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Issue 49, 2d Quarter 2008

Focus on Airpower

The Challenge of USAFRICOM

Hizballah Rising

National Security and Global Climate Change

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Inside

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NDU Press is the National Defense University's cross-component, professional military and academic publishing house. It publishes books, policy briefs, occasional papers, monographs, and special reports on national security strategy, defense policy, national military strategy, regional security affairs, and global strategic problems. NDU Press is part of the Institute for National Strategic Studies, a policy research and strategic gaming organization.

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JFQ Dialogue

Forum

Commentary

CORRECTION

The *JFQ* 48 (1st quarter, 2008) cover photograph showed Camp Six, Guantanamo Bay Naval Base, not Camp One as stated in the caption.

JFQ

Features

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Recall

Book Reviews

ABOUT THE COVERS

The front cover shows F–22 receiving fuel from KC–135 over Eglin Air Force Base (U.S. Air Force/Bryan Franks). The table of contents shows (left to right): Global Hawk unmanned aircraft system being towed to hangar after mission over Southwest Asia (U.S. Air Force/Jason Tudor); RQ–8A Fire Scout vertical takeoff and landing tactical unmanned aerial vehicle test firing unguided Mark–66 2.75-inch rocket (Northrop Grumman/Tim Paynter); crew of Apollo 11 erecting U.S. flag on Moon (NASA); and MV–22B preparing to land at Al Asad Air Base, Iraq (2d Marine Air Wing/Sheila M Brooks). The back cover shows (clockwise from top): USS *Harry S. Truman* receiving underway replenishment from USNS *Arctic* in Persian Gulf (U.S. Navy/Kenneth R. Hendrix); SEAL leading Afghan officer to border checkpoint in Afghanistan (U.S. Marine Corps/Luis P. Valdespino); Master Chief Petty Officer of the Navy with award-winning Navy recruiters (U.S. Navy/Jennifer A. Villalovos); USS *Constitution*, the Navy's oldest commissioned warship, moored in Charlestown, Massachusetts; crew of USS *Porter* striking World War II–era pose while conducting maritime security in Indian Ocean (U.S. Navy/Patrick Gearhiser).

▲ *Download cover as computer wallpaper at ndupress.ndu.edu*

CONTRIBUTIONS

Joint Force Quarterly **welcomes submission of scholarly, independent research from members of the Armed Forces, security policymakers and shapers, defense analysts, academic specialists, and civilians from the United States and abroad. Submit articles for consideration to the address on the opposite page or by email to JFQ1@ndu.edu "Attention A&R Editor" in the subject line. For further information, see the guidelines on the NDU Press Web site at ndupress.ndu.edu.**

Joint Force Quarterly **is published by the National Defense University Press for the Chairman of the Joint Chiefs of Staff.** ***JFQ*** **is the Chairman's flagship joint military and security studies journal designed to inform members of the U.S. Armed Forces, allies, and other partners on joint and integrated operations; national security policy and strategy; efforts to combat terrorism; homeland security; and developments in training and joint professional military education to transform America's military and security apparatus to meet tomorrow's challenges better while protecting freedom today.**

DEADLINE *Approaching* for *JFQ* Issue 51

FEATURING:

Focus on Weapons of Mass Destruction

AND

SecDef and CJCS Essay Contest Winners

Submissions Due by
June 1, 2008

JFQ Issue 52

Featuring:

Homeland Defense and Security

U.S. Transportation Command

Submissions Due by
September 1, 2008

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JFQ Dialogue

Open Letter to *JFQ* Readers

When General Colin Powell established *Joint Force Quarterly*, he envisioned a journal that would contain all the practical utility of *Marine Corps Gazette* and the glossy visual presentation of the Naval Institute's *Proceedings*. In this issue, *JFQ* seeks to support a helpful debate over contemporary issues of air and space power in order to improve joint and interagency synergy. In the July issue, the debate will be very different, inasmuch as sister Service use of naval power does not precipitate the same friction and rancor. The illusory tranquility of the naval power debate is due to the fact that it is largely conducted intra-Service, which increases the opportunities for error in naval strategy and procurement. For balance, *JFQ* shall commit a future issue to Land Warfare issues and challenges as well.

The forthcoming 51st issue of the Chairman's journal will present the winners of the May 2008 Secretary of Defense Transformation and Chairman of the Joint Chiefs of Staff Strategic Essay Competitions (open only to students enrolled in participating military colleges). In addition, *JFQ* encourages you to submit manuscripts that speak to your unique professional strengths and interests. Boldly challenge traditional thought and operational practice in the joint, interagency, national security community, and propose a *new* school solution!

***JFQ* would also like to solicit manuscripts on specific subject areas in concert with future thematic focuses. The following topics are tied to submission deadlines for upcoming issues:**

June 1, 2008 (Issue 51, 4th quarter 2008):
Weapons of Mass Destruction
Essay Contest Winners

September 1, 2008 (Issue 52, 1st quarter 2009):
Land Warfare
U.S. Transportation Command

December 1, 2008 (Issue 53, 2d quarter 2009):
Military Force and Ethics
U.S. Africa Command
Joint Interagency Coordination

March 1, 2008 (Issue 54, 3d quarter 2009):
Strategic Outlook
U.S. Strategic Command

JFQ readers are typically subject matter experts who can take an issue or debate to the next level of application or utility. Quality manuscripts harbor the potential to save money and lives. When framing your argument, please focus on the *So what?* question. That is, how does your research, experience, or critical analysis improve the reader's professional understanding or performance? Speak to the implications from the operational to the strategic level of influence and tailor the message for an interagency readership without using acronyms or jargon. Also, write prose, not terse bullets. Even the most prosaic doctrinal debate can be interesting if presented with care! **Visit ndupress.ndu.edu to view our NDU Press Submission Guidelines. Share your professional insights and improve national security.**

Colonel David H. Gurney, USMC (Ret.)
Editor, *Joint Force Quarterly*
Gurneyd@ndu.edu

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LETTERS

To the Editor—Thank you for emphasizing the importance of better understanding the strategic impact of the law on America's warfighting capability and culture through the topics recently covered in *Joint Force Quarterly* (Issue 48, 1st Quarter 2008). Your authors have done the Department of Defense and the Republic a great service by highlighting the importance of the legal instrument in support of U.S. strategic objectives.

