps it should be reduced. This dilemma will demand revamping the system to collect more information while reporting less.

Starting Over

Based on congressional requirements and the responsibilities of the Secretary of Defense as well as other DOD components, a readiness reporting system should be designed that:

- responds to congressional readiness concerns
- provides readiness information needed to assist the Secretary of Defense, CJCS, CINCs, agencies, and services in performing peacetime and warfighting missions
- revises reporting in the context of efforts to transform the defense establishment to meet the challenges of the 21st century.

To meet these criteria, modernized reporting must be based upon a systems or process approach. A system represents an organization or group of organizations with a common goal. For example, a basic operational unit (such as a ship or infantry battalion) is a system that has a common goal to perform a mission essential task assigned to that unit. A group of operational units (division, battle group, air wing) is a system with a common goal to perform essential tasks assigned to an organization. A facility (port, training center, hospital) is a system with a common goal to perform tasks assigned to an installation. Units and organizations with common goals but different chains of command should also be considered a system. The defense transportation system, for example, includes organizations under various components, but it has a common goal of transporting units and matériel. Readiness is a measure of the ability of systems to achieve goals—their actual output compared with required output.

The basic steps in a systems approach to readiness reporting are (1) identifying the systems whose readiness will be reported, (2) determining the output required of the system, (3) identifying the parts of each system and collecting the added data needed to determine their readiness in terms of output, and (4) requiring the responsible CINC, agency, or service to report on the readiness of their system. This method will provide an assessment for the entire force from individual units to the National Command Authorities.



31st Communications Squadron (Della A. Castillo)

Unloading C-5 at
Sidi Slimane air base,
Morocco.

Unfortunately, lacking a measure of how deficiencies contribute to readiness systems, the effort to eliminate a defect tends to lead to micro-management or suboptimization in which resources intended to fix a problem may not promote improvement because both reporting organizations and the Pentagon are stovepiped. They simply lack a comprehensive view of how the problem under investigation contributes to readiness. For example, regardless of the capability of airlift forces, if bases en route or airports of debarkation are inadequate, the system can produce no more output than the maximum throughput of the facilities. If the goal is providing throughput, then the impact of each problem must be measured in terms of the influence on the throughput of the system. The fact that there is a problem as seen by one element of the system does not mean that it necessarily affects the overall throughput or readiness of the system. Nor should a deficiency be considered without a clear understanding of its relation to other systems that depend on its capabilities.

When participants attempt to either fix or optimize that part of an organization or system for which they are responsible or can see, they risk misusing marginal resources. Using a chain as an analogy, if they fix a link that is already strong in relation to others, they are unlikely to improve the capability of the system. Looking at the overall system and measuring its readiness in terms of its ability to achieve a goal—throughput in the case of the transportation system—leads to a search for the weak link that creates a bottleneck or constraint in the system. The marginal dollar should be spent on the weak link.

The Whole Picture

A systems approach gives participants in the system an opportunity they lack today—to see where they fit and how their actions affect that whole system. Given this capacity, participants can make decisions with a complete system in mind. They no longer must focus solely on bits and pieces of readiness over which they have visibility and control.

To conceptualize readiness, the goal must be measurable and the determination of readiness

must be based on comparing the actual capability with objective goals.

The defense transportation system—responsible for moving forces and matériel from a peacetime location to other venues

tied to strategy—is a critical system and illustrates how a new approach to readiness can be developed. Readiness of the transportation system is reported in parts because no commanders are subordinate to the Secretary, who is responsible for reporting overall readiness. Instead, there are half a dozen CINCs and three service secretaries who have some responsibility for reporting on the readiness of components of the national strategic capability to move forces, supplies, and equipment. It remains for the Secretary and Chairman to make sense out of a diverse set of reports.

Ready for Tomorrow

The systems method helps resolve conflict between current and future readiness. If the Secretary, Chairman, CINCs, and services are able to see an entire system, they may be capable of identifying elements that can be improved in the near term to enhance current readiness. They may also be able to identify elements that can only be improved in the longer term with a modernization or force structure program. Visibility of the tradeoffs possible with the systems approach may also enable better choices about readiness today versus readiness tomorrow.

The concepts presented in *Joint Vision 2020*—dominant maneuver, precision engagement, and full dimensional protection—are best seen as operational level systems of systems. Current assessments cannot determine their readiness. Although CINC or service functional area reports may address parts of a system, they do not encompass the entire system to indicate its capability to provide the output required by CINCs.

a systems approach enables participants to see where they fit and how their actions affect the whole system

Joint Mission Essential Tasks

Tasks that are essential to the ability to perform assigned missions are outlined in the joint mission essential task list (JMETL). This list results from mission analysis conducted in the requirements phase of the joint training systems cycle and provides documentation from which requirements are derived. Among the resources available to assist commanders in developing specific tasks are the universal joint task list, JMETLs from commands, master training guides, and joint doctrine. Common tasks are mission essential tasks drawn from the lists of two or more commands.

Sample JMET

JMET: Coordinate Theater-Wide Information Operations (IO)

Organization: J-3

Conditions

- flexibility of warfare style (flexible)
- theater intelligence organizations (mature)

Standards

- 90 percent of subordinate plans have integrated command and control warfare efforts
- 10 days to achieve information superiority

Supporting tasks—identify theater issues and threats

- Conditions
 - military style (predictable)
- Standards
 - 10 hours or less to identify enemy center of gravity

Command-linked tasks—support national and joint task force surveillance and reconnaissance requirements

- Conditions
 - visibility (high)
- Standards
 - 90 percent of joint operational area has surveillance coverage.

F-16s at Kunsan air base during readiness exercise.



U.S. Air Force (Jerry Morrison)

For example, although the precision engagement system of CINCs might include a command, control, and communications subsystem or a logistic subsystem that can be included in current functional area reports, an evaluation might be beyond the purview of CINCs. The command might be unable to determine overall readiness of precision engagement because it would not know the capability of operational units or capabilities associated with it and would not see how stovepipes fit in the system. Moreover, no subordinate who reports to CINCs on the basis of a functional area would be responsible for ensuring the successful operation of the precision engagement system. In sum, the Armed Forces have no adequate yardstick to evaluate their capacity to acquire future warfighting capabilities.

A systems approach offers a better measure for judging modernization and transformation.

a systems approach offers a better measure for judging modernization and transformation

By integrating future operational requirements in a systemic assessment program, DOD will gain a greater appreciation not only for its current capabilities but also for emerging competencies.

Integrated Approach

Understanding readiness to execute a task requires understanding the readiness of a system designed to execute that task. To provide a comprehensive account of readiness, CINCs report on readiness to execute items on the joint mission-essential task lists (JMETLs) developed for assigned missions. Supporting CINCs and agencies report on readiness to execute tasks on the mission essential task list associated with support missions. Services report on readiness to execute Title 10 functional tasks to meet the needs of supported CINCs. In each instance, understanding readiness to execute tasks requires understanding the readiness of systems that execute the tasks.

Knowing the readiness of large, complex systems is based on an appreciation of the readiness of entities that make up systems. They include operational units as well as supporting entities—depots, ports, prepositioned equipment, communications nodes, hospitals, training centers, and inventory control points—that are critical for readiness. Each must report its readiness to conduct mission-essential tasks associated with its role in the system whose readiness is being reported. For example, ports that are nodes in the defense transportation system are systems whose readiness can be measured. In this example ports report readiness to execute mission essential



Combat Camera, Atlantic (Martin Meddock)

**USS Arctic with
USS Enterprise off
Florida.**

tasks, moving a certain amount of cargo daily. Moreover, other supporting entities are also systems: depots may have engine and radar repair systems, communications nodes are data transmission systems, hospitals are patient care systems, and training centers are unit systems.

Operational units can be treated as systems of systems. The Army, for example, evaluates training readiness in terms of battlefield operating systems, including fires, maneuver, command and control, intelligence, logistics, air defense, and mobility and countermobility. Each operational unit has a similar mix of systems collectively engaged in executing mission essential tasks. Ships report on the basis of primary mission areas that are essentially systems, such as antisubmarine warfare. The Air Force uses similar descriptors in its reporting.

Every readiness-related entity can report its status in terms of the ability to execute mission essential tasks based on an assessment of the ability of systems to provide output associated with essential tasks. An Army infantry battalion is a case in point. Its headquarters, including members of the staff and support capabilities, comprise a command and control system. The scout platoon provides an intelligence system. Three maneuver companies are a maneuver system. The battalion report would be based on a comparison of required levels of personnel, equipment, supplies, and training with the level of each battalion mission essential task.

More Is Less

This vision of reporting calls for collecting and manipulating more data than assessments of today. This is made possible by the expanded capabilities inherent in DOD information technology systems, which can capture large amounts of

data from low-level functional activities and make it available automatically for readiness reports. For example, transactions put in personnel databases or entered in service maintenance databases can be captured and incorporated. Ultimately, all the status data included in readiness reporting must be based on this form of unit-level transaction data. Readiness will be based on each node of every system and automatically updated in near real time. This capability can reduce readiness reporting while the data actually collected increases.

Readiness reporting should eventually become virtually automatic. Databases will provide most data required by unit reports. Commanders will be responsible largely for reviewing data to ensure accuracy and reporting command assessments that differ from objective appraisals. There will be permanent web-based applications representing systems that CINCs, agencies, and services rely on to execute mission essential tasks. The applications will be updated automatically with unit data. Intelligent agents will sweep databases to find readiness problems and bottlenecks and even identify potential workarounds. Planners will identify tasks for deliberate and crisis response plans and select units by task and receive near real-time readiness assessments in response.

A system of systems approach to readiness reporting offers a coherent and comprehensive basis for discussing both operational capabilities and resource allocation. Such a method can increase the capacity to meet near-term requirements and assist the process of transformation. **JFQ**

Rethinking Joint Training



UH-60As landing on USS Essex.

U.S. Navy (T. Swartz)

By ANTHONY HAUGRUD, GARY C. LEHMANN, and CURTIS PHILLIPS

The Chairman initiated the joint training system (JTS) in 1994 to prepare the Armed Forces to fight together and win in a joint environment. Its concepts are sound. The system will ensure that the military is ready to meet joint warfighting requirements. Unfortunately, the system has not been following the established concepts. It is undisciplined and executed haphazardly. This must change in order to live up to the promise of *Joint Vision 2020*.

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Guidance and Guidelines

Under current joint doctrine, the framework in the joint training system is used by the joint community to identify requirements, develop plans, and execute, evaluate, and assess joint training events. It is designed to ensure that forces are prepared to promote peace and stability and to defeat enemies. It offers an integrated requirements-based way to align training programs with assigned missions consistent with command priorities and resources. The system is guided by five principles: focusing on the warfighting mission, training as you will fight, using commanders as primary trainers, applying joint doctrine, and centralizing planning while decentralizing execution.

The joint training system consists of four phases: identifying requisite capabilities based on

assigned missions, proceeding through event planning, executing training, and assessing how well training is accomplished.

The requirements phase describes what a command must be capable of doing. Combatant commands both conduct mission analysis and publish a joint mission essential task list (JMETL) for subordinate commanders. The list defines mission requirements in terms of tasks that must be performed to certain standards and the responsible organizations on all levels throughout the force that must be trained to a prescribed frequency to meet those tasks and standards. In theory, these requirements are driving factors behind all requirements-based JTS events. Joint exercises provide a medium for joint training and should be scheduled and conducted to train existing requirements.

The planning phase begins once the command JMETL is approved. Commanders consider what training is required and who must be trained, as well as command priorities. CINCs

provide guidance to staffs to initiate planning and issue objectives on performance and training conditions. The objectives form the basis for building joint training plans, which lead to

exercise and training schedules and the CJCS joint training master schedule. CINCs also begin to analyze the balance between the resources required (time, funds, personnel, organizations) and those available.

The execution phase is focused on conducting training events, which may take the form of seminars and workshops or field training and command post exercises. All events include planning, preparation, execution, and post-exercise evaluation. Taken together they frame exercises and guide them to completion. The post-exercise evaluation is particularly key because it provides input to guide future training.

In the assessments phase, commanders seek to determine mission capability from a training perspective. Products from the execution phase become inputs. The actual assessment is done by commanders using results from assessment plans outlined in joint training plans. This phase has three purposes: to provide a structure for commanders to make judgments on command ability and confidence to accomplish assigned missions, to provide feedback to adjust training shortfalls, and to support external processes related to readiness. Though assessments complete the joint training cycle, they also begin the next cycle because they drive future training plans.

Reality Check

The CJCS exercise program is designed to provide a way to execute the joint requirements-based training cycle. According to a study by the General Accounting Office (GAO) completed in 1998 on joint training, the program is not effectively scheduled under its priorities and objectives. The highest training priority, supporting warfighting/contingency plans, had the least percentage of exercises scheduled to support it, while the majority supported the second priority, engagement. One can argue that engagement requirements are paramount and that if done properly they prevent the need to employ trained and ready forces for joint combat operations. Yet contrasting demands of warfighting readiness and the imperatives of engagement have put great stress on the system.

There is real friction in that combatant commanders are responsible for scheduling joint and combined exercises while services and functional components are tasked with funding, manning, and executing training. Commanders cannot ignore engagement requirements but rather must use a system not designed for them. Service and component frustration stems from a lack of definitive planning priorities with which to allocate resources to meet warfighting and engagement missions. The services have no consistent authoritative guidance on planning. This results in two necessary but competing programs—training and engagement—grouped under one system designed for only one purpose. A requirements-based process that provides no realistic consensus on what makes a requirement serve neither goal well.

The joint training system is quickly losing its focus. The integrity of the system diminishes as commands move from one phase to the next. The challenge is conducting effective joint training for forces who also must participate in engagement activities which have little to do with training joint warfighting requirements.

A joint training study by GAO in 1995 offered evidence of shortcomings in this phase:

CINC officials said that they seldom test whether prior problems have been corrected in their exercises because (1) the Joint Staff has not required them to do so and (2) they had insufficient time to analyze past problems before planning future exercises. One CINC training official stated that joint exercises consist merely of accomplishing events rather than training and that problems identified during prior exercises may be "lessons recorded" but not necessarily "lessons learned." The views of this official reflect a systemic problem in planning joint exercises that surfaced in a 1990 joint exercise.

the CJCS exercise program is designed to provide a way to execute the joint requirements-based training cycle

AV-8Bs at Joint Readiness Training Center.



USS Tortuga off Curaçao during exercise.



U.S. Navy (Martin Maddock)

55th Signal Company (Aron Robert Kughen)

The lessons learned report noted that players generally had no awareness of joint universal lessons learned or remedial action projects from previous exercises. The apparent absence of continuity or long-term perspective on the part of exercise planners and players tends to cause needless repetition and a lack of focus.

Evaluation of the execution phase, which includes training proficiency evaluations and joint after action reviews, is suspect since training audiences are often based on the forces most available to take part rather than those most in need of the training. These complications impact on the final phase of the joint training system. If finished products from the execution phase are inputs for the assessment, and finished

products from the execution phase are basically flawed, the assessments phase is doomed to failure. CINC evaluations of joint training and exercise events tend to be both subjective and do not critically assess force readiness for joint operations. Thus the joint training system has become a self-sustaining and ineffective process that does not resemble its conceptual origins. And it does not adequately address joint experiments and other joint activities such as the all-service combat identification evaluation team, joint warrior interoperability demonstration, and advanced concept technology demonstration.

Doomed to Failure

Most joint and combined exercises and engagement activities are locked into schedules

with foreign nations through government-to-government agreements concluded years in advance. Like multinational operations, these activities require exhaustive coordination with all participants, often resulting in training objectives being diluted in order to reach consensus or host-nation agreement. The joint training study conducted by GAO suggests the problem is pervasive. In that report, the Directorate for Operational Plans and Interoperability (J-7), Joint Staff, and CINC representatives offered two reasons for conducting so little joint training. First, the objectives of gaining access to seaports and airstrips, maintaining regional presence, and fostering rela-

training becomes more a demonstration of goodwill than a useful test of joint and coalition forces

tions with foreign militaries have taken precedence over training forces for joint operations. Second, since allied and friendly forces have varying levels of operational ability, the complexity of tasks included in exercises with them must frequently be matched to the limited capabilities of the foreign forces. In some regions, foreign militaries are simply not prepared to participate in larger joint exercises. Training becomes more a demonstration of goodwill than a useful test of joint and coalition forces.

Another issue is that many JTF staff training exercises are more single service than joint. The initial joint manning document for a staff training exercise in fiscal year 2000, for example, featured the following participant percentages: Army, 52; Navy, 5; Marine Corps, 3; Air Force, 27; and special operations forces, 13. This imbalance violates the principles of joint doctrine.

Another JTS issue is manning exercise staffs. Far too many participants are not actual JTF battlestaff personnel. As the GAO joint training study concluded

The lack of adequately trained joint task force staffs has hindered the effectiveness of exercises and operations since 1987. For example, joint universal lessons learned reports from Reforger exercises in 1987, 1988, and 1992, Operations Desert Shield and Desert Storm in 1990–91, and Restore Hope in Somalia in 1992–93 noted that joint task force staffs were not adequately trained prior to deployment to the theaters of operation, thereby hindering operational effectiveness.

The CJTF–Noble Anvil command brief (“A View from the Top”) in 1999 following operations in Kosovo noted that the joint task force was not

organized around a pre-designated theater staff and that implications for the future include training, manning, infrastructure, investment requirements, and exercise regimes.

To meet all competing manpower requirements, Reservists often augment exercise staffs. The point of staff training should be to train those who will be on the JTF staffs in real-world contingencies.

Fixing the System

With the joint training information management system (JTIMS), the electronic and on-line version of the joint training system, it is expected to provide one-stop-shopping for scheduling and deconflicting resources for joint training events. JTIMS will help alleviate some deficiencies, but it will fail to cure the fundamental training versus engagement priority issue.

The first issue that should be resolved is eliminating unnecessary exercises that drive up the operating tempo. The joint training system should provide a tool for tracking accomplished tasks regardless of where they are conducted. It should also be flexible enough to allow forces not to participate in scheduled joint training events based on their proficiency. Training a force to accomplish tasks already demonstrated wastes resources.

Proactive leadership is also needed. The problems hindering past joint training are likely to recur without greater Joint Staff program oversight. Fortunately there are hopeful signs. Efforts by many organizations since 1994 have improved both thinking and writing on joint training. Joint training publications are constantly being revised to capture the latest conceptual and technological advances. The Joint Staff issued a revised comprehensive glossary in 1999 to standardize joint training terms and definitions in joint training publications. Recently, the Joint Staff approved funds for a JTS specialist at each combatant command to ease the burden of administrative training responsibilities and provide continuity in long-term JTS expertise. Lastly, the system is becoming more user-friendly through ongoing development, testing, distribution, and implementation of the joint training information management system.

Consideration must also be given to relations among joint training events, experiments, engagement activities, and other requirements that do not fall in a previous category. There needs to reach a consensus on dealing with diverse requirements before the joint training system can be made flexible enough to include these related yet different entities. To help bring joint training and engagement into a common system, the next step is including engagement

F-16s on flightline at Aviano air base.



U.S. Air Force (Dave Ahlswede)


activities in the universal joint task list. The Joint Staff should analyze CINC engagement strategies and plans and develop universal engagement tasks. Then the Chairman should require commanders to establish priorities by event and task—deciding if exercises are primarily training or engagement activities and recognizing that unrealized training must be accomplished another way. The Joint Staff should develop an engagement activity scheduling and tracking system similar (and complementary) to the joint training system, or adjust the system to identify joint and combined exercise primary focus. Service budgeteers should then allocate current joint exercise funding into joint training and theater engagement accounts based on identified training and engagement requirements.

Perhaps most importantly, the services must become more deeply educated about the joint training system. Understanding its basics is just the first step. Leaders and trainers on all levels must grasp the synergy of a holistic combatant command joint and combined exercise environment. The problem is balancing joint warfighting and engagement requirements with component training, operational, and maintenance funding constraints.

A generation of joint warfighters is required who realize that the answer to joint training problems is not necessarily new systems of managing training and resources but more innovative methods for employing existing systems. This approach suggests that the military must become a learning organization able to adapt to changing environments. The catalyst for that transformation must be education.

Great effort was invested in developing and refining JTS concepts. The problem with the system is that reality does not reflect those concepts. The joint force cannot afford to continue to ignore problems. Today's undisciplined execution is a confusing and inefficient mix of actual joint training and other training-related and engagement-focused events. The indirect result is a growing, unhealthy rift in relations among the Joint Staff, services, and combatant commands. Attempting to treat only the symptoms will not cure the disease.

JFQ



USS Lake Erie
conducting Aegis
intercept test.

Missile Defense Attack Operations

U.S. Navy

By NATHAN K. WATANABE and SHANNON M. HUFFMAN

Joint doctrine maintains that theater missile defense (TMD) is a joint mission, but in fact it is just another common mission pursued separately by the services. Joint Pub 3-01.5, *Doctrine for Joint Theater Missile Defense*, often invokes the term *integrate*. Although the services are making progress in vertical integration on all levels, little has been done to harmonize efforts horizontally. Service agencies responsible for TMD illustrate this divergence. Some

numbered air forces have cells dedicated to attack, passive defense, and command, control, communications, computers, and intelligence operations, while the Navy contributes to attack operations with its air assets and could conduct active defense with Aegis systems. The Army operational lead for TMD is 32^d Army Air and Missile Defense Command (AAMDC), which executes elements: attack operations, active defense, passive defense, and command, control, communications, computers, and intelligence. In sum the services have formidable capabilities, but they usually work in spite of each other rather than

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Patriot missile site
in Korea.



8th Communications Squadron (Kevin P. Milliken)

with each other. There is a better alternative. Recent efforts to improve attack operations in Korea reveal the problems and potential for enhancing theater missile defense operations.

Forward Missile Fight

In support of the offensive counterair mission, attack operations prevent launch of theater missiles by destroying every element of the system, including launch platforms; reconnaissance, surveillance, and target acquisition platforms; command and control nodes; and missile stocks and infrastructure. Attack operations strive to deny or disrupt enemy assets. As the Army proponent, 32^d AAMDC responds to the Army component or joint force land component commander (JFLCC) and thus is constrained to this architecture in conducting attack operations. Restrictions require any target identified for attack by the AAMDC intelligence and attack operations cell to be nominated to the Army component deep operations coordination cell for prosecution. Targets can be categorized into two broad groups based on their relative mobility and targetability by assets assigned by the air tasking order, as either preplanned or immediate targets.

Preplanned targets are engaged by the assets requested through the normal air tasking order

development cycle. They are submitted to the deep operations coordination section and compete with other Army target nominations for air/surface delivered attack resources. Preplanned targets can involve lengthy dwell times, theater missile production and storage facilities, garisons, stationary forward operating bases or forward support elements, communications nodes, and countermobility targets (such as bridges and chokepoints). If approved and given a high enough priority by deep operations coordination cell fire planners, TMD targets are included in the Army candidate target list. This list is passed to the Army component battlefield coordination detachment (BCD) at the joint air operations center (JAOC) for coordination and deconfliction. The detachment submits lists to the target development section and master air attack planning team within the combat plans division of JAOC, where nominations are combined with those from other components. Requests are prioritized to eventually produce the joint integrated prioritized target list, which is the basis for ultimately assigning aircraft and weapons.

Immediate targets are nominated for use inside the normal air tasking order planning cycle and must follow a similar request and approval process. Examples are mobile or perishable targets such as launch sites. When identified these targets are forwarded to the Army fire support element of the deep operations coordination cell, which will

prioritize and process requests for immediate attack. If a request is approved according to valid guidance, the target is forwarded to BCD for airspace clearance and the attack unit for execution if possible within service capabilities. If Army assets cannot conduct the attack, the request goes to BCD, which passes it to the execution cell in JAOC for tasking to available air assets.

Time sensitive targets are a subset of immediate targets. They are processed using the same procedures and architecture as immediate requests, though they receive the highest priority. A time sensitive target requires immediate response because it poses a clear and present danger to friendly forces or is a highly lucrative but fleeting target of opportunity. This definition is broad and vague. Therefore it falls to the theater commander or joint task force commander to refine and define attack guidance. Further definition usually addresses acceptable risks in terms of loss of attack assets, duplication of attack, fratricide, and collateral damage. Regardless of the criteria, time sensitive targets must be clearly designated. Enemy assets that CINCs or JFCs may pick as time sensitive targets usually include transporter erector launchers and launch sites. The list is best kept short to lend emphasis and facilitate the quickest attack.

Systemic Limitations

There are drawbacks in doctrine. Army forces usually have little regard for theater ballistic missile threats. Because of their inaccuracy and small throw-weight, such missiles are regarded as militarily insignificant or as weapons of terror that cannot hamper ground operations. In addition,

theater ballistic missiles may pose a strategic threat to coalition unity or political will

Its concerns are massing fires and effects to shape sound operations. Though theater ballistic missiles may pose a strategic threat to coalition unity or political will, they have little to no direct effect on the battlefield; thus the Army component usually assigns a low targeting priority to attacking them, resulting in a lack of collection asset prioritization and limited collection and attack asset availability, further hindering TMD efforts.

Another obstacle to successful attack operations is the site of the ballistic missile target set. Launch, hide, and transfer locales, forward operating bases, and garrison, storage, and production facilities are usually found outside the

the primary focus of the Army component deep operations coordination cell is the ensuing 72–96 hours of the battle.

JFLCC/Army component command area of responsibility, highlighting another barrier to AAMDC efforts—component jurisdiction. By requesting an attack against target sets located outside AORs, JFLCCs must request and coordinate through other functional components. This requirement slows the attack and must compete for resourcing against another set of priorities—usually those of JFACCs.

Attack operations cross more than just the physical boundaries of components; they transcend operational doctrines that lead to procedural disparities. Variations in selection standards, targeting criteria, and even sensitive target definitions often result in a fracturing of attack operations.

In addition, this system is unwieldy. For example, an immediate air support request from AAMDC must be forwarded to the fire support element of the deep operations coordination cell. Once the request is approved, the target nomination is sent to BCD for clearance. Once cleared, the target passes to the execution cell in JAOC, where assets are identified, coordination is effected, and final approval is given before the tasking is passed to available aircraft via airborne command and control. By bypassing the deep operations coordination cell and collocating AAMDC with BCD and JAOC, a 35-minute process can be shortened to ten minutes by eliminating middlemen and concurrently seeking airspace clearance and JAOC coordination and approval.

Duplication of effort in developing targets and assigning attack assets is another drawback to the Army method of TMD targeting. This process is simply not a joint, integrated effort. Each component, notably the Army through AAMDC and the Air Force through a numbered air force TMD cell, is pursuing the same targets, collecting and analyzing information and data to identify targets independently—resulting in duplicated efforts and wasted resources. Additionally, each service has its own system for requesting fire support and air missions, leading to multiple attacks. This is less of a problem for preplanned operations since the joint target development/air tasking order development cycle largely prevents duplication. But the challenge is more pronounced when pursuing immediate targets when time is a factor and redundancy of attack is difficult to prevent.

Rethinking the Process

Used for attack operations, standard Army processes are unwieldy and inefficient. A more streamlined method is needed that places TMD responsibility under a single executive agent. Such a method exists and is being refined in Korea. Commander in chief, United Nations Command and Combined Forces Command, has designated a single authority for the conduct of

TMD operations in the Korean theater of operations—in this case, the Commander, Air Component Command, and Commanding General, Seventh Air Force. In a break with Army tradition, the Commanding General, Eighth U.S. Army, gives up operational control of 32^d AAMDC when Seventh Air Force is in theater, effectively establishing a single focused authority over theater missile defense on the peninsula

The theater missile defense operations center functions as a staff under the combined forces air component command and is responsible for planning, coordinating, and integrating theater-level missile operations. The center is split-based with Seventh Air Force and Republic of Korea air force

preplanned missions include both interdiction and air alert interdiction missions scheduled on integrated tasking orders

elements in theater and 32^d AAMDC in the United States. During either an exercise or in wartime, 32^d AAMDC collocates in the hardened theater air control center and integrates operations

with the Seventh Air Force cell and Korean air force personnel at Osan air base. In addition, it dispatches liaison teams to the deep operations coordination cell of the ground component command, the Eighth U.S. Army rear command post, Combined Unconventional Warfare Task Force Headquarters, and other commands.

Joint attack operations is an ongoing venture, beginning with intelligence preparation of the battlespace conducted jointly between AAMDC and the Seventh Air Force intelligence cell. Information sharing aids the process. Attack strategy is jointly drafted and approved. Preplanned and immediate attack mission requests are developed. AAMDC brings experience as well as considerable technical capabilities with its intelligence tools such as the generic area limitation environment and all source analysis systems. It also provides a measure of continuity vis-à-vis the one-year tour lengths of the personnel assigned in Korea. The in-country Seventh Air Force analysts bring enormous Korea-specific knowledge and access to quick-response Air Force collection systems. With these resources, joint intelligence identifies the enemy theater missile order of battle, operational patterns and techniques, capabilities and weaknesses, likely operating areas, and other exploitable information.

Theater missile targets were developed and nominated solely by the theater missile defense operations center—no other agencies in-theater develop them—establishing unity of command and freeing the other components from this task.

Where possible, targets are serviced by commander, air component command (CACC), apportioned resources which both the ground and maritime components appreciate.

Preplanned and immediate missions in Korea are requested in the same manner as doctrinal targeting, but with a twist. Most notably, immediate missions are requested directly through the air operations center execution cell rather than the Army deep operations coordination cell, resulting in a dramatic decrease in response time. Fewer agencies and approvals are required so the target is processed and attacked more expeditiously.

Preplanned missions are processed directly through the air operations center for inclusion in integrated tasking orders. But as a special CACC staff element, the center has no direct targeting responsibility to the ground component commander. Hence TMD attack nominations are submitted to air component command planners in the combat plans squadron, which bypasses the approval of the Army component command and BCD.

Preplanned missions include both interdiction and air alert interdiction missions scheduled on integrated tasking orders. The former are scheduled to attack fixed facilities and infrastructure supporting both current operations and long-term capabilities while countermobility missions are planned to isolate theater missile operating areas through aerial mining and attack against key sites and their lines of communication. The latter provide assets to be retasked to strike lucrative fleeting targets in missions similar in function to combat air patrols. Procedures for air alert interdiction vary by theater, but missions are generally given a primary target in an associated killbox and a time on target. These missions will usually have a vulnerability or flex time prior to their station time during which they can be diverted to attack other (short-dwell) higher-priority targets in their designated killboxes or others nearby.

Immediate attack mission requests in Korea are also acted on more efficiently. When a time sensitive or immediate target is identified and verified for attack, the request is coordinated with all parties in conjunction with the director of combat operations who has overall responsibility for the mission. The air interdiction officer tracks air mission availability and weaponry and recommends missions for possible divert. After command and control are arranged, the attack order is passed to airborne controllers to relay to the attack aircraft. Special operations and airspace representatives provide target systems analysis and deconfliction. A targeting cell checks targets against priorities and collateral effects and if needed confirms aircraft scheduling and arranges for reattack of original targets by diverted aircraft. The intelligence duty officer and collections



Intelligence analysts from 32^d Army Air and Missile Defense Command.

1st Combat Camera Squadron (Jim Vanhegy)

arrange for both real-time confirmation of target status and battle damage assessment while BCD deconflicts airspace and requests surface-to-surface fires when needed.

Future Fixes

Though theater organization and structure definitely improve attack operations, they are not the total solution to theater missile defense or attack operation problems.

Prioritization. If the objective is having attack operations affect the threat prior to launch, this target category must be assigned a sufficiently high priority to provide the attack as well as the intelligence, surveillance, and reconnaissance resources to enable effective identification and robust effort to destroy, disrupt, or delay launch.

Physical dislocation. Perhaps the greatest drawback of the current organization is physical separation. The Seventh Air Force cell conducts its mission in country daily while 32^d AAMDC is located in the United States. Both pursue TMD through intelligence preparation of the battlefield

and other pre-hostility efforts. And although there is cooperation and as much information sharing as possible with available automated systems, it is a feeble substitute for face-to-face planning and coordination. The best solution is collocating the units. Barring this option, the commands must train together in exercises such as Ulchi Focus-Lens and Foal Eagle to hone interoperability and maintain and improve attack operations planning.

Combined operations. A key feature of operations is inclusion of Korean national forces. Foreign disclosure restrictions limit the ability to coordinate U.S.-Korean theater missile defense. The language barrier, which affects everything from briefing deadlines to the prosecution of time sensitive targets, is another obstacle. Protocol and manning, which affect the numbers and ranks of assigned personnel, also create artificial barriers to effective combined operations.

Information and attack processing. Attack operations are hindered by lack of automation. Capabilities such as those provided by both the advanced field artillery tactical data system and the theater battle management core system assist



1st Combat Camera Squadron (Jerry Morrison)

Patriot missile system, Roving Sands '99.

displayed with unit information. This requires an ability to receive, parse, and display the active air tasking order, but allows attack operations personnel to assess availability of assets for diversion or rerole of air assets or attack by the Army tactical missile system.

In general the capabilities required to conduct attack operations should enable receiving and analyzing targeting intelligence, submitting target nominations to the deep operations coordination cell or air operations center, tracking the status of preplanned and immediate target nominations, receiving targeting guidance and priorities, and maintaining situational awareness for both air and surface fire support systems. Current systems must be improved to both expand capabilities and make them more user friendly.