In particular, the two articles by Colonel James Terry, USMC (Ret.), and the essays by Colonel Peter Cullen, USA, and Colonel Kevin Cieply, ARNG, effectively lay out both the scope and nature of the legal challenges that we face in the years ahead.

I am convinced that we win wars because of the way we fight, adhering to accepted standards of behavior that govern combat and the treatment of our enemies. These standards are central to our national identity; they provide the moral foundation for our actions on the world stage. Operators in all branches of the Armed Forces and leaders at every level of government must understand and embrace the principles that underpin our actions. Reinforcing these principles in both training and application will help us avoid the damaging effects of incidents such as Abu Ghraib.

Judge advocates continue to provide guidance on these subjects to commanders from tactical to strategic levels, as the Services come together to conduct operations in the joint commands around the world. Your exposition of these issues in *JFQ* helps ensure senior decisionmakers continue to fight the Nation's wars in a way that will make future generations of Americans proud.

—Col David C. Wesley, USAF
Commandant
The Judge Advocate General's School
Maxwell Air Force Base, Alabama

To the Editor—After reading Robert Oakley and Michael Casey's "The Country Team: Restructuring America's First Line of Engagement" (Issue 47, 4th Quarter 2007), I wanted to give some candid feedback "from the field," as it were, in regard to U.S. Country Teams. The article is spot on, for the most part, and should be widely disseminated for *all* to read—not only in the military, but also in all Federal agencies that send representatives to U.S. Embassies.

I recently completed a 3 ½–year tour as the Marine and Navy Attaché at the U.S. Embassy in Warsaw, where I oversaw relations with Special Operations Forces, the Proliferation Security Initiative (PSI), and counterterrorism efforts and activities. Several months after arriving at post, I realized that there were several different agencies working on soda-straw portions of counterterrorism-related issues but that there was no *integrated* effort on either the U.S. or Polish side.

To address this, I suggested to Ambassador Chris Hill that we create a Joint Interagency Counterterrorism Working Group (JIACWG) that could integrate and unify actions and better reach out to and coordinate activities with the host nation government. I proposed that in working with the host nation, we adopt a structure and approach that mirrored the PSI, which was launched by the United States in Poland and is now global in scope and application.

This suggestion was embraced by Ambassador Hill and all agency heads. The process of self-examination resulted in a critical assessment of what U.S. policy *was* in Poland and the surrounding region. It took several months to sort out what the various directives from Washington were and then how to weave these back together in Warsaw into an integrated and harmonized set of objectives. Receiving not only insubstantial but also contradictory guidance from Washington, we set out to approach the Poles and ask them to join us in putting all of their national agencies into a similar working group. While this met with some initial skepticism, over the following year we were able to merge into a collaborative working environment.

The capstone event took place last spring, when the U.S. Embassy, with strong support and interaction from Washington and the Polish government, held the first bilateral counterterrorism exercise. This was an "almost no notice," very closely held exercise in which six protagonists attacked the Embassy, seized hostages, and exercised the emergency action council at the Embassy and host nation responders at the same time. The exercise was very successful, and the JIACWG had gone from a concept to a reality.

This example serves as a textbook example of what Ambassador Oakley and Mr. Casey are driving at. All of their points resonated closely with me from my experience with Country Teams in Africa, Asia, Europe, and the Middle East. The delicate balancing act between the Ambassador and other leaders of various organizations who comprise the Country Team requires both vigorous personal leadership and a strong organizational commitment to long-term personnel policies that will ensure effectiveness that is not personality dependent.

I do take issue with Ambassador Oakley and Mr. Casey's comments vis-à-vis the military. While I am sure that their remarks accurately reflect the Ambassador's experiences, they do not reflect, with only minor exceptions, the experiences that I have had with a great many Country Teams, from Warsaw to Canberra. When Ambassador Oakley states that "to this day the military is not routinely enjoined to work with Ambassadors," he overlooks the fact that, for example, the commander of U.S. European Command holds an annual Ambassadors' conference where he meets with all of the Ambassadors at length. Furthermore, the Joint Military Attaché School goes to great lengths to explain the role and mission of the Ambassador as the Presidential envoy to the host nation, and every attaché knows this upon assignment to post or station. When Ambassador Oakley notes that "non–State Department personnel often outnumber diplomats," he could also add that these personnel frequently have more overseas time and experience than their State Department colleagues, a fact that can further hamper the ability of the Country Teams and their respective staffs to work well together.

—LtCol D.J. Thieme, USMC
25th Marine Regiment

To the Editor—Robert Oakley and Michael Casey's article "The Country Team: Restructuring America's First Line of Engagement" (issue 47, 4th Quarter 2007) is an outstanding compendium of issues and challenges regarding interagency work in the Embassy "field environment" traditionally reserved for diplomats. The authors note that the goal of maximizing U.S. foreign policy in other countries is more complex than ever. They also point out that those selected as Ambassador do not necessarily have a proven track record of effectively representing U.S. interests and that the process often ignores language and cultural skills. Tellingly, Ambassador Oakley and Mr. Casey pen the same indictment for the training and selection of other agency heads. What is noteworthy is that a pool of capable, qualified officers able to represent the Department of Defense (DOD) in today's challenging global environment already exists.

This pool of officers should be a primary consideration when implementing the new DOD Directive 5105.75, which excised the term *United States Defense Representative* (USDR)

from the vernacular and established the Senior Defense Officer (SDO) as the "diplomatically accredited Defense Attaché (DATT) and Chief of the Security Assistance Organization (SAO)," in effect making the officer dual-hatted as both the SDO and DATT. The SDO/DATT is to "act as the [commander's] principal military advisor on defense and national security issues, the senior diplomatically accredited DOD military officer assigned at a U.S. diplomatic mission, and the single [point of contact] for DOD matters involving embassy or DOD elements assigned to or working from the embassy."