Attack operations, perhaps more than other aspects of theater missile defense, is a genuine joint endeavor that requires the integration of component efforts to defeat threats prior to launch. Collaboration or coordination is not sufficient to provide the requisite focus of effort. Ideally, the expertise resident in the Army Air and Missile Defense Command is best coupled with the rapid collection and attack capabilities of Air Force theater missile defense cells. Although this synergy of effort is lacking in most theaters, the joint and combined theater missile operations cell under the Combined Forces Air Component Command in Korea is addressing key issues. **JFQ**

with processing automated targets and both immediate and preplanned mission requests. More and better capabilities are needed to collate and display the enemy operational picture of theater missiles, enhance situational awareness of friendly attack asset availability, and further streamline attack operations requests and command and control processes. Targetable intelligence must be quickly fed from intelligence and collection systems to the targeting system. A capability is needed to pass targeting information to the fire request processing system.

Moreover, situational awareness can be improved to enhance attack operations and should be maintained on both air and surface fire support systems; that is, locations of field artillery units and attack aircraft (close air support, interdiction, strategic attack) should be graphically

SPACE

and the Theater Commander's War

By THOMAS A. DOYNE

From Desert Storm to Allied Force, the role of spacepower in the American way of war has expanded. Other nations also acknowledge the merits of spacepower. According to recent figures, 32 nations as well as many commercial firms and private consortia have objects in orbit. India is reportedly developing improved imagery satellites—from 5m to 1m resolution—based on a lesson learned from skirmishes with Pakistan over Kashmir. Recently one company launched *Ikonos*, a commercial satellite with 1m resolution, whose images are available on the Internet.

Spacepower is no longer a preserve of superpowers. Victory will belong to those who best integrate and employ its capabilities on the operational level. But a review of current doctrine and organization reveals areas in need of improvement. Specifically, spacepower should be included in the basic plan portion of the operation plans and execution paragraph of orders used in crisis action planning. Organizationally, JFCs must have a director of space and information operation forces, similar to a director of mobility forces under the joint force air component commander (JFACC) to integrate strategic and inter-theater airlift, in order to provide unity of effort for spacepower. Such recommendations will enable JFCs to fully exploit spacepower in combined arms teams.

Doctrinal Waterloo

The unified command plan (UCP) has defined the responsibilities of U.S. Space Command (SPACECOM) since 1985. Commander in Chief, Space Command (CINCSPACE), serves as the focal point for military space operations, including communications. He is also tasked to “provide military representation to U.S. national, commercial, and international agencies for matters related to military space operations.” Force enhancement—intelligence, surveillance, and reconnaissance, weather, missile warning, navigation, and communications, the most mature SPACECOM mission areas—notably overlaps information operations. As a result, the unified command plan assigns information operations missions related to computer network attack and defense to the command.

Despite the expansion of its authority, SPACECOM links to the regional command are still undeveloped. Joint Pub 0-2, *Unified Action Armed Forces*, and Joint Pub 3-0, *Doctrine for Joint Operations*, state that JFCs may establish functional components within JTFs to provide centralized direction and control of certain functions and operations. Joint Pub 3-0 also states that a functional component is appropriate when forces from two or more services operate in the same dimension or medium. But these documents stop short of mentioning a space component or task force.

On theater command and control of spacepower, the draft of Joint Pub 3-14, *Joint Space Operations*, stipulates: “A supported CINC/JFC/JTF

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U.S. Air Force (Vince Parker)

Monitoring operations over Iraq.

the Air Force holds that a single commander should control both air and space forces for the theater command

commander should designate a coordinating authority for space operations under the JFC (for example the JFACC).” However, it contains no details and only focuses on Annex N (Space Operations) and supporting space plans. In addition, it does not relate spacepower to campaign objectives or enemy and friendly centers of gravity.

Both Joint Pub 5-00.2, *Joint Task Force Planning Guidance and Procedures*, and CJCSM 3122.03, *Joint Operations Planning and Execution Systems, Volume 2*, treat spacepower within the context of joint force. In particular, the former incorporates space in planning responsibilities of the J-2 (intelligence), J-3 (operations), J-5 (planning), and J-6 (communications) staff elements. But emphasis on spacepower diminishes as CJCSM 3122.03 and AFSC Pub 1 apply joint doctrine to campaign design and operational plan/order development. For example, the former publication provides the format for Annex N, which is attached to operation plans but provides little guidance on incorporating spacepower into the basic plan. While Joint Pub 5.00-2 tasks intelligence staffs with preparing estimates of enemy space capabilities, CJCSM 3122.02 does not mention space in discussing areas of interest. CJCSM 3122.02 and AFSC Pub 1 highlight phasing campaigns and orienting them on attacking centers

of gravity while protecting one’s own. But they do not provide planners with structural or analytical frameworks for incorporating spacepower into campaigns.

Pertinent doctrine is found in Air Force doctrine documents (AFDDs) 1, *Air Force Basic Doctrine*, 2, *Organization and Employment of Aerospacepower*, and AFDD 2-2, *Space Operations*. The first logically links air and space operations in spite of differences and asserts that airpower and spacepower “share the advantage of three-dimensional maneuver” and therefore are governed by the same tenets. Thus centralized control and decentralized execution apply to spacepower just as they do to airpower. “It is a basic principle of air and space doctrine that command and control of air and space forces be centralized under one officer—an airman.” In this scenario an airman is one who appreciates and knows how to employ the full scope of aerospace capabilities. However, AFDD 1 does recognize that space forces differ from most air forces because they are global. Thus it acknowledges that SPACECOM has operational control over them, just as U.S. Transportation Command (TRANSCOM) retains control over strategic airlift.

The global nature of space presents a doctrinal dilemma. On one hand, the Air Force holds that a single commander should control both air and space forces for the theater command; but on the other, it acknowledges that SPACECOM, and not an air commander in theater, has operational control of space forces. This dilemma exists on all levels of Air Force doctrine.

AFDD 1 recognizes that the nature of space forces differentiates them from air forces and prevents transferring operational control to JFCs. However, the February 2000 edition of AFDD 2 states that “the responsibility of integrating space forces into the joint effort is normally delegated to the JFACC.” When authorized by CINCSpace, JFACC requests and coordinates employment of Air Force space assets through the commander of the Air Force component of SPACECOM, who provides space support through the aerospace operations center, which develops supporting plans for JFACC and establishes a daily space tasking order to control Air Force space assets.

AFFD 2 provides guidance for writing the Joint Aerospace Operation Plan, which stresses identifying enemy centers of gravity and vulnerabilities. It recommends that information on forces not assigned, such as SPACECOM elements, be entered in the friendly forces paragraph. It does specify that the paragraph on aerospace operations “should consider land, sea, air, space, special operations, and multinational” capabilities by the phase of a campaign. The pub does not address what happens when JFACC is not the

Who's Who in Orbit (2001)

Launcher/operator	Payloads
Arab Satellite Communications Organization	7
Argentina	5
Asia Satellite Telecom Company (Hong Kong)	3
Australia	7
Brazil	10
Canada	17
Chile	1
China	33
China/Brazil	1
Czech Republic	4
Denmark	1
Egypt	2
European Space Agency	29
European Telecom Satellite Organization	19
France	31
France/Germany	2
Germany	18
Globalstar (San Jose, California)	52
India	21
Indonesia	9
International Maritime Organization	9
International Space Station	1
International Telecommunications Satellite Organization	56
Iridium Satellite LLC (Tempe, Arizona)	85
Israel	3
Italy	12
Japan	67
Luxembourg	11
Malaysia	3
Mexico	6
North Atlantic Treaty Organization	8
Norway	3
Orbcomm LLC (Dulles, Virginia)	35
Philippines	2
Portugal	1
Russia	1,329
Saudi Arabia	2
Saudi Arabia/France	1
Sea Launch Company (Long Beach, California)	1
Singapore/Taiwan	1
South Africa	1
South Korea	7
Spain	6
Sweden	10
Taiwan	1
Thailand	4
Turkey	4
United Arab Emirates	1
United Kingdom	21
United States	766
Total	2,729

Source: Air Force Magazine (Space Almanac).

Athena II lifting satellite into space.





DOD (R.D. Ware)

The Chairman briefing reporters on Allied Force.

air expeditionary force commander, nor does it consider the fact that the Air Force space commander does not exercise operational control over Army, Navy, national, commercial, or international satellite systems and cannot task them.

AFDD 2-2, *Space Operations*, articulates operational doctrine. Like its parent documents, it acknowledges that SPACECOM has operational control of space forces. However, it does touch on non-Air Force assets, stating that “flexibility and innovation on the part of the commander” are required to maximize effectiveness.

Spacepower is provided by many agencies, making synchronized support for warfighters difficult.

Today command and control of space forces is provided to regional CINCs or designated JFCs by support teams who deploy to their respective areas within JTFs. Coordinating teams can be difficult. SPACECOM liaison officers serve with the national space community, the Defense Information Systems Agency (DISA), and unified commands. It develops and issues mission type orders to components to coordinate and synchronize support for JTFs. It also provides coordination copies of orders to the national space community and DISA to help synchronize operations.

the unified command plan entrusts responsibility to CINCSPACE as the single focal point of military space operations

Doctrinal and Organizational Solutions

Current doctrine should be revised. Spacepower contributions to the overall campaign plan must be stated in the basic plan section of the operation plan and not simply relegated to Annex N

and supporting plans. Spacepower must be integrated into operation plans and orders in the three following paragraphs: (1) *situation*—explaining that enemy and friendly centers of gravity analysis must include spacepower, (2) *execution*—indicating how spacepower contributes to accomplishing each phase of an operation, and (3) *command and control*—detailing the roles of military, civilian, and commercial satellite communications in command and control. Revising the basic guidance in both plans and orders will give space operations the proper emphasis.

Since doctrine is oriented on attacking enemy centers of gravity while guarding one’s own, planners need an analytical device to link spacepower to centers of gravity if spacepower is integrated into the operation plan and order paragraphs. Every CINCSPACE since the mid-1990s has championed the idea of spacepower as a center of gravity, yet many planners have difficulty in treating it as vital because space systems do not shoot bullets or drop bombs. Planners need a simple way of linking spacepower to centers of gravity. One solution is using a planning methodology known as center of gravity-critical capability-critical requirement-critical vulnerability analysis.¹

Three Models

Sound doctrine and planning need proper organization for successful campaign execution. Structural changes are required to complement the integration of spacepower into the 5-paragraph format of operation plans as well as various orders used for crisis action planning. Joint doctrine gives JFCs the flexibility to organize JTFs by service or function, component, or task force. The unified command plan entrusts responsibility to CINCSPACE as the single focal point of military space operations for regional CINCs. Future command and control of space forces must leverage SPACECOM responsibility to provide global centralized control.

Three possible models might be applied to the problem of command and control, beginning with the Air Force approach. Under this model the chain of command for space forces functions with JFACC as the single JTF focal point. The advantages are congruence with Air Force doctrine and unity of command, but there are disadvantages in implementation. The typical JFACC has no space experience and limited training. Joint aerospace operations centers (JAOCs) are designed to plan and execute the air campaign via the air tasking order. Consequently, the Air Force has been staffing the center with space experts and thus has no need to man and equip the supported staff of a unified command or another

Processing information
on *USS Philippine Sea*.



U.S. Navy (Renzo Amantia)



66th Signal Company (Eric Hughes)

Tactical satellite dur-
ing Joint Guardian.

functional or service component operations center in the same way. Unfortunately, the demand for space experts outstrips the supply. Lastly, this model will require CINCSPACE to delegate UCP missions to a component (Fourteenth Air Force), which effectively places it over Army and Navy components. Fourteenth Air Force normally has operational control for only Air Force space systems such as the global positioning and defense support program. It is also responsible for much of the space surveillance mission and launch ranges at both Vandenberg Air Force Base and Cape Canaveral Air Station. While making JFACC the single operational focal point for spacepower will provide unity of command, using the Fourteenth Air Force as the central command center would place too heavy a workload on a single functional component.

Another option is forming a joint space operations component or joint space operations task force to provide unity of command to space forces within JTF by providing a single focal point for space support. This command and control architecture is congruent with joint doctrine and gives reachback to SPACECOM for centralized control for space systems. The main disadvantage of a space component/task force commander is operational control. The global nature of space systems prevents transferring control of assets to JTFs. Other questions about such an organization relate to physical residence of this task force in theater and support requirements. The answers will have an impact on JTF time phase deployment database flow and limited transportation resources.

A third option is establishing a director of space and information operations forces based on the command and control model of TRANSCOM, a functional command with a global mission that



Bomb damage assessment, Desert Fox.

supports unified commands. The command delegates operational control of strategic airlift to the Air Force air mobility command tanker airlifter control center (TACC) while intra-theater airlift comes under the operational control of the joint airborne communications center. Interface is provided by the director of mobility forces, normally a senior officer with both airlift and in-theater experience. The director is responsible for all inter- and intra-theater airlift issues and works for JFACC. Located in his division is the air mobility element, a forward-deployed element of TACC providing reachback for support and command and control. This arrangement can act as a model for theater-space command and control. It has the same advantages as the component commander model—unity of command, reachback to SPACECOM, and congruence with joint doctrine while resolving the operational control issue.

The director of space and information operations forces must be the senior professional in the field within theater, regardless of service. But the position is likely to be held by an Air Force officer since that service owns and operates the majority of space systems and has the largest space operations career field. This model would more effectively use space support teams and simplify reachback to SPACECOM. The director can be located in JAOC or a joint operations center (JOC), minimizing the impact on the data base. Locating the director within JAOC under JFACC parallels the mobility forces model and will conform to Air Force doctrine. Putting the position in JOC will simplify interfacing with JFCs and utilize joint

space support team and information operations cell workspaces. The location should be dictated by the situation.

As in the case of strategic lift resources, satellites traverse between theaters, but the cargo is information (hence the linkage between spacepower and information operation). Whereas airlifters create an air bridge between bases in the United States and JTFs, space operators establish a space bridge that carries information required for battlespace awareness and information superiority. The director will provide campaign planning and coordination to ensure responsive centralized control of space forces via CINCSPACE to bring decentralized execution of spacepower by JTFs.

Spacepower must be incorporated into campaign planning and conduct. Joint Pub 5-00.2, draft Joint Pub 3-14, CJCSM 3122.02, and AFSC Pub 1 must be updated to state that spacepower must be integrated into operation plans as well as situation, execution, and command and control paragraphs of orders used in crisis action planning. Spacepower must be part of JFC intelligence preparation of the battlespace. With tools such as the gravity-critical capability-critical requirement-critical vulnerability model, campaign planners must establish the relationship between spacepower and centers of gravity for combat effectiveness and then apply the operational art to spacepower by integrating it into every phase of a campaign. Joint and service doctrine should be updated to establish a director of space and information operation forces. Whether situated in a joint operations center or joint aerospace operations center, the director will provide unity of effort for the planning and execution of spacepower throughout the campaign. These doctrinal and organizational changes will enable the United States to achieve and maintain space superiority to exploit spacepower on the operational level. This is essential for the Armed Forces in attaining victory over space-savvy enemies. **JFQ**

NOTE

¹ Joe Strange, *Centers of Gravity and Critical Vulnerabilities: Building on the Clausewitzian Foundation So That We Can All Speak the Same Language*, 2^d Edition (Quantico, Va.: Marine Corps University, 1996), p. 3.

CH-53 landing on
USS Dwight D. Eisenhower.



U.S. Navy (Alisha M. Clay)

Joint Shipboard Helicopter Operations

By GEOFFREY C. LAMBERT *and* MARK M. HUBER

The use of both Army and Air Force helicopters from ships during contingency operations in Grenada, Panama, Somalia, and Haiti suggests that helicopters of all services should be capable of operating from naval vessels. But daunting incompatibilities exist between helicopters and ships from which they operate. Although the safe execution

of past operations speaks well of the skill of the squadrons and ships involved, failing to resolve incompatibilities belies a serious dysfunction: the inability to address lessons learned to improve joint operations.

Understanding joint shipboard helicopter operations enables planners to efficiently prepare for the future. Such operations are likely to be short fused, highly visible, and dynamic in terms of the type and scale of missions. Considering joint shipboard helicopter operations in support of Uphold Democracy in Haiti and Earnest Will in the Persian Gulf is illustrative.

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Army helicopters
on *USS Enterprise*,
Uphold Democracy.



U.S. Navy

Operational Necessity

The Navy facilitated the application of military power in Haiti by embarking Army aviation units aboard *USS America* and *USS Dwight D. Eisenhower*. The former embarked Joint Special Operations Task Force 188 with 2,200 personnel. Special operations aviation units flew MH-53s, MH-47s, UH-60s, and light observation helicopters from *USS America* for more than a month to support Uphold Democracy. Meanwhile, conventional Army helicopter units flew personnel from 10th Mountain Division ashore to Port-au-Prince from *USS Dwight D. Eisenhower*.

In Uphold Democracy, special operations and conventional aviation units were required to conduct operations on short notice. Issues of interoperability could only be raised in the time that it took for carriers to transit from the east coast of the United States to assigned stations off Haiti.

Even though many aviators had never flown from ships before embarking in the carriers, they were now tasked to conduct large-scale joint shipboard helicopter operations.

Not all joint shipboard helicopter operations are major efforts, nor are they always conducted from large carrier flight decks. Earnest Will is an example. Deploying Army special operations helicopters to the Persian Gulf in 1987 was not only a

much lesser effort but involved ships (such as frigates and destroyers) with much smaller aviation facilities. Though deployment lead time was longer than in Uphold Democracy, equipment compatibility and operational procedures issues had to be addressed after, not before, the arrival of helicopters aboard various ships. Earnest Will was a case of highly innovative teamwork by the Army and Navy. The payoff was evident when the helicopters caught *Iran Ajr* laying mines in international waters and attacked it.

In Earnest Will, though they were proficient in shipboard operations, neither the Navy nor Marine Corps could provide helicopters and crews for night, low-level countermine operations that might involve engaging small boats. While less proficient at shipboard operations, the Army had rotary-wing aircraft for such missions and crews trained to operate in a low-level environment with night vision devices. Thus Earnest Will established that joint solutions to new problems are often the answer and that interoperability is key to winning on the asymmetric battlefield.

Uphold Democracy and Earnest Will reveal that future contingency operations are unlikely to provide adequate time for preparation and that



U.S. Navy (Bradley P. O'Brien)

ship crews and aviation personnel must overcome equipment compatibility issues quickly to establish operational procedures for all participants.

Experience suggests that future JFCs may seize the opportunity to employ the same assets in other useful mission profiles to increase combat effectiveness. Thus joint planners must grasp

Army and Air Force helicopters often lack features that are considered essential by the Navy

the general characteristics of joint shipboard helicopter operations and the means to appreciate the realities inherent in the employment of Army and Air

Force helicopters from Navy ships. Otherwise, joint commanders may decide in crisis out of alignment with actual capability.

Flawed by Design

Not all commanders and planners have shipboard or helicopter aviation experience, which can lead to the notion that joint shipboard helicopter operations are nothing more than helicopters taking off from and landing on ships. But the challenges are many and can be broadly categorized as material and nonmaterial.

Material challenges are primarily related to aircraft and ordnance. Both Army and Air Force helicopters often lack features that facilitate shipboard operations and that are considered essential by the Navy and Marine Corps. Their absence does not necessarily preclude using helicopters at sea, but it will diminish the efficiency of ships conducting flight operations; more troubling, the absence of certain equipment may lead to major safety hazards. A rotor brake, for example, simply stops the movement of helicopter blades more quickly after engine shutdown than when they

are allowed to coast down. A Navy SH-60 helicopter with a rotor brake stops blades within 50–80 seconds but more quickly if necessary. Depending on wind conditions, an Army UH-60 without a brake may take up to five minutes to windmill to a stop. At low RPMs, helicopter rotor blades are prone to flap up and down, creating a hazard to equipment and personnel and, at the least, placing stress on rotor head components which can cause damage. The blades are also susceptible to flapping in turbulent winds commonly produced at flight quarters. As a result helicopters without rotor brakes pose a shipboard hazard that routinely endures for relatively long periods of time.

Rotor brakes are not the only concern. Ships cannot make turns during the disengagement or shut down of helicopter blades because turns exacerbate winds that make low-RPM blades vulnerable to flapping. Being unable to maneuver impacts on the ability to transit from one place to another in a timely fashion and can make ships more assailable to attack. Minutes and seconds count when maneuvering large ships, and the absence of a simple device such as a rotor brake could have profound consequences.

The lack of blade spread/fold systems on Army and Air Force helicopters is more onerous. Again, both Navy and Marine helicopters have automatic blade spread/fold systems, which in the case of folding systems quickly reduces the size of helicopters for storage on flight decks. Navy SH-60s can fold their blades in two minutes. Manually folding the blades of Army UH-60s can take up to 30 minutes. Because a ship must maneuver to keep winds within prescribed limits for blade fold operations, its capability to do so expeditiously or defensively is restricted. In addition, helicopters with blades spread on flight decks keep that location from being used to either launch or recover aircraft. In the case of fixed-wing operations from carriers, many Army helicopters could not be started or shut down within the time constraints presented by a normal carrier cycle for flight operations, making fixed- and rotary-wing operations mutually exclusive. This inability to conduct simultaneous fixed- and rotary-wing operations tremendously limits the flexibility of joint force commanders.

Ordnance also poses vexing challenges. It makes little sense to operate Army or Air Force helicopters from Navy vessels if they cannot launch with the proper complement of defensive and offensive ordnance. But not all Army and Air Force ordnance is certified for storage aboard ships. Even when ordnance is certified, handling

and loading may be problematic. The Army 2.75 inch rocket is a case in point. Naval procedures require mounting pre-loaded rocket pods on aircraft so pods do not have to be replenished with rockets manually. The Navy method keeps rockets safe from exposure to electromagnetic interference or accidental firing. But mounting pods on AH-6s invalidates boresight alignment and degrades their accuracy. Replacing pods poses a hard choice: conducting boresight alignment with each reload or accepting some degree of inaccuracy. In either case, uploading rocket pods is more time-consuming than inserting new rockets in a pod attached to an aircraft—even without boresight alignment. Barring changes in existing protocol for reloading rockets, JFCs must accept mission degradation. One obvious alternative solution is finding ways to certify Army procedures for manually reloading rockets.

Even though Army and Air Force helicopter hardware issues impact on their capabilities once embarked, avionics challenges are also worth noting. First, some aircraft do not have navigational

equipment to facilitate finding and recovering aboard ships, especially at night or in poor weather. Second, many Army and Air Force helicopter avionics and flight control systems are not de-

signed to operate within the intensive electromagnetic environment of ships. Often helicopters cannot land in close proximity to ship emitters because of interference or radar hazards. Consequently, JFCs find themselves on the horns of a dilemma. They may elect to secure some ship emitters, such as navigation or air defense radars that may be crucial to safety, to launch and recover helicopters. Alternately, they can accept limits while conducting flight operations, such as restricting the spots on deck that can be used, to keep radar systems operating. Either choice means compromise in the overall capability of the joint force.

People Problems

Nonmaterial challenges—aircrew as well as ship crew procedures—are significant as well. Familiarity with shipboard operations among Army and Air Force helicopter aircrew and support personnel varies considerably. Special operations aviation units are most accustomed to operations aboard vessels; some personnel are as familiar with the shipboard environment as naval pilots. On the other hand, conventional units with virtually no shipboard experience are periodically

tasked to train and operate from ships. Likewise, Navy experience with Army and Air Force aviation varies widely. Some ship crews are well versed with challenges of supporting non-naval helicopters; others may have no experience whatsoever.

Repositioning aircraft on deck appears to be a simple procedure conducted countless times daily on large aviation ships. In fact, it is rife with danger unless done by trained professionals. Aircraft weighing tens of thousands of pounds are routinely maneuvered within inches of the edge of decks and one another on a surface that is slick with rain and grease, not to mention pitching and rolling motion. Mishaps involving aircraft running over people or even slipping overboard offer common and vivid testimony to hazards of moving aircraft on deck. Flight deck personnel safely effect aircraft movement because they assiduously follow procedures. Introducing airframes that were not designed for flight decks requires careful management of elevated risks.

The AH-6 is a prime example. Navy and Marine aircraft are moved on large decks by tow bars coupled to tractors. Tow points on AH-6s were designed for winch and cable systems, not tow bars and tractors. Consequently, the only way to move aircraft on ships requires six people to push it, a method that presents many more hazards afloat than ashore. Furthermore, Navy flight deck personnel are not trained to perform the procedure. Thus they must rely on Army squadron members to move aircraft. This cumbersome situation could disrupt the flow of flight operations, especially in cases of unexpected aircraft movements.

Lack of familiarity with Army and Air Force helicopters presents added challenges. Flight deck personnel are well acquainted with associated hazards and fire-fighting and rescue procedures for naval aircraft operating from ships. The same can't be said of Army and Air Force helicopters. AH-64s, for instance, create particular hazards for flight deck personnel who might be required to extract incapacitated pilots from cockpits. Cockpit windows can be jettisoned by explosive charges to expedite pilot egress. Without knowledge of this feature and procedures for gaining access to cockpits, Navy flight deck personnel could be injured trying to remove pilots from aircraft that are on fire or have crashed on deck.

Army and Air Force pilots with little experience of embarked operations have much to learn in order to operate from ships and all the more so when functioning with Navy or Marine aircraft. When conducting cyclic flight operations, aircraft carriers routinely launch and recover up to forty aircraft at a time, making airspace deconfliction critical. Army and Air Force pilots must quickly be familiarized with launch and recovery procedures to avoid interfering with flight operations.

Navy flight deck personnel must rely on Army squadron members to move aircraft



UH-60A landing on board *USS Peleliu*.

U.S. Navy (Erin A. Zocco)



Briefing on procedures for Army helicopters.

U.S. Navy (Erin A. Zocco)

Moreover, shipboard conditions do not always favor launch or recovery procedures used by Army pilots. When flight deck spots are limited, pilots accustomed to launching many aircraft simultaneously may have to wait to cycle aircraft on the same spots for launch over a long period before rendezvousing and advancing to mission objectives. The inability to launch simultaneously can significantly reduce the radius of action, a critical consideration for joint planners.

Finally, simply bringing Navy and Army or Air Force units together can strain planning procedures and execution. Typically, ship companies are unfamiliar with the embarking Army and Air Force unit organization and structure and vice versa. Confusion results as each organization endeavors to learn the other's functional counterparts. Until these relationships are understood, coordination suffers, diminishing joint planning effectiveness.

Changing Course

Recognizing that lessons from joint shipboard helicopter operations did not lead to changes in tactics, techniques, and procedures, the Office of the Secretary of Defense established a test and evaluation program in 1998. Designated the joint shipboard helicopter integration process (JSHIP) and located at Naval Air Station Patuxent River, it is innovative in accomplishing its mission and ultimately in providing more options to commanders.

Some of the most ambitious program tests involve ship-helicopter combinations most likely to be used in joint operations. Compatibility issues are identified and tests are performed. After data is evaluated, legacy products and recommended changes to improve future operations result.

There have been positive developments: improved ordnance handling procedures; changes to simultaneously launching multiple helicopters from large amphibious ships; training packages to prepare aviation units to embark more easily; and electromagnetic vulnerability software designed to represent transmitter stand-off distances. Ultimately this process will result in a revision of

1st Combat Camera (Sean M. Worrell)

HH-60 during Desert Rescue VII.

Joint Pub 3-04.1, *Joint Tactics, Techniques, and Procedures for Shipboard Helicopter Operations*.

Though sea tests are the most visible manifestation of ongoing efforts, work in other areas also has promise. The program recognizes that crew training is enhanced by flight simulators that more accurately replicate the shipboard environment. Toward that end, data has been collected to develop simulation software that not only reproduces turbulent airflow encountered around ship structures but replicates pitch and roll. The result will be flight simulations to prepare helicopter crews to operate in a joint shipboard environment.

Reasonable Expectations

It is unreasonable to expect Army and Air Force helicopters to operate with the same ease on ships as their Navy and Marine Corps counterparts. Even with unlimited resources and time, the current program could not accomplish that result. In any case, the cost would be enormous. And although joint shipboard helicopter operations have become more commonplace, they are still too infrequent to justify higher spending. The cost of retrofitting even a fraction of existing Army and Air Force helicopter fleets with rotor brakes and automatic blade fold and spread systems is prohibitive, much like the cost of certifying Army ordnance for shipboard storage.

Realistically, joint planners must make operational compromises in dispatching Army and Air Force helicopters to fly off ships. Nevertheless, improvements should be made. With a five-year charter and total budget of \$25 million, the current program is on track to provide JFCs with greater advancements than the resources devoted to it.

But can joint shipboard helicopter operations be enhanced if deliberate integration efforts no longer exists? Sadly, the answer is no. At the least, as the services acquire new classes of ships, aircraft models, and ordnance, the interoperability issues of today will appear. Unless Army and Air Force rotary-wing aircraft are designed with shipboard operations in mind—an expensive and unrealistic proposition—the same challenges will arise. Joint shipboard helicopter operations are dynamic in terms of mission type and scale, characteristics that are likely to endure. A conclusion that one must reach, given the dynamic nature of such operations, is that an enduring organization is needed to address emerging challenges. Nonetheless, if this process in its present form ceases to exist altogether at the end of its charter, some organization may become the main repository of the program legacy products. Otherwise, tools that deliver enormous operational advantages to joint warfighters will be lost.

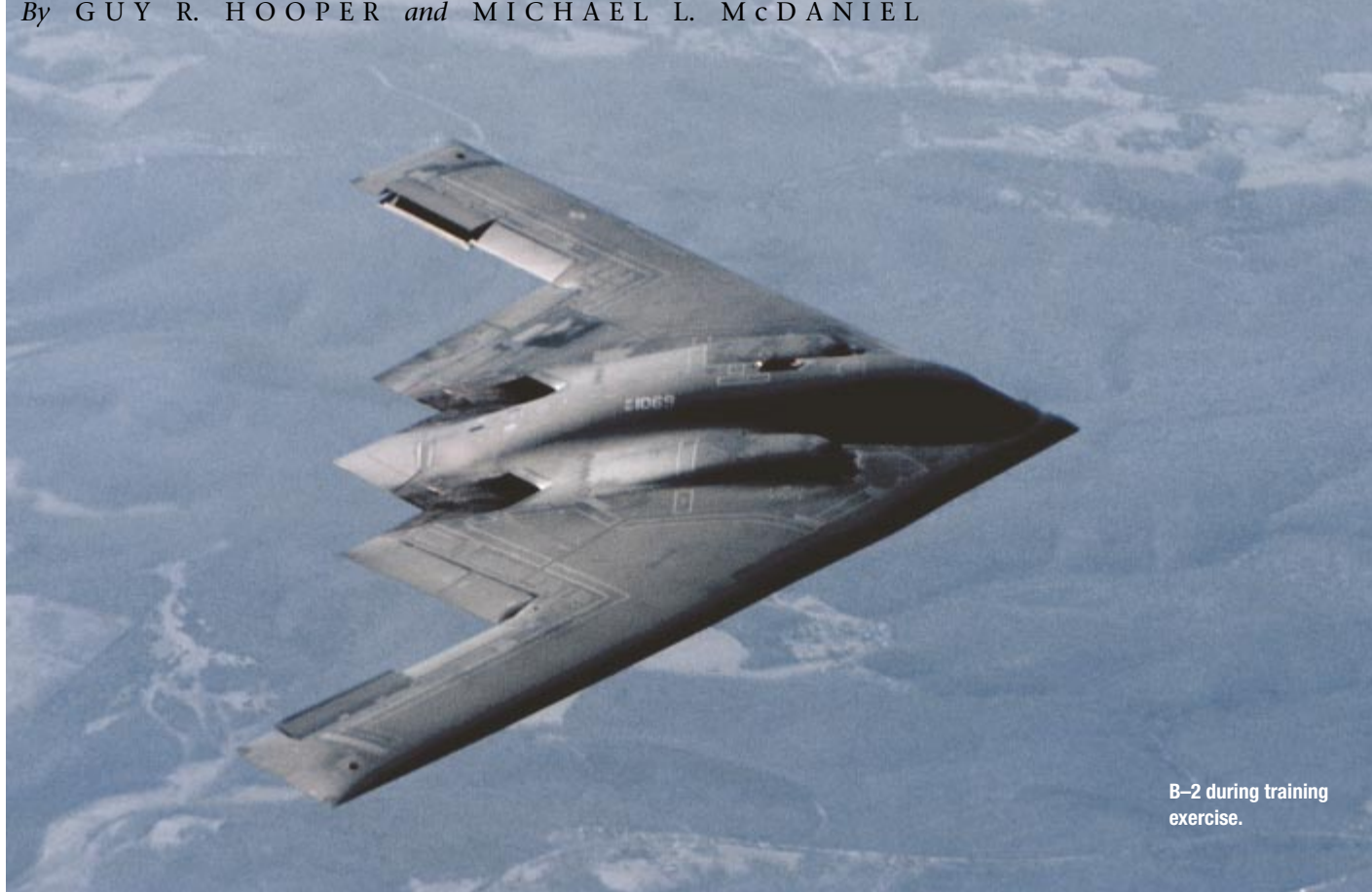
One logical repository for legacy products and home for a reorganized and smaller JSHIP staff is U.S. Joint Forces Command. But it would be naïve to propose that this command or any other organization should assume responsibilities like these without sufficient resources.

Joint commanders will lead more joint shipboard helicopter operations in the future. These efforts will be short-fused and highly visible, but variable or unpredictable in both their mission and scale. They will be demanding because of interoperability challenges presented by hardware and procedural differences among the services. By initiating test and evaluation efforts for JSHIP, the Department of Defense realizes that lessons can be learned and that joint shipboard helicopter operations can be improved to provide greater operational flexibility and reliable options.