The action to establish a principal DOD official speaks to but one of many recent policy attempts to grapple with the contemporary operating environment and better prepare the United States to meet emerging national security goals. To that end, the existing Foreign Area Officer (FAO) program provides a ready solution to the problem of developing and placing the right military personnel—what the Army would term *Soldier-Statesmen*—in Embassies in order to effect a more seamless interagency solution, while at the same time providing regional experts capable of working effectively at all levels with both friends and allies. If we are to better prosecute the war on terror, we need not only to provide a single DOD authority for Ambassadors and country teams, as this new policy requires, but also to select and promote those who are best trained and best qualified to operate effectively in this arena.

The Army FAO program is synonymous with the parameters of the new SDO policy, which aims to provide selected personnel with the requisite skills to function as the DOD representative on the country team. In fact, the new policy articulates a broad set of requirements such as language, attaché, and security cooperation training, which are already part and parcel of an experienced FAO kitbag. While it is true that a number of positions affected by the new policy are already manned by qualified FAOs, there are two exceptions that must be addressed.

First, the Army and Marine Corps FAO programs have proven track records over several decades. However, until recently the Navy and Air Force programs have received minimal emphasis, and assignments to Embassy billets as often as not represented a final reward for long and faithful service, vice ensuring the best trained and most capable were sent. This often counterproductive approach is something DOD FAO guidelines should serve to eradicate.

Second, there remain key countries that, due to size of account (Egypt, Saudi Arabia) or importance of the relationship (Turkey, Russia, China), have general officer/flag officer billets that have met the requirement for the USDR. The DOD program for FAOs states that "Officers with potential for service on political-military staffs and for effective military diplomacy shall be competitively selected within the Military Departments and be able to represent the U.S. Department of Defense to foreign governments and military establishments." This has typically not been the case. A traditional lack of FAO competitiveness for promotion above O–6 means that countries important to U.S. goals often do not enjoy leadership selected from the FAO ranks. This has been succinctly captured by the authors. This new policy endorses FAO promotion to flag rank and would serve to ensure officers possessive of skills, area experience, and established credibility with the host nation are selected.

With the current emphasis on the war on terror, it is no wonder that the exploits of the likes of T.E. Lawrence have experienced a rebirth in U.S. military academic institutions such as the U.S. Army's Command and General Staff College. But what was Lawrence if not the prototypical FAO? Lawrence intuitively understood the culture in which he was dealing because of travel, in-depth study, and experience in the region. His ability to draw upon this background contributed immensely to Great Britain's efforts in World War II. Well-trained and effectively developed, FAOs understand jointness, interagency cooperation, and the multinational environment far better than traditional operators who rise to flag rank on the strength of Service-specific command performances.

It is time to recognize that the Cold War ended years ago, and we no longer find our enemy postured to attack the Fulda Gap. Our ability to operate effectively means the development of senior leaders who understand that efforts to force an answer in a foreign culture where no answer *is* your answer will harm, not help, U.S. interests. In short, it means recognizing that the U.S. military possesses an extant, but as yet only partially tapped, pool of experts who can make tangible, lasting, and meaningful contributions to the Nation's security at a time their skills are most required, while concurrently effecting institutional change to capture their potential over the long term.

—Jeffrey D. Vordermark
COL, U.S. Army (Ret.)
U.S. Army Command and General Staff College

Joint Doctrine Update

Joint Chiefs of Staff J7 Joint Education and Doctrine Division

The joint doctrine development community (JDDC) yielded 20 joint publications (JPs) in calendar year (CY) 2007. The JDDC also voted on and approved the CY 2008 campaign plan during the 40th Joint Doctrine Planning Conference. The plan calls for the development and revision of joint doctrine publications in order to provide the joint warfighter with relevant and updated doctrine. The intent is that the majority of doctrine will remain less than 3 years old via a distributed "steady state" work stream to ensure that the average publication development timeline (from development approval to signature) will not exceed 18 months.

Although the CY 2008 campaign plan calls for fewer publications, the pace will remain brisk as the community tackles some difficult issues regarding joint doctrine on counterterrorism and counterinsurgency.

The plan for CY 2008 includes some of our most versatile and functional publications to date. We will complete revision and publish 10 JPs (see table). Work on both JP 4–09 and JP 4–10 is proceeding in parallel with JP 4–0 to include a comprehensive plan to realign the 4-series publications with the logistic core capabilities identified in JP 4–0.

The workload will continue to be demanding on the JDDC as we work on publications that are currently in or will be in revision during CY 08 (see table). Both JP 3–24 and 3–26 are new publications that have the interest of representatives from other U.S. Government departments and agencies that are working to develop an Interim Counterinsurgency Guide for the Interagency. Additionally, all the revised publications are being reviewed with due diligence to ensure that they have the information our warfighters need.

Our challenge is to keep the doctrine community on the offensive and lead the integration of lessons learned, best practices, and emerging concepts into joint doctrine. The community will proactively look to integrate the emerging ideas through the publication of white papers, pamphlets, and handbooks, while ensuring full support to the Chairman's joint doctrine development program.

For access to joint publications, go to the Joint Doctrine, Education, and Training Electronic Information System Web portal at https://jdeis.js.mil (dot.mil users only). For those without access to dot.mil accounts, go the Joint Electronic Library Web portal at http://www.dtic.mil/doctrine.

Joint Publications (JPs) Revised

CY 2008

1–06, *Doctrine for Financial Management*

3–04, *Shipboard Helicopter Operations*

3–11, *Operations in a Chemical, Biological, Radiological, Nuclear Environment*

3–18, *Forcible Entry*

3–29, *Foreign Humanitarian Assistance*

3–57, *Civil Military Operations*

3–59, *Meteorological and Oceanographic Operations*

4–0, *Logistic Support Operations*

4–09, *Global Distribution*

4–10, *Contracting and Contractor Management Operations* (new)

JPs in or Scheduled for Revision

CY 2008

1–05, *Religious Support in Joint Operations*

2–01, *Joint and National Intelligence Support to Military Operations*

2–01.3, *Intelligence Preparation of the Battlespace*

3–02, *Amphibious Operations*

3–05, *Doctrine for Joint Special Operations*

3–06, *Doctrine for Joint Urban Operations*

3–07.1, *Joint Tactics, Techniques, and Procedures for Foreign Internal Defense*

3–08, *Interagency, Intergovernmental Organization, and Nongovernmental Organization Coordination during Joint Operations*

3–09.1, *Joint Tactics, Techniques, and Procedures for Laser Designation Operations*

3–09.3, *Close Air Support*

3–13, *Information Operations*

3–14, *Space Operations*

3–17, *Joint Doctrine and Joint Tactics, Techniques, and Procedures for Air Mobility Operations*

3–24, *Counterinsurgency Operations* (new)

3–26, *Counterterrorism* (new)

3–30, *Command and Control for Joint Air Operations*

3–31, *Command and Control for Joint Land Operations*

3–40, *Combating Weapons of Mass Destruction*

3–52, *Joint Doctrine for Joint Airspace Control in the Combat Zone*

3–53, *Doctrine for Joint Psychological Operations*

3–61, *Doctrine for Public Affairs in Joint Operations*

JPs for Formal Assessment

CY 2008

2–01.2, *Counterintelligence and Human Intelligence Support to Joint Operations*

3–07.2, *Antiterrorism*

3–08, *Interagency Coordination during Joint Operations*

3–10, *Doctrine for Joint Rear Area Operations*

3–13, *Joint Doctrine for Information Warfare*

3–13.3, *Operations Security*

3–13.4, *Military Deception*

3–61, *Doctrine for Public Affairs in Joint Operations*

4–01.2, *Sealift Support to Joint Operations*

4–01.6, *Joint Logistics over the Shore*

4–05, *Joint Mobilization Planning*

4–06, *Mortuary Affairs in Joint Operations*

6–0, *Joint Communications Systems*

Executive Summary

In its first decade, the U.S. Air Force School of Advanced Air and Space Studies (SAASS) required students to develop and present personal theories of airpower. After over 300 attempts by its carefully screened student body, the faculty discontinued the effort. The school's Dr. Hal Winton asserted that "there simply does not exist any body of codified, systematic thought that can purport to be called a comprehensive theory of air power." More than one airpower theorist has suggested that a comprehensive theory of airpower is no more useful than a theory of "north"; it has no meaning independent of the other points of the compass, which include land, maritime, and space power. Certainly, any sound theory of airpower should be able to stand up to the same demands as a theory of war writ large; it should be able to define its essence, and that definition should be flexible enough to encompass all the variables related to it. What then is the central proposition of airpower? Undeniably, air, space, and cyberspace are the most efficient lines of communication today. Does dominance of these domains confer maximum influence at an acceptable cost while minimizing risk? The articles in this issue's Forum may lead readers to precisely this conclusion.

In the final analysis, air, space, and even cyberspace power are simply means of exerting national will, and success or failure depends upon how well their application helps to achieve the political objectives sought. Many military analysts and media pundits make the mistake of presuming that a particular type of conflict (conventional, counterinsurgency, cyber, and so forth) is the blueprint for the near future and overemphasize the need to procure and train for a narrow threat or point on the spectrum of conflict. A beneficial outcome of the competition for ideas and resources among the military Services—which all employ airpower—is that the United States develops, upgrades, and fields a wide variety of assets and capabilities, ensuring experimentation, innovation, and operational flexibility while reducing strategic vulnerability. No one knows what the next war will be like, and debates over airpower command, control, and procurement strategies are best resolved in hindsight. Nevertheless, the long-term success of airpower depends upon foresight, and for this reason, our Forum begins with the views of a leader who commands the most powerful air, space, and cyberspace organization on Earth.

Rather than pitting one variant of air power against the other . . . Enduring Freedom *convincingly demonstrated that such 20th-century interservice rivalries have no place in the 21st-century U.S. warfighting establishment. The operation was remarkable for its degree of seamless interoperability between the U.S. Air Force and the Navy–Marine Corps team's sea-based aviation . . . . In short, aircraft carriers and* [land-based] *bombers should not be viewed as competitors for resources, but as partners able to leverage unique synergies on the modern battlefield.*

—Vice Admiral John J. Mazach[1]
Commander, Naval Air Force
U.S. Atlantic Fleet

F–16s conduct training mission over South Korea

U.S. Air Force (Quinton T. Burris)

In "America's Air Force: The Nation's Guardian," General T. Michael Moseley speaks to the strategy that he has implemented for the Air Force and his assessment of the challenges that will face America tomorrow. His top priorities are winning the war on terror, developing and caring for Airmen, recapitalizing the fleet, and preparing for an uncertain future. His approach to this future is the integrated domination of three core competency domains, at least one of which (the cyber domain) is seriously challenged by potential adversaries. The highlight of General Moseley's article is his tour of the future strategic environment, including the character of 21st-century warfare and his assertion that airpower is no longer the sum, but rather the *product*, of air, space, and cyberspace superiority. His plan for preserving and enhancing these strategic domains to achieve prompt, persistent, and decisive effects is essential reading for the joint Service professional.

Technological innovation produces the qualitative advantages that allow U.S. airpower to overmatch superior adversary numbers while minimizing the exposure of military personnel to casualty and capture. The most recent example of this central feature of airpower is now being exhibited in the assault support mission performed for decades by helicopters. The first combat deployment of the MV–22 Osprey in Operation *Iraqi Freedom* is the point of departure for the second Forum article, which focuses on a revolutionary aircraft that has entered the airpower arsenal against long odds. Test pilot and former Osprey squadron commander Glenn Walters outlines the struggle that Marine Corps and special operations community proponents of tiltrotor technology waged against those with a different vision of airpower priorities and requirements. Colonel Walters cites a continuous reference to the principles of war as a means of mitigating the risk of an obsolete debut following the long lead time from conception to deployment of major weapons systems. He makes the case that the MV–22 has exceeded expectations in the first iteration of an aircraft that is undoubtedly destined to produce numerous variants and commercial spinoffs into the future.