Joint shipboard helicopter integration will allow for improvements to a degree, and for a time. But additional steps must be taken to ensure that those improvements are available to joint force commanders in the future. **JFQ**

Fighting with Fires

By GUY R. HOOPER and MICHAEL L. McDANIEL



B-2 during training exercise.

305th Communications Squadron (Gary El)

Modern precision firepower does not determine combat against either an entrenched enemy willing to accept losses or one skilled in camouflage, concealment, and deception. In Vietnam, the Persian Gulf, and Kosovo, liberal use of expensive precision weapons produced important results but still left the national leadership the unpalatable choice of accepting the terms of bombing alone or running up a butcher's bill by sending in troops to root out an enemy.

The time is right for a new operational concept that blends proven strategic principles of the past with the tactical revolution advanced by precision weapons and mobility. This idea involves forcing enemies from foxholes by seizing politically and materially vital areas, thus confronting them with a choice of their own—do nothing and lose or engage superior precision firepower.

The time has come to fight with fires. This concept combines maneuver and fire warfare. Maneuver warfare puts boots on the ground to seize or threaten centers of gravity in the rear, then precision fires destroy enemy forces during the inevitable counterattack. The destabilizing effect of invasion acts as a forcing function. An

Major Guy R. Hooper, USAF, is director of Global Hawk assessment team at Edwards Air Force Base and Michael L. McDaniel is an assistant program manager for U-1/U-6 aircraft at Naval Air Systems Command.

Jumping near Aviano air base.



30th Communications Squadron (Jennifer C. Wallis)

F/A-18C delivering direct attack munitions.



U.S. Navy

enemy is compelled to react against an immediate threat to political control, yet it is exactly this reaction that exposes it to destruction from precisely targeted fire. Critical to strategists, fighting with fires answers the basic question of whose side time is on.

Harnessing the Revolution

Operational fires, attacking targets deep inside enemy territory with airpower, missiles, and long-range artillery to support theater-wide campaign objectives, have revolutionized modern war. A century ago, battlefields were a few acres in size, and forces not engaged eye-to-eye exerted little direct influence. Today the area can be thousands of square miles, and it is routine to attempt

to win not just battles, but campaigns, by striking targets deep within an enemy's rear.

The revolution in operational fire has not led to a revolution in operational art. Operational fires have proven deadly against troops and vehicles in the open but have been nearly worthless against entrenched forces. Artillery barrages on the Somme, B-17 pickle-barrel bombing in World War II, B-52 strikes in Vietnam, and cruise missile attacks in Kosovo did not win the war against dug-in or concealed troops. Operational fires have only been slightly more effective against mobile or time sensitive targets.

Somewhat paradoxically—and in the face of contrary evidence—operational art has raised the bar for precision firepower, expecting it to compel a political result by the efficient reduction of a carefully tuned not too hot, not too cold target list. Air strikes may cut off reinforcements, and rocket barrages may keep enemy heads down, but ultimately the United States counts on firepower to break the morale of enemy populations, who theoretically and somewhat vaguely spontaneously rise up and depose their own leadership to settle the conflict.

Launching missile
from *USS Philippine
Sea*, Allied Force.



U.S. Navy (Pensco Amantz)

This has not occurred since World War I. Instead, populations tend to dig in and endure. Thus the Army believes with justification that ground forces ultimately settle conflicts by territorial battles. In its view, humble infantrymen

winning control of the seas and exercising day-to-day control demand different types of ships

are far from obsolete. The proponents of land-power are generally correct, but unfortunately are afflicted by specifics. Ground forces have poor strategic mobility. Light infantry can be moved readily, but any sort of mechanized forces involve shipping large numbers of heavy armored vehicles, a sluggish process at best. Second, and more critically, ground assaults entail a high price because soldiers can't execute bloodless warfare. Policymakers fearful of losses and possible collapse of public support are unwilling to rely on ground attacks as their first option.

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Future challengers to the United States will know how to counter its strength and exploit weaknesses inherent in large-scale deployment of heavy forces or precision weapons. Mobility, the humble spade, and the well-constructed decoy may have proven enough of a match for high tech weapons to convince an enemy that it might survive combat against the Armed Forces.

Asymmetric Responses

The fleet-in-being principle has been adopted by small nations in confrontations with great powers. The idea of such a fleet is simple: keep a viable fighting force together and occupy enemy assets with the threat of a sortie. Since this force can choose the time and place of attack, its enemy must keep an equal or superior force in battle position continually as a counterweight. Considering the need to rest and refit this masking force, an enemy can tie up a force twice its size. This has made the fleet-in-being a favorite strategy of weak naval forces for centuries.

Recently this classic naval stratagem has been adapted to conflict on land. Enemies have learned that Americans are strong on bombing and weak in mobile logistics and the willingness to absorb casualties. They have come to realize that by avoiding bombs and preserving their assets, the United States will take months to transport strong ground forces to the theater and may never work up the will to commit that force to battle.

Countering this strategy is not easy, but it can be achieved. The weakness of the fleet-in-being is that minor fleets cannot control the seas. A nation that needs to use the seas must fight whenever it is challenged. And it is this fact, suitably transposed to the land environment, which is key. Fighting with fires is based on the simple proposition of grabbing something an enemy can't afford to lose, then annihilating its forces with operational fires when it tries to reclaim it.

Naval strategists have long acknowledged that winning control of the seas and exercising day-to-day control demand different types of ships. Winning control involves either defeating or threatening to defeat an enemy in a pitched battle. This demands large, powerful vessels—ships of the line, battleships, and carriers. On the other hand, exercising control demands smaller, more numerous forces, such as frigates and cruisers—ships able to both stop enemy shipping and defeat opposing commerce raiders, but not intended to take part in a fleet action.

The same principles apply to warfare on land. Historically, heavy units such as infantry, cavalry, and artillery fight and win battles. But it

Readying F-117A for Southern Watch.



1st Combat Camera Squadron (Greg L. Davis)



26th Marine Expeditionary Unit, Combat Camera (Rick T. O'Connor)

Looking through TOW missile launcher.

is light, small units that exercise control over conquered territory: a troop of light cavalry on horseback, a regiment of light fighters, or even an infantry squad in a fighting vehicle. The *petit guerre* for exercising control remains the same.

Thus the concept of fighting with fires calls for deploying a ground force powerful enough to exercise control over land that an enemy cannot concede, yet distant enough that an enemy cannot simply

turn around in its foxholes and fight but must instead redeploy its forces. When an enemy comes out and starts moving toward the ground force, it is defeated in detail.

Limits and Limitations

It is worth mentioning what fighting with fires is not. First, it is not a recipe for dumping ground forces into the midst of an enemy army. The concept calls for inserting a force into an area with light defenses, with a good killing zone be-

tween the ground element and enemy main body. Like frigates in the age of sail, the fighting with fires ground force is not put in place to fight major battles. And like frigates, its primary job is taking the objective in a swift operation. It must be equipped to conduct a seizure operation, but it cannot be expected to fight an extended pitched battle in the process. But unlike frigates, the fighting with fires force is the equivalent of a ship-of-the-line in formation. With adequate communications, precision fires can be targeted at a superior enemy during an unexpected encounter.

Second, fighting with fires is not close air support operating under a different name. The latter provides air strikes on the battlefield to support ground forces engaged in a pitched battle. Fighting with fires wipes an enemy out before it closes with the land force with sufficient forces to dislodge it. This is a distinction that may be reduced in practice. The ground commander may be best placed to direct fires, so the result may use



Fort Hood TSC-EIDC (John Byerly)

Dismounting on assault course at Fort Hood.

a concept similar to close air support. More likely, however, a covering force will protect inserted troops while massive fire is directed by the joint force air component commander against the main enemy responses.

Third, fighting with fires is not an interdiction strategy. Classical interdiction strategy calls for taking out bridges and other transportation chokepoints to isolate the battlefield and prevent an enemy from bringing up reinforcements. Fighting with fires may use interdiction to channel the foe onto the killing ground, but the intent is cut an enemy down, not to cut an enemy off. With this approach, chokepoints are places to find targets rather than targets in themselves. However, interdiction could be achieved as a byproduct of the main operation.

Concepts and Criteria

One key to fighting with fires is picking ground targets. Most nations have a handful of major cities, each of which is a high-value political and industrial target. Over the centuries laying siege to capitals has proven one of the best ways to compel

an enemy to fight or yield. Other potential targets for seizure are moderate-value, low-population areas, especially areas disaffected from central governments. Seizing high-traffic chokepoints is also useful. Blocking key mountain passes, stretches of rivers, or road networks might lead to economic collapse. Finally, there is the potential for flushing an enemy out into the open

not by seizing any particular objective, but simply through presence in the rear. It has long been acknowledged that movement creates doubt for one's enemies and opportunities for oneself.

No new operational art evolves without force structure implications. Several aspects of combined arms warfare for a fighting with fires approach warrant consideration. The concept will not work without a ground element. A coalition approach offers one solution. Instead of using American troops, forces of local allies, or even an internal opposition movement can be employed to seize and hold ground while the United States provides operational fires that destroy enemy combat forces, though for maximum flexibility the Nation should maintain its own ground insertion capability.

Fighting with fires also has consequences for research, development, and procurement. Major requirements include:

Lighter ground forces. Some progress has been made in this arena over the last few years, but much of the focus has been on trying to equip rapidly deployed American troops to fight in urban environments. Opponents of lighter forces have noted that while light infantry equipped with light armored vehicles may be fine for peacekeeping or counterinsurgency, they will not last long against armored forces. The number one priority must be to find the right balance between organic firepower and mobility for ground forces.

All-weather operational fire capability. The United States can deliver operational fires at night or in poor weather. But the challenge is introducing this capability across the joint force.

Saturation reconnaissance capabilities. Fighting with fires requires that an enemy be both detected and destroyed before it can engage friendly ground forces. This implies reconnaissance systems with a genuine saturation capability. Continuous support is essential. Systems like the RQ-4 Global Hawk UAV can provide such coverage and will be needed in future operations.

Fire management. Fighting with fires demands not only fast reconnaissance, but flexible operational firepower. And this depends on fire management, the ability to put ordnance on the right target at the precise moment that an attack will achieve maximum effect. The Armed Forces have the capability to send mobile target locations to strike aircraft in flight, and tests show that imagery can be sent with target coordinates. Unmanned weapons such as Tactical Tomahawk will have a similar real-time update capability in the near future.

Target management. Solving this problem is the greatest need and hinges on eliminating intelligence stovepipes and ensuring real-time retasking of operational fire assets. Procedures involve

several aspects of a fighting with fires approach will not work without a ground element

Conducting check with USS Boxer.



U.S. Navy (Eric Logsdon)

extensive imagery analysis to support strike planning cells for the joint force air component commander, which plugs targets into the air tasking order for the next day. Such a process is not sufficiently responsive for new operational concepts. A new system is needed in which imagery (by saturation reconnaissance) is fed to fire controllers, who can quickly call on ready operational fires. Future campaigns will demand artillery-like timelines for operational fire support.

High-speed logistics. Rapid insertion of a ground force will demand a lot of logistical support preferably not shackled to airfields. This may require special transport. Perhaps the true answer is an amphibious transport aircraft, capable of exploiting rivers and lakes as runways to deliver equipment where it is most needed.

Overload suppression of enemy air defense and electronic warfare capability. Logistics are quite likely to be conducted over an air bridge. The supply effort must be resilient in the face of

enemy air defenses. In Kosovo, the Serbs adopted a fleet-in-being strategy with an air defense net, never turning the whole thing on at one time and thus preserving their assets to fight another day. It worked, so the U.S. military is likely to see this approach again. As a counter, an air and electronic blockade capability is needed. Instead of launching a handful of planes to fly defense suppression and jamming missions for the few minutes of an air strike, a joint task force will need platforms that can loiter over the battlefield until enemy defense radars are either turned on or fire surface-to-air missiles—and then instantly reply with jamming, antiradiation weapons, and fire missions. Unmanned combat aerial vehicles may be part of the solution.

Air supremacy. Logistic and firepower support must not be vulnerable to air intercept. The future airspace is going to be hostile with sensitive netted defenses and highly lethal fighters. Fighting with fires puts a premium on dominating the skies. The F-22 program is the only effort to combine necessary qualities in a single platform which can ensure air dominance.

Non-lethal weapons. Various non-lethal capabilities will be required to minimize collateral damage and civilian casualties. This will allow commanders to focus on military forces and reduce concerns over the civilian populace.

Redundant secure communications. To the fighting with fires force, physical encirclement is far less threatening than interdicting communication. Without communications, operations will become extremely high risk.

Extraction. The fighting with fires force must disengage and withdraw as effectively as it is inserted. Under no circumstances must the force be left hostage to an enemy.

Joint concept of operations. Forces can come from the Army or Marine Corps, depending on the circumstances. Firepower can come from any service. Communications, terminology, and fire procedures must be transparent. Jointness is essential. No service can provide the capabilities to ensure effective employment. Not only is a multi-service approach crucial, but the integration of systems will have to be fully operational from the opening moment of the campaign.

Precision warfare is an inadequate basis for the future. Simply dropping more bombs will not solve the problem. Fighting with fires provides a new operational dimension that can stymie potential asymmetric responses such as the fleet-in-being strategy. But to realize this concept the Nation must make investments to place a more agile and lethal force on the battlefield. **JFQ**

Dutch peacekeepers in Eritrea.



AP/Wide World Photos (Soyud Azim)

New Instruments for War and Peace

By JOSEPH J. EASH III

The regional commands devote considerable effort to shaping their security environments. U.S. Pacific Command reports that its most likely and time-consuming missions fall short of war: civic action, disaster relief, humanitarian, and peace operations. Such noncombat efforts, though challenging, pay off in many ways. A report by the Center for International Development and Conflict Management at the University of Maryland showed that armed conflicts within and among states fell by nearly half since the early

1990s. This decline is attributed to conflict management practices and international support for peace building.

Clearly, conflict prevention is a safer and cheaper approach than setting up refugee camps and rebuilding infrastructures. Eliminating the causes of hostility is even more desirable in light of asymmetrical threats and the consequences of attacks on U.S. citizens and allies. As Deputy Secretary of Defense Paul Wolfowitz has said, “it is very important to have an active strategy . . . the goal is to keep wars as small and as far away as possible.”

Prediction and Prevention

Combatant commands seek a more effective and efficient way of shaping. Increasingly they face complicated geopolitical situations with fewer

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assets than during the Cold War. There is no actionable framework to assess potential for crises or identify means of preventing them. There may be help on the way. A recent study by the Presidential Committee of Advisors on Science and Technology concluded that “scientific research can clarify causes of deadly conflict.” This research stems from the new social sciences, where tools like agent-based programs can simulate nonlinear societal activities beyond merely economic considerations. Moreover, information technologies are offering new life to forecasting instability. The Defense Advanced Research Projects Agency attempted to develop a model-based forecasting system during the early 1970s. It failed because of a primitive information and computer system. The technologies of today may succeed.

There is growing interest in forecasting. A workshop organized by U.S. Pacific Command studied methodologies developed by the Center for Army Analysis, Joint Warfighting and Analysis Center, and National Ground Intelligence Center—each showing promise for predicting instability.

business regards conflict prevention as a high priority for long-term development and profitability

Another enabler of instability forecasting is the availability of data. More than ever before, national and international organizations have collected data on the causes of instability, particularly intrastate conflict.

This and other data that may be collected will facilitate detailed empirical examinations. These could verify conflict theories and enable the design and testing of preventive strategies.

International attention to conflict prevention is considerable and growing. To a large extent it is motivated by humanitarian concerns. Most casualties in conflicts are not military but

civilian. At the start of the 20th century nonmilitary casualties accounted for some 50 percent of war-related deaths but by the end of the century had increased to 75 percent. Another motivation is the desire for a stable international order. Intrastate conflicts have interstate consequences, as seen by the exodus of refugees from Somalia, Haiti, Rwanda, and the former Yugoslavia. Even local politics are affected by transnational issues that swamp traditional governmental structures. In addition, the international business community, which once had little involvement in conflicts other than providing aid, today regards conflict prevention as a high priority for long-term development and profitability.

Illuminating the Shadow of War

International organizations are not only collecting data on the causes of instability but are demonstrating the possibility of forecasting the causes themselves. Two efforts are noteworthy. *Social and Economic Policies to Prevent Complex Humanitarian Emergencies*, cosponsored by the U.N. World Institute for Development Economics Research and Queen Elizabeth House at Oxford University, captured data on complex humanitarian emergencies from 1980 to 1995. The second, *Economic Causes of Civil Conflict and Their Implications for Policy*, was compiled by researchers at the World Bank and examined 73 civil wars between 1965 and 1999 and collected details on 47. The studies provide insights into the causes of instability and have reached either similar or complementary conclusions. The U.N. report “debunks . . . common beliefs in the recurrent literature in this area,” while Paul Collier has observed that the results of the World Bank research “are so counterintuitive . . . social scientists should be distrustful of the loud public discourse on conflict.” Together, they question the inevitability of conflict.

“A key theme of the research is that conflict in the late 20th century cannot be explained as an inevitable resurgence of tribal tensions,” reports the United Nations. Rather, the likely causes are multiple, with political and economic factors playing the largest roles. In each case, the factors interact in varying ways. Events can trigger underlying tensions by exposing the inability of the government to maintain order or by creating a focal point for the mobilization of rebellious forces. These studies demonstrate that much more is known about the conditions that inspire conflict than those that make it actionable.



Training Nigerians for peace operations.

U.S. Navy (Jim Hampshire)

U.N. relief arriving in East Timor.



U.S. Marine Corps (Bryce Piper)



AP/World Wide Photos (Visar Kuyezli)

Albanian rebels southeast of Pristina.

Both reports indicate that even though declining economic conditions such as slow growth and low income contribute to the likelihood of conflict, they may not be the cause of it themselves. It may be precipitated by natural disasters as well as government practices. In the 1980s, droughts in Zimbabwe, followed by state closure of shops and suspension of services, created conditions for violence. External factors may contribute to instability. Expatriates often fund conflicts in their native countries. External debt combined with falling living standards during the 1980s increased potential for conflict in Yugoslavia. Collier also states that "Countries with a

substantial share of their [gross domestic product (GDP)] coming from the export of primary commodities are radically more at risk." He calculates that a nation with a commodity export comprising 26 percent of GDP has a 23 percent greater risk of conflict than those with no commodity exports. Worsening trade terms can hurt a nation with such dependency, as seen in oil-reliant Nigeria. Also, a commodity may be the primary goal of corrupt officials and rebels, as were diamond areas in Sierra Leone.

Economic stagnation is not always a sufficient cause for internal conflict, however, as seen in the lack of violence in Tanzania in the 1980s and Cuba in the early 1990s. Social composition may also contribute. According to Collier, risk doubles for states with a dominant cultural group that can gain control and cause discrimination against minorities. Ethnically diverse states are safer largely because of the difficulty for rebel groups to recruit a viable force in factional societies.

Inequities between groups can also be a contributing factor, according to the U.N. report. The problem stems from uneven access to economic opportunities: land, education, or government services. The greatest grievance is an unequal access to political power. In Haiti, the Congo, and



56th Signal Company (William Montoya)

Soldiers controlling Serb crowd in Kosovo.

elsewhere political power has enabled economic power. Such inequities, particularly in a declining economy, sharpen group identities and create a factionalism that can be exploited.

History also matters. Some societies in which groups have complaints lack the tradition of settling political differences through violence. However, the U.N. report states that the history of violence greatly “heightens the likelihood of a complex humanitarian emergency.” One such case is Haiti, which has experienced 12 successful coups since 1956. But immediately after

hostilities, there is a 40 percent chance of another conflict, Collier reports, which falls only 1 percent with each year of peace, a significant factor if the mission is peacekeeping.

“Conflicts are more likely to be generated by resource wealth than resource poverty,” adds the U.N. report. It is the “very wealth that the environment offers and the potential for private and group accumulation that drives conflict.” Thus unrest does not seem to involve the “rage of the poor,” as Collier puts it, but more often the “rage of the rich.”

In a worsening economy, ruling elites may make a greater effort to maintain their position, as described in the report: “In order to maintain incomes of the ruling elite as the economy declines, corruption has to become more gross.”

Moreover, elites may take desperate actions against threats to their political and economic power. A study of 17 complex humanitarian emergencies showed that governments usually initiated violence, as occurred in Rwanda, Burundi, Uganda, and Haiti.

Leaders on all sides may seek to build support within the population—and herein often lies a major misperception. “Historic animosities have been exploited to enhance mobilization,” notes the report by the United Nations. “A sense of grievance is deliberately generated,” writes Collier. Depending on the nation in question, leaders may capitalize on grievances among ethnic, religious, or clan groups. Grievance is how many understand the cause of conflict. A downward spiral will likely ensue. Internal conflict usually leads to a crisis of state legitimacy. The U.N. report points out, “There is also a key interaction between state legitimacy and economic performance.” As the economy declines, so do public revenues. This reduces the capacity to fund defense and makes rebel predation easier. A bad economy also boosts recruitment from the unemployed.

New Research Agenda

Although by no means complete, research carried out to date accomplishes several things. It goes a long way towards clarifying the causes of conflict and countering popular misperceptions. Moreover, it reveals the possibility of collaboration across the international scientific community, the closest thing to a global endeavor. This could yield data on aggressive behavior, inter-group relations, ethnocentrism, mutual accommodation, and conflict resolution. This research might also indicate that improvements in theory, identifying as well as relating the cause of conflict, may make it possible to develop a predictive model to enable a more reliable assessment of conflict.

No model completely explains the cause of conflict or offers a solution for all eventualities. However, any viable model would have significance for the Armed Forces. As analysts from U.S. Pacific Command indicate, “Finding an appropriate yardstick to measure instability . . . could greatly assist military planners and operators in their work to prevent future conflict.”

Also, a predictive model could help combatant commands working with the Department of State and other agencies prepare for prevention. Analytical modeling could enable them to decide when forces are most needed, so assets could be more effectively employed. It would also aid in tailoring forces to the situation. If causes of conflict became known, forces could then train for the necessary functions to prevent it. This model could provide a venue for decisionmakers to work

Planting maize in North Korea.



AP/World Wide Photos (Peter Smerdon)

together and assist them in understanding the impact of their actions on conflict prevention.

Moreover, a predictive model might provide a more comprehensive approach to prevention that takes advantage of national strengths other than military force. The lessons from Afghanistan to Rwanda are that piecemeal assistance does not work. This model might help define the role of forces and guide performance relative to other nations and nongovernmental organizations.

If science can help, so can technology. It might provide new shaping tools for prevention. Once causes are better understood, information technologies can find data to help detect changes in a nation and provide early warning of impending threats. Modeling and simulation based on sound research can explore ways of changing conditions in countries susceptible to internal conflict.

The potential inherent in this approach can be found in interactive and distributed learning simulations such as synthetic environments for national security estimates and crisis management workshops developed by the Institute for Defense Analyses. Participants must make decisions on almost every aspect of national development or reconstruction, including health, education, investments, and budget. Simulation can teach economics without lectures and also illustrate the effects of short-term opportunistic decisions and

the benefits of sustained development. Representatives of Georgia, Bosnia-Herzegovina, and Montenegro have used this method.

One way of contemplating the future is discerning the fundamental causes of current trends to anticipate their impact. It is also the best way to prevent conflict in an increasingly shrinking and interconnected world. How that is done greatly depends on scientific research. The causes of war must be disclosed by hard data that only a scientific inquiry can produce, not on mere perceptions. That data has been collected and may serve as the basis for a future international cooperative effort. Research can ensure a more efficient use of shaping tools in conflict prevention. It may also provide the Armed Forces with more effective tools to shape the security environment, contributing to a more focused and advanced warning of instability. This would give combatant commanders time as well as insights on where and how to use forces. Such instruments could lead to a more active approach to national security and a more peaceful environment. **JFQ**

Admiral Forrest Percival Sherman

(1896–1951)

Chief of Naval Operations

VITA

Born in Merrimack, New Hampshire; graduated from Naval Academy (1917); served in Atlantic and Mediterranean in World War I; *USS Reid* (1920); commanded *USS Barry* (1921); *USS Florida* (1921–22); flight training, Pensacola (1922); fighting squadron 2, *USS Aroostook* (1923–24); flight instructor, Pensacola (1924–26); Naval War College (1926–27); *USS Lexington* and *USS Saratoga* (1931–32); commanded fighting squadron 1 (1932–33); director, aviation ordnance section, Bureau of Ordnance (1933–36); *USS Ranger* (1936–37); staff positions (1937–40); war plans division, Office of the Chief of Naval Operations (1940–42); commanded *USS Wasp* (1942); chief of staff to Admiral John Towers (1943); deputy chief of staff to Admiral Chester Nimitz (1943–45); commanded carrier division 1 (1945–47); commander of naval forces in Mediterranean (1948–49); Chief of Naval Operations (1949–51); died at Naples, Italy.



Unification of operational command of forces, including air, in each theater and area is conducive to the most effective conduct of war. It is essential to the defense of key positions in time of peace. . . . It should provide for joint training in peace as well as in war. On the other hand, unification or centralization of administration in any headquarters is usually prejudicial to its effectiveness in the conduct of war. Preoccupation with administrative matters prevents concentration on operations.

Operational command can be unified completely and adequately in Washington and in the field, in peace and war, irrespective of the administrative organization of the national defense into one, two, or three departments. Joint staffs have been and can be formed effectively under any departmental system.

In Washington, unity of operational command can be and should be achieved under the President by the Joint Chiefs of Staff and their numerous subordinate agencies.

—From statement by Forrest P. Sherman before the Military Affairs Committee (November 30, 1945)

Organization

TURNING PURPLE

To become a joint specialty officer (JSO) one must complete Phase I and II of the program for joint education (PJE) at the National War College or the Industrial College of the Armed Forces, or *both* Phase I PJE at (1) a senior-level professional military education (PME) institution (U.S. Army War College, College of Naval Warfare, Marine Corps War College, or Air War College), (2) an intermediate-level PME institution (U.S. Army Command and General Staff College, College of Naval Command and Staff, Marine Corps Command and Staff College, or Air Command and Staff College), (3) a selected foreign war college or fellowship program, or (4) a nonresident PME program (U.S. Army War College, U.S. Army Command and General Staff College, Naval War College, or Air Force Command and Staff College) *and* Phase II PJE at Joint Forces Staff College.

Officers designated as JSOs also must complete a joint duty assignment (JDA). Joint duty credit can only be earned from JDAs posted on the joint duty assignment list. Tour lengths are two years for general/flag officers and three years for O5 and O6 (except for two-year tours for some overseas assignments) and critical occupation specialties (COS) in initial JDA. Moreover, aspirants must be selected by a JSO selection board. Nominees fall into one of four eligibility categories:

- *category A*—officers who complete PJE before completing a full JDA or COS officers who complete a full joint duty tour (36 months) before finishing PJE requirements

- *category B*—COS officers who complete joint duty under COS-takeout provisions (24 months) and who have terminated PJE either before or after they fulfilled JDA. COS officers are exempt from the sequence requirement which specifies, for other officers, that PJE must be concluded before JDA completion

- *category C*—non-COS officers who have completed full JDA before they finish PJE; requires a sequence waiver for JSO designation

- *category D*—officers who have completed two joint tours in lieu of PJE; requires an education waiver for JSO designation.

The total number of waivers for categories C and D granted for officers serving in the same paygrade during a fiscal year may not exceed 10 percent of total officers in that paygrade selected for the joint specialty in that fiscal year. Services can opt not to make selections from category C or D officers. In addition, JSOs must be approved by the Secretary of Defense. **JFQ**

Doctrine

LOGISTICS AND JFCs

Knowledge of joint, combined, and multinational logistics took a step forward with the appearance of Joint Publication 4-0, *Doctrine for Logistics Support of Joint Operations*, in April 2000. While the Armed Forces have conducted myriad missions around the world since the Cold War, few have capitalized on the virtues of joint, combined, and multinational logistic applications.

The executive summary of this revised pub states that logistics is the foundation of combat power. Frequent mention is made of the importance of using deliberate logistic planning to reduce improvisation and emergency measures. An argument is made throughout for a focus on seamless deployment, distribution, and sustainment. Efforts of logisticians on the strategic, operational, and tactical levels must form an integrated system connecting the national economy to fighting forces. An argument is also made throughout for a logistic focus on seamless deployment, distribution, and sustainment. In addition to revised and expanded chapters on authorities and responsibilities, principles and considerations, planning, and theater logistics, the pub provides a new chapter on contractors in-theater, reflecting the reality that contractor support to joint operations is significant. The manual provides a useful overview of planning considerations in integrating contractor support within the theater logistic framework.

This joint publication could well become a classic in the field. All combatant commanders and senior logisticians should have copies on their shelves. While the defense establishment has praised the advantages of joint, combined, and multinational logistics, operationally many have not accepted them. Nevertheless, this superb pub is a major contribution to the literature. **JFQ**

Education

ON TARGET

Each service has developed its own doctrine and methodology on targeting. With the revision of FM 6-20-10, *Tactics, Techniques, and Procedures for the Targeting Process*, the Army and Marine Corps use the decide, detect, deliver, and assess approach. But Navy and Air Force derive target methodology from the air tasking order (ATO) cycle. As the services continue to conduct a range of joint operations, targeting problems occur on both the operational and strategic level.

To address such problems the Joint Targeting School in Virginia Beach offers courses for intelligence, operations, and planning officers, warrant officers, and noncommissioned officers assigned to unified commands or JTF staffs. For artillerymen, the curriculum is geared toward fire supporters at corps/division fire support elements, deep operations coordination cells, battlefield coordination elements, and joint staffs. The school offers four courses of instruction.

- *joint targeting staff*—three-week course on the six-step joint targeting cycle (determining objectives and guidance, developing targets, conducting weaponing, applying weapon-target match to the force, executing the plan, and assessing the effects)

- *joint targeting application*—two-week course on the weaponing step which covers air-to-surface and surface-to-surface methodologies for matching weapons to targets

- *joint battle damage assessment*—one-week course on combat assessment which looks at concepts and theory associated with combat assessment and functions of battle damage assessment cells on the operational or JTF level

- *mobile training teams*—one-week version of targeting course on joint targeting process for both unified commands and eligible JTF staffs.

For details, call (757) 492-0276/DSN 492-0276; Fax (757) 492-0280/DSN 492-0280; or see the school Web site at <http://www.jts.damneck.navy.smil.mil>. **JFQ**

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NEGOTIATING THE POST-COLD WAR WORLD

A Review Essay by

CASIMIR A. YOST

Chinese Negotiating Behavior: Pursuing Interests Through Old Friends

by Richard H. Solomon

Washington: United States Institute of Peace Press, 1999.
224 pp. \$14.95
[ISBN 1-878379-86-0]

Russian Negotiating Behavior: Continuity and Transition

by Jerrold L. Schecter

Washington: United States Institute of Peace Press, 1998.
256 pp. \$14.95
[ISBN 1-878379-78-X]

Negotiating on the Edge: North Korean Negotiating Behavior

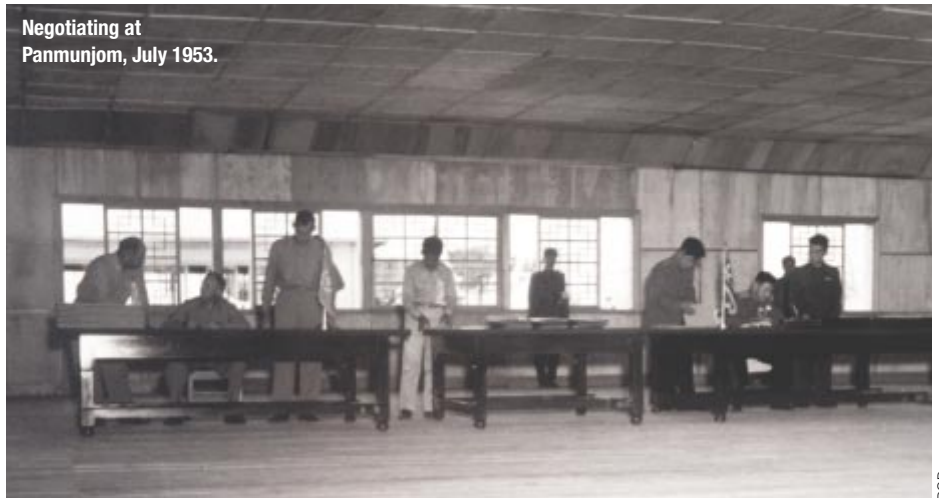
by Scott Snyder

Washington: United States Institute of Peace Press, 1999.
236 pp. \$17.50
[ISBN 1-878379-94-1]

International negotiations are often regarded as the province of diplomats and official trade representatives, but they can also engage military officers. Like other negotiators, those in uniform will benefit from the growing body of scholarship being published by the U.S. Institute of Peace (USIP) in its cross-cultural negotiation project. Thus far three generic and three country studies have appeared, with more in the queue. The country studies are *Chinese Negotiating Behavior: Pursuing Interests Through Old Friends* by Richard Solomon, *Russian Negotiating Behavior: Continuity and Transition* by Jerrold Schecter, and *Negotiating on the Edge: North Korean Negotiating Behavior* by Scott Snyder. The premise of the books in the series is that "culture and institutional differences significantly shape negotiating behavior." In time USIP intends to bring out titles that will

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Negotiating at Panmunjom, July 1953.