The third Forum offering begins with the premise that the joint community has been

unable to provide adequate unmanned aircraft system (UAS) coverage to Army forces engaged in tactical operations. The U.S. Army Training and Doctrine Command system manager for UAS argues that when ground units are in contact with the enemy, continuous sensor coverage is not a convenience; it is an imperative. Colonel Jeffrey Kappenman asserts that Army UAS are organic assets and should not be subject to the allocation decisions of central controllers from other Services. In his words, a "strategic concept of centralized control, in which UAS allocation is perceived to have scheduled predictability, does not operationally support [tactical] ground commanders." He goes on to claim that the teaming of manned and unmanned platforms is becoming the standard in Army operations at the division level and below, leading to habitual relationships and more efficient mission planning and execution. He concludes that the joint UAS that meet requirements at corps echelon and above do not alleviate the deficiency in real-time dedicated combat information needed by ground commanders at lower levels. *JFQ* readers should compare Colonel Kappenman's views with those of General Deptula's in the eighth Forum feature.

In the longest essay that *JFQ* has ever published, Dr. Mark Clodfelter argues that the past 80 years of American thought about airpower reveal an enduring faith in bombing as a just, rational instrument of military force that makes wars quicker, cheaper, and less painful for all sides than a reliance on surface combat. This conviction, he claims, is the central premise of progressive airpower. Originally developed by visionary airmen such as Billy Mitchell, the belief stems from America's Progressive Era and has been embraced by wartime Presidents. Although it has complemented the messianic tendencies of American foreign policy since Woodrow Wilson, it has frequently undercut Washington's political objectives and helped to achieve the antithesis of the desired results. It has done so for two reasons: (1) it neglects the impact of "friction"—the combination of uncertainty, chance, danger, and exertion that makes actual conflict very different from "war on paper"; and (2) it is ill suited to unconventional and stagnant conventional types of limited war. Friction-induced collateral damage has often undermined war aims, especially in unconventional conflicts to win "hearts and minds"—which Dr. Clodfelter claims are the most likely types of wars that the United States will face in the years ahead. Accordingly, he argues that American leaders should jettison airpower's progressive notions and the rhetoric that accompanies them.

The fifth Forum contribution addresses the space domain from where General Moseley left off. General C. Robert Kehler traces the importance of space systems from victory in Operation *Desert Storm*, through the establishment of the Space Warfare Center and the training contributions of the 328th Weapons Squadron at the Nellis Air Force Base Weapons School, to today's Joint Space Operations Center. Speaking to General Moseley's point about the myriad products of space superiority, General Kehler identifies terrestrial developments such as low-yield precision munitions, combat search and rescue, and Blue Force Tracking devices. In an overview of space power's future, he asserts that the Air Force knows for the most part what capabilities it will have in the year 2033 and emphasizes the need for recapitalization and modernization to keep pace with warfighting requirements. Technology is blurring the boundaries between warfighting domains, perhaps most notably in the realm of intelligence, surveillance, and reconnaissance (ISR) activities. Foreseeable threats demand progress in the integration of new capabilities across all military power domains.

As the Integrated Global Presence and Basing Strategy eventually returns over 50,000 U.S. military personnel from foreign bases, the role of strategic air mobility increases in prominence and will remain a critical pillar of military power indefinitely. In the sixth Forum installment, General Arthur Lichte, commander of U.S. Air Force Air Mobility Command (AMC), takes *JFQ* on a historical survey of ever-shrinking crisis-to-employment timelines, from World War I to Operation *Enduring Freedom*. An AMC aircraft takes to the air somewhere in the world every 90 seconds, and dependence upon host nations for en-route basing support has led the command to establish expeditionary organizations that efficiently link points of origin to destinations. Future requirements such as the Air Force's number-one acquisition priority, the KC–X aerial tanker, are addressed alongside examples of operational adaptation to support national strategic efforts that range from diplomacy to combat. Success and victory in peace and war go to those who arrive "the fastest with the mostest," and air mobility is the indispensable catalyst for the deployment, employment, and sustainment of global U.S. combat and soft power.

An excellent and stimulating example of contemporary Air Force institutional thought is presented in our seventh Forum offering entitled "Domain Expertise and Command and Control." This article restates Air Force Service philosophy vis-à-vis a longstanding debate that attracted great attention following the Korean War when Lieutenant General Ned Almond, then commandant of the Army War College, criticized Air Force priorities in the employment of airpower. The question of airpower expertise is just as thought-provoking and strident today, especially regarding command relationships: "Is airpower so unique as to require central control of each Service's organic and integrated aviation assets?" The authors, Lieutenant General Raymond Johns and Lieutenant Colonel Bruce Hanessian, claim a link between effective command and control and domain expertise, concluding that this link is the foundation for intelligent employment of military forces. What has contextually changed over the years is the cost of individual aviation assets, making them increasingly scarce and valuable. The essay argues that only Air Force domain experts possess the vision to guide aviation development for the mid and long term. Additionally, joint force commanders should rely on these domain experts to command and control air and space forces efficiently in a joint military campaign. *JFQ* encourages its readers to comment on the arguments presented in this essay. Each Service develops uniquely integrated aviation assets and employs associated tactics, techniques, and procedures in training for combat operations. Does centralized command and control of all aviation assets in joint operations support the ability of the land and sea Services to fight as they train? Is this assertion of single-Service expertise the blueprint for improved joint military efficiency and long-term success?

Lieutenant General David Deptula picks up the thesis of the previous article and brings it to bear on the transformational incorporation of UAS by all Services. He worries that "the evolution of UAS capabilities has outpaced the development and implementation of an overarching concept of operations to govern their use." His proposed remedy is consonant with General Moseley's goal of integrated domination of Air Force core competency domains: an employment strategy that purports to ensure UAS integration and optimizes their use in joint force operations. The justification for this strategy is that it will increase capability for joint forces, promote Service interdependence, and maximize the return on taxpayer dollars. In

addition to these benefits, the author points to dramatically increased risks should the United States not employ such effectively integrated UAS before facing an adversary presenting a credible air threat.