DOD

prove useful to conflict managers, governmental and nongovernmental officials, et al.

The project will publish studies on Japan and Germany in 2001. The country studies that have appeared so far examine cases where negotiators exhibit identifiable styles. All three nations have had intense relationships with the United States since World War II. Moreover, arms control and proliferation issues have been central to American interaction at the negotiating table in dealing with the People's Republic of China, Russia, and North Korea.

Chinese Negotiating Behavior is not a new work. It originated as a classified RAND study in 1983 and covers the period 1967-84. Despite the passage of time and the evolution of bilateral relations, Chinese behavior retains characteristics laid out in the RAND study, including identifiable stages. The first involves cultivating ties and agreement on Chinese-initiated principles. That is followed by an assessment stage in which the negotiators seek to have interlocutors to present their positions. Pressure may be applied to turn counterparts into supplicants. A third stage—known as the end game—can come quickly because the Chinese feel nothing more can be gained through negotiations. The implementation phase of the agreement can involve Chinese backtracking.

The author offers common sense guidelines for bargaining with Beijing. In sum, enter discussions well prepared, be patient, and know the bottom line while recognizing that the Chinese will seek to play on supposed friendships to get counterparts to relax their stance.

Richard Solomon, president of the U.S. Institute of Peace, sets his study in historical context, identifying sources of Chinese negotiating style and phases in the evolution of bilateral relations. He points out that "the Chinese emphasize to foreigners the importance of being treated with equality and with full respect for their sovereignty and national independence." In this matter, as in other aspects of their national character, they are not unique; however, they are even more effective in turning pride into making their opposite numbers appear to be supplicants. This manipulation is reinforced by a Chinese preference to negotiate on home turf.

The new edition of *Chinese Negotiating Behavior* also includes an essay by veteran China watcher Chas. Freeman, who notes that while the book has enduring value, things have changed. National politics are less constraining and negotiators have vastly more sources of information. Today there are more bureaucratic players, including representatives of the People's Liberation Army. Nonetheless, the Chinese remain hampered by frequently ineffective interactions in the diplomatic milieu, particularly in communicating with legislators, media, and interest groups.

China has gained experience dealing with America and has adapted. For example, Freeman argues that they have concluded "that most Americans expect to reach agreement at a price or on terms roughly midway between those asked and those offered." As a result, although they eschew salami tactics, he maintains that they have "gotten pretty good at salami-slicing themselves."

Russian Negotiating Behavior depicts a nation perched between old style Soviet diplomacy and a quest for a new approach. On balance, "psychological conditioning behavior patterns and personal style of those raised under the Bolshevik code continue to dominate Russian negotiating culture." Moreover, "Russian nationalism has replaced Marxist-Leninism as an ideological driving force in foreign policy decisionmaking." (The same can be said of China.) "The role of authority, the avoidance of risk, and the necessity for control are vital to understanding Russian negotiating behavior."

Russians deeply resent the loss of superpower status and the triumph of their rivals. At the same time, they recognize the potential gains—particularly financial—of interaction with the West. Complicating the achievement of those benefits is the pluralism of their society and government. Since the foreign ministry is not necessarily the lead agency in negotiations, the bureaucracy cannot be counted on to deliver on any deal.

Jerrold Schecter traces the stages of Russian negotiation that closely mirror bargaining by the Soviet Union. The Russians begin with cautious prepositioning by which negotiators cultivate relationships with counterparts. Their opening moves can be aimed at bringing opposing positions out in the open. Moreover, Russian negotiators want to look good at home and are likely operating under tight instructions. Their opening position is usually extreme. The next period can be long as Russians probe for weaknesses. Once satisfied that there is no more to gain they move rapidly to a conclusion.

The author closes by saying, "Only negotiators who understand the cultural and emotional baggage their Russian counterparts are carrying can hope to be effective and achieve their goals." Based

on this observation he offers specific advice: be sensitive, but not oversensitive, to Russian problems; treat Russian counterparts with respect; stand tall and maintain dignity; insist on agreed rules (for example, leave nothing to goodwill or unwritten agreements); use incentives, especially financial, for cooperation; and implement problem-solving mechanisms early. While these pointers reflect common sense, they do not preclude dealing with negotiators who cannot—as opposed to will not—deliver on commitments.

The author of *Negotiating on the Edge: North Korean Negotiating Behavior* had the task of analyzing negotiations on which there is little known or published. Moreover, the decision process in Pyongyang is more opaque than in Beijing or Moscow. Korean behavior has roots in a Marxist-Leninist state imposed on a Confucian society with a revolutionary, anticolonial heritage.

Scott Snyder claims that "North Korea's negotiating style and objectives have conformed to a consistent and all-too-predictable pattern." Negotiators typically begin with a firm position, move to a period of give and take, then finish with hard bargaining. Compromise usually comes in informal venues, not in formal meetings. "The most distinctive characteristic . . . is brinkmanship, a negotiating tactic closely related to crisis diplomacy." Crisis is used to shape and affect agendas. Moreover, the implementation process of agreements may be contentious.

The book offers some guidelines: do not expect progress until the leadership in Pyongyang is persuaded that every alternative has been explored, do not confuse rhetoric with reality, resist North Korean attempts to seek weaknesses on your team, expect crisis tactics, signal

negotiating objectives but do not overinvest in them, and be patient.

China, Russia, and North Korea share the legacy of Lenin but each has a special cultural base. None has a strong legal tradition. And all three nations have had ambivalent experiences with the West—the United States in particular—and each has a basic suspicion of Washington. In some cases, necessity rather than desire has driven each to negotiate. The authors all note the importance attached to being taken seriously by American counterparts and being accorded respect. Thus it is not surprising that there are common features in descriptions of styles offered by Solomon, Schecter, and Snyder. Russian, Chinese, and North Korean negotiators traditionally have acted on short leads held by watchful superiors at home. They are given limited flexibility. Each tends to respond to American initiatives rather than putting forward their own solutions. By contrast with some counterparts, Russia, China, and North Korea are not described as hurrying negotiations, at least in the opening and middle phases. All three countries place great importance on the initial "getting to know you" phase, reflecting the substantial weight placed on the personal dimension of the interaction, particularly by Asian cultures.

On American styles of negotiation, another book in the series, *Negotiating across Cultures: International Communication in an Interdependent World*, by Raymond Cohen, contrasts low and high context communication. Cohen argues that "one is associated with the predominantly verbal and explicit, or low-context, communication style of the United States which is infused with the can-do, problem-solving spirit, assumes a process of given-and-take, and is strongly influenced by Anglo-Saxon legal habits." The alternate model, high context communication, "declines to view the immediate issue in isolation; lays particular stress on long-term and effective aspects of the relationship between the parties; is preoccupied with considerations of symbolism, status, and face; and draws on highly developed communication strategies for evading confrontation."

Americans enter negotiations with predispositions. They normally believe that both sides can benefit. They expect to compromise and split the difference. They bring lawyers to the table and are much focused on the particulars. They are naturally in a hurry. They want to quickly get to a deal and expect a vigorous and

Look for
Joint Force Quarterly
on the Joint Doctrine Web site

http://www.dtic.mil/doctrine/jel/jfq_pubs/index.htm

direct given and take. Americans see negotiations leading to a defined settlement while others may be more interested in what evolves after the agreement.

Not all negotiators fit this pattern. Max Kampelman, one of America's most distinguished and effective negotiators, explicitly rejects salami tactics. He is legendary for refusing to be rushed into a deal or settle for a bad one. When a counterpart complained that Moscow was making all the concessions, he remarked "I considered their beginning position totally off the wall, but that it was impossible for the U.S. position to be equally excessive because [the Americans] were required to go through complex interagency negotiations before they came to a beginning position." As a result, the U.S. approach can sometimes appear bizarre to the other side.

Does culture matter? Cohen contends that it can "complicate, prolong, and even frustrate particular negotiations where there otherwise exists an identifiable basis for cooperation." But culture is not the entire answer. Chinese, Russian, and North Korean negotiators have a mix of backgrounds, traditional and communist. It is not clear where one begins and the other leaves off. Moreover, particularly in the cases of China and Russia, experience in negotiating across cultural divides has rubbed off. Freeman observes that China adopts a different style with Japan than with America. North Korea deals very differently with South Korea than with the United States.

These books suggest that U.S. negotiators would do well not to focus their preparations on substance alone. They must be aware of larger geopolitical issues and how specific exchanges fit, understanding that achievable deals may not be desirable deals. They must also appreciate that the mindsets and approaches their counterparts bring to the table are based on unique histories and cultures. Recognizing differences is helpful in reaching an outcome that serves national interests. American officials must envision how their approach may be interpreted across the table and affect outcomes. In such matters, this series of recent books offers negotiators valuable advice. **JFQ**

DOUGHBOYS IN BATTLE

A Book Review by
BRIAN M. LINN

Soissons, 1918

by Douglas V. Johnson II and
Rolfe E. Hillman, Jr.

College Station: Texas A&M Press, 1999.
213 pp. \$29.95
[ISBN 0-89096-893-4]

Until recently most accounts of World War I fell into a rather predictable mold. The focus was on the high command or the individual soldier in the trench with little consideration of events in between. European scholarship, particularly in Britain, was dominated by bitter disagreement over leadership, casualties, and the horror of combat. Critics assailed brass hats for their stupidity, callousness, and chateau generalship. Efforts to describe battles and campaigns often degenerated into descriptions of rats, mustard gas, and futile charges against machine gun nests. For the most part, Americans have escaped this historical debate, in part because there was little challenge to the interpretation of events reported by General John Pershing and his supporters immediately after the war. This version held that despite resistance from the Allies and the War Department, Pershing shaped the American Expeditionary Force (AEF) into an effective, aggressive organization that carried the offensive in the final months of 1918. Heroic doughboys such as Sergeant Alvin York reinvigorated the Allies and decisively snatched victory from the Germans. Perhaps because it was such a satisfying myth—proving both military prowess and intellectual and moral superiority over Europe—this uncritical emphasis on Pershing and AEF exceptionalism continued for decades. Douglas Johnson, a research professor in the Strategic Studies Institute at the U.S. Army War College, and the late Rolfe Hillman, an accomplished writer and military authority, break from this uncritical mold in *Soissons, 1918*.

In recent years, scholars have returned to documents on the war and

reexamined command, tactics, operational efficiency, combined arms doctrine, and myriad other topics. Indeed, virtually no area of World War I scholarship has been left unchallenged. The result is a greater appreciation of the immense problems of fighting on the Western Front, the importance of coalition warfare, and the scope and range of Allied tactical and doctrinal innovation. Indeed, most recent evaluations of the operational ability of the British and Commonwealth forces in the latter half of the war are quite favorable. Not surprisingly, the new scholarship has contributed to a reappraisal of American contributions and raised some troubling questions about Pershing and dysfunctional AEF tactics and overall battlefield performance.

Soissons, 1918 is a significant reassessment of the American effort on the Western Front. Written by two soldier-scholars, it examines the first major AEF offensive operation. Anticipating a renewed enemy offensive on the Aisne-Marne salient, General Ferdinand Foch ordered a spoiling counterattack on a vulnerable German flank. He selected Tenth Army, commanded by General Charles Mangin, which included 1st and 2^d Divisions, to attack toward Soissons. In the battle of July 18–22, the Americans broke through the German lines but could not sustain the attack. By the time the divisions were pulled out of the line they had lost 13,000 dead. Although they did not take Soissons, Johnson and Hillman argue that the offensive unhinged the enemy attack and disrupted German long-term strategy.

This book can be appreciated as a precise day-by-day narrative of the five days of combat. Chronologically organized chapters follow regiments, brigades, and divisions. Extensive quotes from participants provide insights into the hardships and confusion. The authors are particularly effective in reconciling conflicting accounts and reconstructing events. They also provide an astute and detailed analysis of AEF command from the corps to regimental level. Although the Allies had developed a complicated and centralized system of command and control, inexperienced American troops lacked the training and willingness to implement it. Pershing claimed that AEF command would be decentralized but in practice insisted on centralized direction. The result was that AEF command in fact had the inflexibility of the Allies but little of their efficiency. Pershing added to the problem by insisting that his commanders both demonstrate drive and get

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results regardless of the tactical situation. That led to a command climate permeated by fear in which officers often became victims of the uncertainties and ambitions of their superiors. One vignette is the sad tale of the relief of Colonel Conrad S. Babcock of the 28th Infantry, whose reputation was damaged by his division commander's ruthlessness, animosity, and ignorance.

The authors argue that Soissons was "a confused mess . . . a complete mix-up of men and organizations" but also a key transition for the American Expeditionary Force. The battle revealed not only a lack of American preparedness, but how rapidly AEF units adjusted. Like an increasing number of American historians, the authors recognize the skill and ability of the Allies. They give full credit to the French command, particularly to Foch's ability to see the German vulnerability on the Soissons flank and Mangin's ruthless drive. They discuss the usually overlooked but crucial role of tanks and detail the intricacies of coordinating World War I battles. They criticize Pershing on several counts but are sympathetic to the great burdens he shouldered. Ultimately, the doughboys and leathernecks paid a high price for their victory, partly because of inexperience and lack of training. They attacked in tight formations, did not use support weapons, and also failed to coordinate infantry and artillery. Americans at Soissons were a force in transition, the victims of rapid expansion, untested commanders, inadequate training, and dysfunctional doctrine. That they fared as well as they did may be the most telling argument in favor of Pershing's methods.

Soissons, 1918, while advancing our knowledge of the American effort in World War I, raises questions on the ability of militaries to learn from mistakes in time to avoid repeating them. Moreover, it addresses the issue of putting driving leaders in charge of untrained and inexperienced troops. Placing soldiers in harm's way without adequate preparations always leads to disasters. This book deserves a careful reading. **JFQ**

PREPARING FOR THE NEXT WAR

A Book Review by
JOHN F. ANTAL

After the Trenches: The Transformation of U.S. Army Doctrine, 1918–1939

by William O. Odom
College Station: Texas A&M University Press, 1999.
288 pp. \$44.95
[ISBN 0-89096-838-1]

The military is undergoing a transformation. To adapt to the international environment and maintain full spectrum overmatch on battlefields of the future, doctrine is being reconceptualized. This is a daunting task for any organization, let alone one with global responsibilities. However, this is not the first transformation the Armed Forces have undergone, nor will it be the last.

Army reform and reorganization after World War I, an effort of the War Department, was profound. William Odom has captured the essence of that interwar effort in a new book, *After the Trenches: The Transformation of U.S. Army Doctrine, 1918–1939*. It is must reading for those interested in the relationship of transformation to doctrine, organization, and technology.

Without effective doctrine acting as a rudder, military institutions can't meet operational, organizational, and informational requirements to steer a course through strife. Lacking relevant, well-practiced doctrine a force can flounder. War is a constant struggle of action and counteraction between two thinking enemies. Doctrine must change to meet the threat. Thus reliable doctrine is difficult to produce in peacetime and even more so if future dangers are unclear or nonexistent. Doctrine must close the gap between theory and reality in peace as well as for conflicts yet to come.

The challenges facing the Army in 1919 were quite profound. Its previous methods of warfare were overturned following four years of observing the European conflict, and then participating in it. Doughboys went to war with leaders whose military expertise was largely garnered from the Indian and Spanish

American Wars. Armed with revolvers and sabers and sporting campaign hats, the Army ended the Great War in metal helmets and gas masks, and armed with machine guns, rapid firing artillery, combat aircraft, and armored vehicles.

After the Armistice, the lessons learned were used to revise doctrinal tenants to match changing strategic, operational, and tactical conditions. Odom holds that the lessons of World War I were rigorously studied and captured in field service regulations in 1923, but then something went terribly wrong. True to its tradition, the Army was largely disbanded, retaining only a small corps of professional soldiers from 1919 to 1939. Manpower and matériel shortages led to a rapid decline in the quality of Army doctrine. Meanwhile, warfare evolved. Germany continued to study and advance the lessons of the Great War, improve on methods and weapons, and in spite of disadvantages transform doctrine and training. Odom explains the less deliberate evolution of U.S. Army doctrine throughout this period and traces the intellectual life of a service trying to find its way, detailing the infighting and bureaucratic strife resulting from lack of resources and focus.

Guided by John Pershing, Hugh Drum, George Lynch, Frank Parker, and Lesley McNair, the Army attempted to balance technology and the human dimension of war but came up short. Rapid development of combat methods changed doctrine from one "built on infantry-artillery coordination to one based on a highly mobile combined arms team." Doctrine did not keep pace. With few troops, little matériel, miserly funding, and no maneuvers conducted between 1919 and 1939, it is not surprising that the Army was unprepared for global conflict. Hassles in the War Department, friction between branches, and an inept doctrinal development process combined to create an atmosphere so bad that the service failed to coordinate a combined arms doctrine up to the eve of World War II. Then, with German victories in Poland, Norway, and France providing a blueprint, the Army raced to catch up. In a few brief years it had its own breakthrough, cranking out manual after manual and then revising them almost before the ink was dry. Initial experience in combat demonstrated that even this doctrine was still flawed both conceptually and in practice. It took many battles for the Americans to learn the art of war.

Colonel John F. Antal, USA, is commander of 16th Cavalry Regiment.

After the Trenches concludes that the biggest reason doctrine lagged was an institutional inability to maintain a well-coordinated doctrine development process. Thus the events described in this book offer an important cautionary tale for doctrine writers. Complex systems today require an intricate procurement process measured in years, often decades. Doctrine speeds procurement along the fastest route. The challenge in interwar years is to develop and test doctrine using debate, experimentation, and wargaming to increase the odds that new systems will prove themselves under fire.

As Odom contends, "an organization dedicated to monitoring and accommodating change is the most important element in successful modernization. This organization must address weapons, organizations, and doctrine to avoid the same calamity that befell the Army from 1919 to 1939." The Armed Forces must overcome similar demands today. More than a decade after the Cold War, the military must be transformed to become the objective force to fight and win tomorrow's wars. *After the Trenches* should be included on the reading list of those officers and civilians who must contemplate future forces. **JFQ**

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IN THE SHADOW OF HANOI

A Book Review by
ROD PASCHALL

The Secret War against Hanoi: Kennedy's and Johnson's Use of Spies, Saboteurs, and Covert Warriors in North Vietnam

by Richard H. Shultz, Jr.
New York: HarperCollins, 1999.
408 pp. \$27.50
[ISBN 0-06-019454-5]

The only problem with the book under review is its title. While Richard Shultz, director of the International Security Studies Program in the Fletcher School of Law and Diplomacy at Tufts University, has certainly covered covert activities by America during the Vietnam War, he has done far more. This work details operations in Laos and Cambodia and provides highly useful insights and judgments on why the United States and its allies fared so poorly during the 1960s and 1970s. The author offers a thorough account of the failures and triumphs in a long and ruinous war.

The Secret War Against Hanoi offers a range of operational and tactical details to engage the professional officer and serious reader of military history while offering the policymakers of today a rich menu of politico-military lessons. Shultz details intelligence operations, reconnaissance missions, cross-border raids, target identification actions, prisoner-snatching incursions, deception plans, and psychological and political warfare. Based on a wealth of both declassified documents and interviews with officers who ran the Military Assistance Command Studies and Observation Group (MACSOG), as well as senior officials who directed the war, this book is the first definitive and comprehensive account of the covert war in Indochina. The author weaves a web of Kennedy and Johnson administration missteps and explains why most clandestine activities were doomed to failure or reduced to modest success by officials in Washington who crippled them through delays and self-imposed geographical or operational limitations.

Colonel Rod Paschall, USA (Ret.), is the editor of *Military History Quarterly*.

Despite constraints, questionable leadership, and stifling oversight, MACSOG managed to cobble together a valuable adjunct to the war. Its operations were nowhere more successful than in interdicting the Ho Chi Minh Trail, the supply line used to infiltrate troops and supplies to South Vietnam through Laos. It is worth pondering the consequences if such operations had been aggressively pursued earlier in the conflict in Southeast Asia.

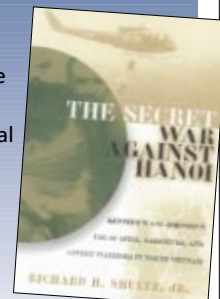
Readers are likely to draw two critical conclusions from this book. The Laotian panhandle, the communist route south and the geographic linchpin of North Vietnamese strategy, was ceded to Hanoi by the Kennedy administration through a major diplomatic blunder in 1962. This argument is persuasively made by Norman Hannah in *The Key to Failure: Laos and the Vietnam War*, which appeared in 1987. Shultz's treatment adds to the story—he was given access to recently declassified material that links policies made in Washington and operations conducted in Indochina.

The other conclusion is more tactical in nature but perhaps more applicable to contemporary affairs. Readers may assume that once an attempt to subvert a totalitarian regime through support of a resistance movement fails, the next best policy alternative is making the regime believe that it is being threatened internally. To a certain extent, that is what the United States did in North Vietnam in the late 1960s. Autocrats are almost always paranoid and prone to expend scarce resources and energy to counter internal security dangers at the expense of external aggression. Unfortunately, America did not follow through and this stratagem was needlessly ceded away.

The Secret War Against Hanoi exposes the implications of pursuing national strategy while limiting the use of force. There are lessons for military planners and policymakers. **JFQ**

The Secret War Against Hanoi

was the subject of a recent *JFQ* book lecture by the author which was held at the National Defense University on December 9, 1999, and televised by C-SPAN [see video 154101].



BLUEPRINT FOR STRATEGIC THOUGHT

A Book Review by

HAROLD R. WINTON

Modern Strategy

by Colin Gray

Oxford: Oxford University Press, 1999.
412 pp. \$29.95
[ISBN 0-19-87825-19]

Colin Gray is known for his contributions on strategic studies and defense policy. *Modern Strategy* is intended as a magnum opus and addresses three important issues. The first is that the underlying logic of strategy as the use (or threat of the use) of force to further political purpose is immutable though it is manifest in rich and varied forms. The second is that strategy has 17 enduring elements that can be grouped in three rubrics: people and politics, preparation for war, and war proper. The third is that *On War* by Clausewitz, from which Gray derives the construct for his logic, remains the touchstone for strategic thought despite the limits of time and circumstance.

Modern Strategy is simultaneously an ambitious, flawed, and important book. Its ambition is evident in the author's attempt to establish a paradigm for strategic understanding to endure over time: "I am capturing the whole nature of strategy for all periods." It is also evident in the breadth of subjects addressed: strategic culture, guerrilla war, terrorism, nuclear deterrence, and conduct of operations in the dimensions of land, sea, air, space, and cyberspace warfare.

But the book is flawed in important respects. The basic tasks of any theoretical work are defining the field under investigation, categorizing its elements, and explaining relations among the elements. Gray gets high marks on the first. His definition of strategy is useful and consistent but his categories are confusing and, save for two, his explanations of them are less than rigorous. When one divides a phenomenon into categories for investigation, the categories should meet the test of comprehensiveness and

mutual exclusiveness. That is, taken together they should cover the field with little overlap. Two theorists who accomplished this task were Clausewitz, whose basic elements of war were reason, violence, and chance, and J.F.C. Fuller, whose elements were the mental, moral, and physical dimensions of war. Two categories outlined by Gray, preparation for war and war proper, are mutually exclusive; but the third, people and politics, overlaps the others significantly. To avoid categorization errors, Gray could have identified the strategic environment as the third element to differentiate it from preparation for both war and war proper, although that would have required rethinking subelements included under all three categories.

It can be argued that categorization, while interesting to students of theory is not important. But the challenge in organizing the concepts underscores a glaring deficiency in *Modern Strategy*, its failure to explain. Two caveats to this criticism are that Gray does, in various contexts, provide explanations for relations between force and political purpose and demonstrates fairly conclusively that the needs of strategic practice had a profound influence on strategic theory. But the exposition on the 17 elements does not explain their interaction but simply reveals that they are vital elements of strategy. One learns that military operations are critical, but nowhere is actual

empirical evidence offered on how and if strategy should shape operational design or whether operational parameters affect strategic choice. The core of any theory is its ability to lay bare the dynamics of relationships among elements of a given phenomenon. Even if Gray's categories were not elegantly composed, he had the opportunity to explore what he judged to be the most important of the relations among his elements of strategy. This opportunity was largely missed.

Modern Strategy is an important work. The first reason is the intrinsic significance of the subject. The world remains a dangerous place. Good strategy is still needed and bad strategy can ruin the destiny of whole peoples. The book is also valuable because its most important argument is accurate: there is an essential logic to strategy that is neglected only at great peril. As an adjunct to this debate, the work is also significant because it points back to Clausewitz. Gray is balanced in assessing the insightful Prussian, clearly recognizing the temporal and geographic limitations under which he worked, yet giving due credit to his probing intellect and reminding us that much in *On War* is still of value. In a day when many enthusiasts are trumpeting that everything under the sun is new, this is a useful corrective. But if an appeal to old ideas is one reason to value this book, its great modernity is another. **JFQ**

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INTERVENTION IN HAITI

A Book Review by
RONALD H. COLE

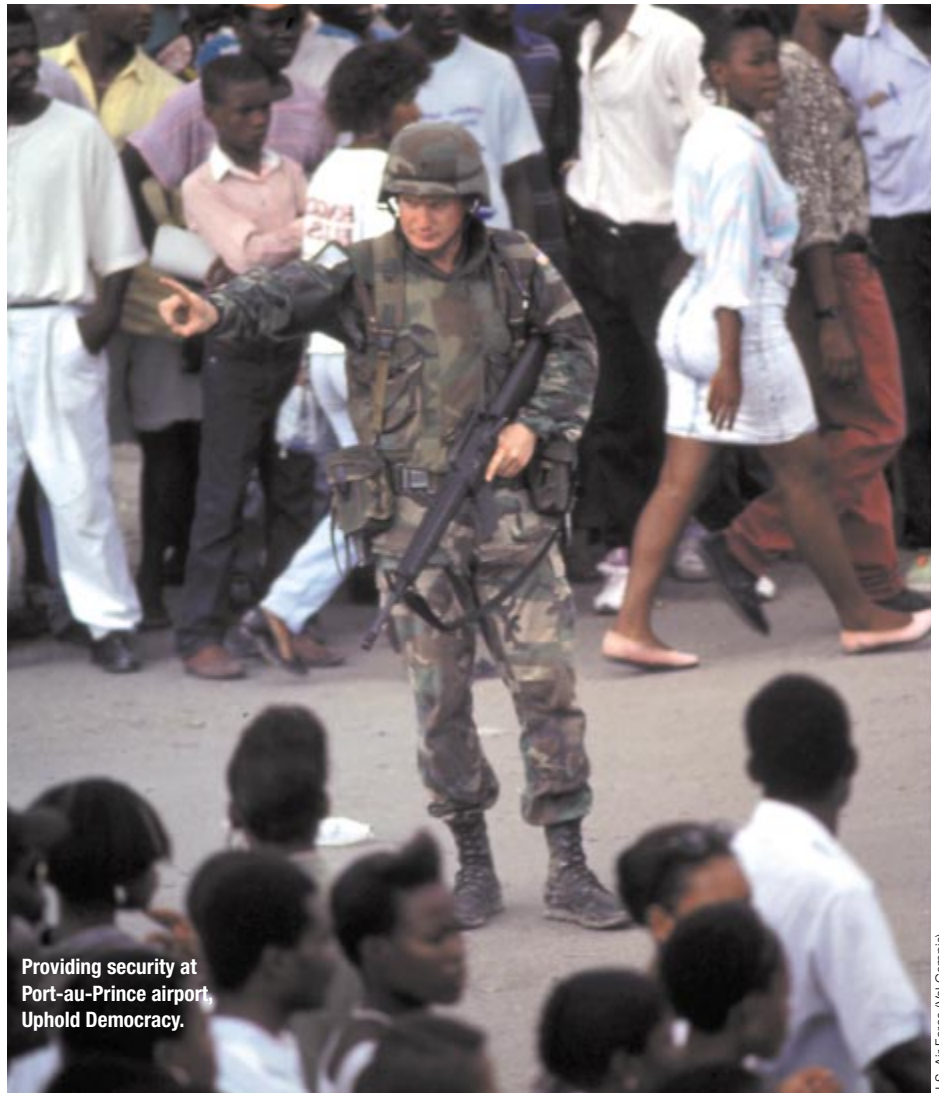
Upholding Democracy: The United States Military Campaign in Haiti, 1994–1997

by John R. Ballard
Westport, Connecticut: Praeger
Publishers, 1998.
292 pp. \$62.95
[ISBN: 0-275-96237-7]

The Persian Gulf War represented the last conventional military operation conducted by the Armed Forces in the 20th century. During the 1990s the United States participated in many peace and humanitarian operations including Iraq (Provide Comfort), Somalia (Eastern Exit and Provide Hope), Bangladesh (Sea Angel), Bosnia-Herzegovina (Deny Flight and Joint Endeavor), and Haiti (Uphold Democracy). In *Upholding Democracy: The United States Military Campaign in Haiti, 1994–1997*, John Ballard has produced a comprehensive account of that last operation, in which he served with the joint analysis and assessment team under U.S. Atlantic Command (ACOM).

Ballard interviewed many key planners of Uphold Democracy including two marines who had been assigned to the Joint Staff at the time, General John Sheehan and Colonel Robert Garner. He also used countless published sources. One he did not consult is *Invasion, Intervention, "Intervasion": A Concise History of the U.S. Army in Operation Uphold Democracy*, another comprehensive treatment of the operation. Published by three members of the faculty at the U.S. Army Command and General Staff College, Walter Kretchik, Robert Baumann, and John Fishel, this work overlaps *Upholding Democracy* in both sources and themes. But unlike *Upholding Democracy*, it covers the operation in Haiti primarily from a joint task force (JTF) perspective—with less political and strategic analysis but with important details about activities on the operational level.

Ronald H. Cole serves in the Joint History Office and is coauthor of *Roles of Federal Military Forces in Domestic Disorders, 1878–1945*.



Providing security at Port-au-Prince airport, Uphold Democracy.

U.S. Air Force (Val Gemppis)

Aside from some triumphal language and pedantic asides, Ballard's account is readable and valuable for the depth and clarity of its analysis. After a survey of Haitian history, he considers the planning for forced and permissive entry, initial operations by JTF 180, follow-on stability and political-military operations by JTF 190, and ensuing U.N. missions. In his concluding chapter, he presents some lessons learned on flexible planning, command and control, joint interoperability, media relations, managing transitions between forces, theater strategic coordination, joint training, interagency coordination, and "mission success."

Upholding Democracy documents progress in improving jointness. Under the Goldwater-Nichols Act, the enhanced powers of the Chairman and unified commanders significantly bolstered joint

operations. In 1993 ACOM was transformed from a naval into a genuinely joint command. Its subordinate commands produced entry plans for Haiti, a bridge plan among them, related options, and troop lists to accompany each plan. Using worldwide communications systems and computer simulation programs, frequent command exercises enabled commanders and planners to become familiar with one another. The resultant team spirit facilitated the eleventh hour switch on September 19, 1994 from invasion to peaceful entry.

Uphold Democracy also highlighted the limited use of the military in complex contingency operations. From the outset of the Haitian crisis, two Chairmen and commanders understood that armed entry was only the initial challenge.

There were also political, economic, and social aspects of the operation known as *nationbuilding*. The military worked with other agencies, international organizations, and Haitian authorities to rebuild security and justice systems, establish a modern transportation and communications infrastructure, and privatize inefficient state-run industries.

Not surprisingly, Haitian elites preferred the status quo, which preserved their monopoly on land and wealth, a problem neither military planners nor civilian officials sufficiently considered. The Armed Forces focused on what they do best, entering a country in strength to remove threats and bring temporary stability. The peaceful disposition of the Haitian military and partial disarmament of paramilitary units were significant

achievements, but they did not assure success of democracy and free enterprise. As Ballard notes, even after four years of U.S. military protection, civilian organizations proved unable to reform or remove Haitian elites who blocked political and economic reform. Today foreign firms are reluctant to invest in Haiti, economic conditions are worsening, the democratic regime seems unwilling to take action, and Haitians are again migrating by boats for a better life elsewhere.

For these reasons, the talk of mission success in *Upholding Democracy* rings hollow:

Just as the [multinational force] met all objectives assigned to it, the U.N. mission in Haiti completed its tasks in superb fashion prior to its planned mission end date. Although U.N. efforts continued into 1998, there is no doubt that the application of

multinational and U.N. military and civilian support accomplished the tasks assigned. The effects of the anti-Aristide coup of 1991 were corrected, and Haiti was returned to the path of democratic advancement.

One can recall claims by General William Westmoreland, later echoed by Colonel Harry Summers, that American troops never lost a battle in Vietnam. But assuming that assertion, tactical successes mean little if they don't add up to strategic victory. Similarly, achievements by the Armed Forces during Uphold Democracy created a chance for progress in Haiti. No matter how competently the civilian and military communities accomplished the tasks assigned, the claim of overall success in that troubled country remains premature. **JFQ**

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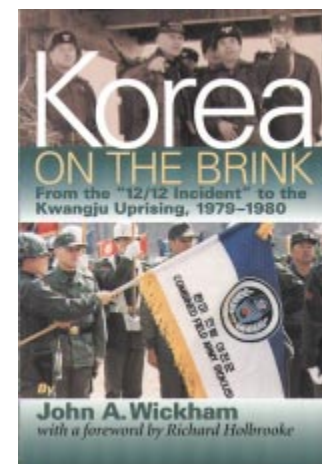
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