A natural result of the proliferation of unmanned aircraft systems, on-orbit assets, and emerging technologies is the vast amount of battlespace information to be indexed, accessed, and processed. Our ninth essay, authored by Lieutenant General Michael Peterson, addresses the Air Force's implementation of the Department of Defense Net-Centric Data Strategy initiative, which aims to provide decisionmakers at all levels with authoritative data and reduce friendly fog and friction. The Data Transparency initiative exploits metadata technologies and business rules to reduce manual communication processes and thereby shorten decision cycles. The ability to access the right information at the right time is prerequisite to observing and responding faster than adversaries and keeping them firmly planted on the horns of serial dilemmas delivered by deftly choreographed joint forces.

The tenth Forum contribution is a good news story from RAND's Dr. Benjamin Lambeth. Despite the glaring budget and command and control differences to be overcome by the Services in regard to airpower, in the realm of fixed-wing strike operations, integration is now truly part of joint culture. This fairly recent development is convincingly traced by Dr. Lambeth to *Desert Storm*, where Service friction and pernicious interoperability challenges shocked naval aviation into rapid transformation. Change did not come overnight, but the 10-year experience of Operations *Northern* and *Southern Watch*, enforcing no-fly zones over northern and southern Iraq, served as a "real-world operations laboratory." With Air Force, Marine, and Navy strike warfare assets operating interchangeably in the daily air tasking order, the Services were unusually well poised for Operations *Enduring Freedom* and *Iraqi Freedom*. Indeed, the author believes that Air Force and naval aviation should regard one another as natural allies, rather than as competitors in the roles and resources arena. The highlight of this article is the final segment, wherein the author identifies future challenges and details a number of joint ventures and investments in equipment and hardware to improve the already impressive state of joint strike warfare.

In our eleventh essay, Lieutenant Colonel Price Bingham, USAF (Ret.), insists that Service culture has undermined the "immense potential" of the E–8 Joint Surveillance Target Attack Radar System (Joint STARS). He argues that absent major changes in Service doctrine and force structure, Joint STARS should be transferred to a joint organization with the authority to establish requirements, fund upgrades, and improve force structure. Sparing neither the Army nor the Air Force criticism, he claims that Airmen value the system primarily in its battle management role and that Soldiers treat Joint STARS as fundamentally a ground surveillance system and fail to exploit real-time information on movement during a battle. The author appeals to Congress in the spirit of Goldwater-Nichols to require the Department of Defense to treat advanced ISR systems as above Service parochialism. Last year, the Chairman of the House Armed Services Committee, Representative Ike Skelton, created a roles and missions panel that is due to publish a study in April 2008. Panel member Representative Joe Sestak has been advocating Joint Staff control of funding for command, control, computers, communications, intelligence, surveillance and reconnaissance. "C^{4}ISR is common to all of the services and key to precision strike," said Sestak, a former Navy vice admiral.

Our twelfth Forum installment returns to space and the ambitious challenge of laying the foundation for an empirical theory of space power. If, as this editor believes, an independent theory of space power is not practical, Colonel Charles Lutes, USAF, is perceptive in his views of its themes as regards national security. This essay begins with a survey of space ages—from 1957 to present—and their products—prestige and information. If Colonel Lutes' hypothesis that the next space age will produce wealth (from tourism, energy, mining, and manufacturing) is correct, "the next space age will be marked by a boom in the economic value of space itself." He surveys the international system before addressing national security and eight basic strategies toward space security. He concludes with the warning that "understanding of the essence of space power, and the ways in which other actors will approach it, is an essential first step for policymakers as they seek to ensure the tranquility of the final frontier while maximizing space activity for national good."

Our final printed entry in the Forum returns to the beginning of this Executive Summary: to the School of Advanced Air and Space Studies. Despite its name, SAASS does not produce aviation theorists or planners, but rather strategists concerned with the use of military force in support of statecraft. Its small pool of graduates is in high demand throughout the Armed Forces and includes 18 flag officers, as well as the two most recent editors of *JFQ*. The strength of SAASS is that it teaches students to think, and it equips them with tools to support that effort. These tools are important because the students in residence normally read a book every night. At the end of the course, all students must present and defend a thesis. It is a tribute to the rigorous liberal education imposed by the superb SAASS faculty that the thesis topics often appear offbeat and challenge traditional ways of doing business. SAASS is an education for the balance of a lifetime, and proof can be found in the fact that its graduates enjoy long careers and frequently second careers closely connected to strategy and policy. Regrettably, SAASS produces a small number of graduates annually, and even if the institution were expanded tenfold, we would lament that it is still too small.

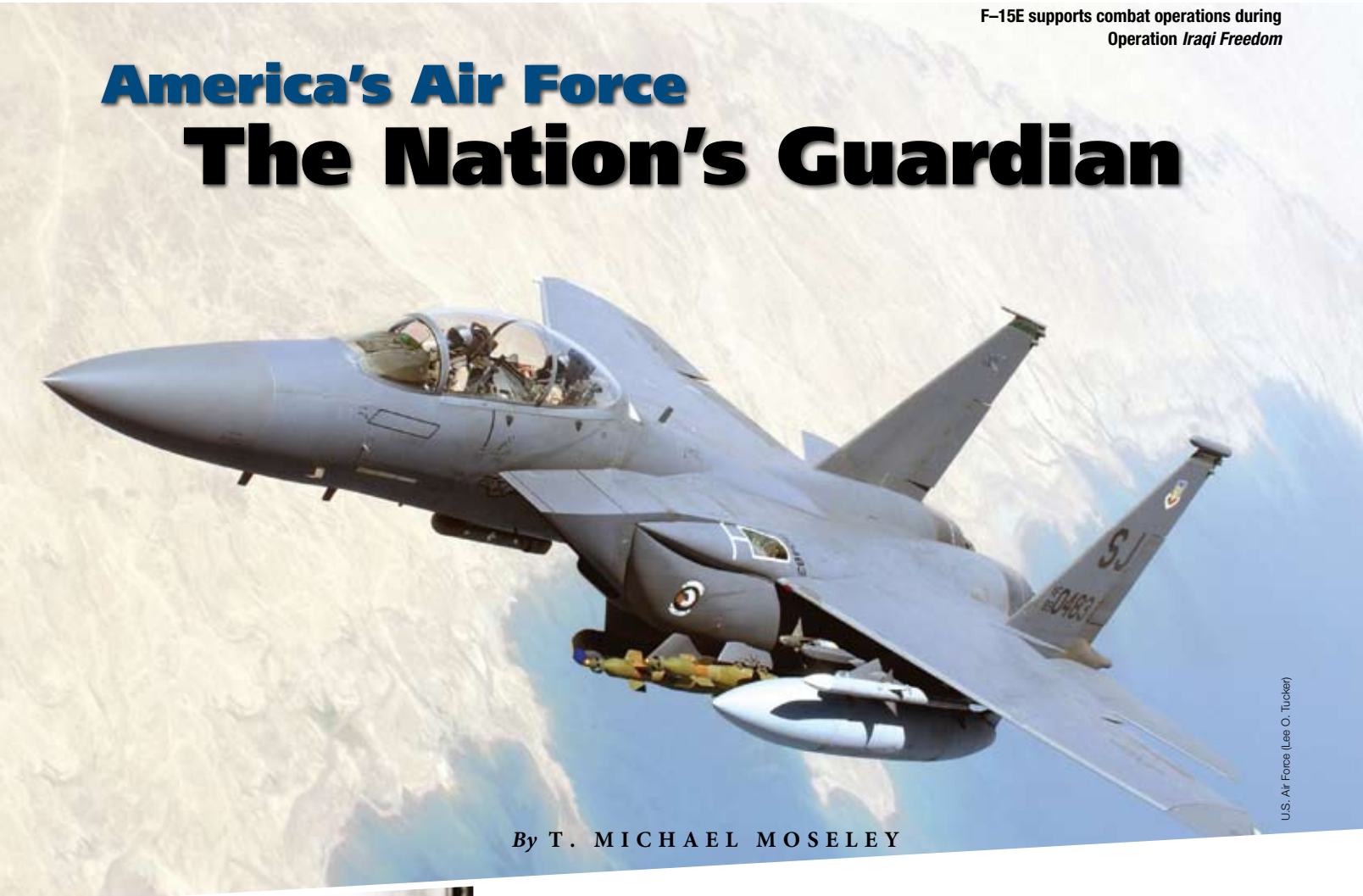
JFQ calls readers' attention to the eleventh-hour arrival of an excellent article by Lieutenant General John A. Bradley, USAF, chief of Air Force Reserve, which can be viewed in the online edition of this issue at ndupress.ndu.edu. General Bradley speaks to building a viable Total Force while remaining operationally engaged. This article is also intended to assist policymakers in examining the recent history, current challenges, and likely future of the Reserve Components.

Contemporary U.S. airpower has no peer because its strength and flexibility are products of competition, debate, and conflict. Undeniably, this dominant form of military power projection is increasingly costly, even as it produces multiplying benefits that are internalized by every military Service as prerequisite for mission success. The competition for airpower ideas and resources can only grow more intense over time. The challenge before us is to preserve the benefits of Service competition while reducing the attendant inefficiencies. As an efficient investment of your time, we hope that you find this issue of *JFQ* thought provoking. We encourage your feedback, hopefully in the form of manuscripts delineating *your* lessons learned in joint, integrated, air, space, and cyberspace operations. **JFQ**

—D.H. Gurney

NOTE

[1] John J. Mazach, "The 21st-Century Triad: Unconventional Thinking about the New Realities of Conventional Warfare," *Sea Power* (March 2002), 53.



F–15E supports combat operations during Operation *Iraqi Freedom*

U.S. Air Force (Lee O. Tucker)

America's Air Force
The Nation's Guardian

By T. MICHAEL MOSELEY

War Department (Underwood and Underwood)

World War I ace Captain Eddie Rickenbacker, USAAF, was credited with downing 26 enemy planes

Nations nearly always go into an armed contest with the equipment and methods of a former war. Victory always comes to that country which has made a proper estimate of the equipment and methods that can be used in modern ways. —Billy Mitchell

I am deeply honored to contribute this essay to *Joint Force Quarterly*. It is altogether fitting for the Chairman's journal to dedicate an issue to airpower, especially so close to the 60th anniversary of an independent U.S. Air Force. I will leave it to others featured in this issue to discuss the contributions of American airpower as it has evolved over the past 100 years, from the creation of the Aeronautical Division in August 1907, through the establishment of an independent Air Force in September 1947, to the mighty organization that I am privileged to lead today.

Instead, I want to use this opportunity to acquaint our brothers and sisters in arms—the entire joint team serving our great nation—with the strategy I have charted for America's Air Force. This strategy defines the Air Force's indispensable role in promoting and defending the national interest and outlines the urgent actions necessary to cope with today's and tomorrow's challenges. Consider this essay a definitive statement of your Air Force's intent to maintain its role as the Nation's guardian—America's force of first and last resort. Consider it also a tribute to Airmen—those who have gone before me and those I lead today.

Since the days of Kitty Hawk, airpower has been viewed through the lens of

General T. Michael Moseley, USAF, is the 18th Chief of Staff of the U.S. Air Force.

its awesome technology: beautiful flying machines streaking effortlessly across the sky; mighty rockets flawlessly lifting satellites into orbit; and persistent electronics sensing, signaling, connecting, transmitting, processing, and controlling integrated, cross-dimensional effects in air, space, and cyberspace. Yet it is the *Airmen* who transform hunks of metal, buckets of bolts, microprocessors, and circuitry into the Nation's warfighting edge. Taking care of Airmen—America's sons and daughters, brothers and sisters, husbands and wives—means much more than just providing them with the training, equipment, and quality of life they deserve. Taking care of Airmen calls for leadership they can trust with their lives. It also requires a concerted effort to uphold their pride, foster their warrior ethos, and safeguard their rightful position in the pantheon of the Nation's defenders.

As the youngest of America's five Services, our battle traditions are less than a century old. Yet we are heirs to a proud legacy of leading by example, from the front, assuming the full measure of risk and responsibility. This heritage has been forged by airpower's early pioneers; by the first air combat heroes of Lafayette's Escadrille; by the Tuskegee Airmen who racked up an impressive combat record against overwhelming odds, fighting both the Nazis abroad and racial prejudice at home; by pilots and navigators who flew into harm's way in two World Wars, Korea, Vietnam, Iraq, Yugoslavia, Afghanistan—and Iraq again; by astronauts who blasted into space and walked on the moon; by crews of HH–3 Jolly Green Giant rescue helicopters who risked their lives so others might live; by prisoners of war who continued to fight from a prison cell; and many, many others.

Airmen fly and fight in inherently dangerous domains. Schweinfurt and Ploesti are our Iwo Jima and Omaha Beach—though we were in those fights, too. Than Hoa Bridge and the Hanoi Hilton are our Khe Sanh and Ia Drang Valley—though we were over those battlegrounds as well. This heritage obligates us to honor the sacrifice by recommitting ourselves to the common touchstone of warrior virtues and a single, unifying purpose: *fly, fight, win*.

Airmen are America's cross-dimensional, global maneuver force. The power that we wield is at once tactical, operational, and strategic. We are indeed democracy's sword and shield—its guardians and avengers. America's Airmen are ever faithful to an ethos that unifies warriors across centuries and warfighting domains. At this time of war, America could ask no more and no less from its youngest Service.

History shows that military advantage is fleeting. In the wake of Operation *Desert Storm*, America's global reach and global power were the sole arbiter of world affairs. A *Pax Americana* replaced the Cold War nuclear standoff, until that deadly September 2001 morning when 3,000 people were killed on American soil.

in the wake of Operation Desert Storm, *America's global reach and global power were the sole arbiter of world affairs*

That very day, the U.S. Air Force spread its wings over America's cities in an extraordinary operation aptly named *Noble Eagle*. The Air Force continues to provide this combat air patrol with about 100 aircraft committed daily, all while serving as the Nation's ultimate nuclear backstop, acting as its global eyes and ears, and flying and fighting in Iraq and Afghanistan. In these theaters, Air Force precision targeting kills insurgent leaders, saving American and coalition lives; airlift transports troops and supplies, removing 3,500 convoys and some 8,600 people per month off deadly roads; aeromedical evacuation accounts for the highest survival rate (97 percent) of any conflict in history; space-based capabilities provide precise global timing and navigation, weather, and secure communications indispensable to all operations; and other intelligence, surveillance, and reconnaissance assets find and track enemies, enabling precise targeting and near-real-time assessment of effects.

Fighting and winning the war on terror, developing and caring for America's Airmen, recapitalizing and modernizing our aging fleet, and preparing for an uncertain future are my top priorities. My sacred obligation, however, is to the men and women of the Air Force. Given the stakes, I will never falter and I will not fail.

The Strategic Imperative

Since the Nation's birth, it has been the constitutional duty of our military to ensure national survival, defend lives and property, and promote vital interests at home and abroad. The Air Force's mission is to "deliver sovereign options for the defense of the United States of America and its global interests—to fly and fight in Air, Space, and Cyberspace." The Air Force exists to dominate the atmosphere, space, and the electromagnetic spectrum on a global scale, unhindered by time, distance, or geography. Thereby, we underwrite the national strategy of defending the homeland and assuring allies, while dissuading, deterring, and defeating enemies.

The Air Force is charged with safeguarding America by dominating the ultimate vantage of air, space, and cyberspace. We provide the entire joint team with global vigilance, global reach, and global power in and through these domains:

- *Global vigilance* is the persistent, worldwide capability to keep an unblinking eye on any entity—to provide warning on capabilities and intentions, as well as to identify needs and opportunities.
- *Global reach* is the ability to move, supply, or position assets—with unrivaled velocity and precision—anywhere on the planet.
- *Global power* is the ability to hold at risk, or strike, any target, anywhere in the world and project decisive, precise effects.

The Air Force's ability to fulfill its missions is already being tested. This is particularly true in cyberspace, seen by potential adversaries as a relatively inexpensive venue to offset our traditional advantages in air and space. Since the air, space, and cyber domains are increasingly interdependent, loss of dominance in one could lead to loss of dominance in all. Thus, superiority and freedom of action—the historically proven predicate of all ensuing operations—cannot be taken for granted.

The Air Force must be better postured to contend with both today's and tomorrow's challenges. To promote and defend America's interests through global vigilance, global reach, and global power, the Air Force must attain *cross-domain dominance*, which integrates systems, capabilities, operations, and effects to gain competitive advantage in any and all domains. It transforms our operational concepts to maximize synergy, thus generating a new array of simultaneous, synchronized effects.

Moreover, through cross-domain dominance, the Air Force preserves the necessary freedom of action and permits joint freedom of maneuver in all warfighting domains. This, in turn, allows the joint force commander to achieve desired outcomes across the full range of military operations. Without the ability to wield—and capitalize on—this full spectrum of effects in peace, crisis, and war, America would be in grave peril.

History is replete with examples of militaries that failed due to their inability to transform organizations and culture, adopt new operational concepts, or leverage breakthrough technologies. *But militaries do not fail by themselves*. Failure occurs in the context of an overall, national debacle, caused by systemic problems that fall into three distinct but related categories: failure to anticipate, failure to learn, and failure to adapt. In contrast, victory comes to those who foresee, recognize, and act on changes in the strategic environment.

Today's confluence of global trends already foreshadows significant challenges to our organization, systems, concepts, and doctrine. The future strategic environment will be shaped by the interaction of globalization, economic disparities, and competition for resources; diffusion of technology and information networks whose very nature allows unprecedented ability to harm and, potentially, paralyze advanced nations; and systemic dislocations impacting state and nonstate actors, and, thereby, international institutions and the world order. The following are salient features of this increasingly complex, dynamic, lethal, and uncertain environment:

the Air Force preserves freedom of action and permits joint freedom of maneuver in all warfighting domains

- violent extremism and ethnic strife
- proliferation of weapons of mass destruction and empowering technologies
- rising peer competitors with voracious appetites for resources and influence
- predatory, unpredictable regional actors
- increasing lethality and access of terrorists and criminals
- systemic instability in key regions
- unprecedented velocity of technological change and adaptation
- availability of advanced weapons in a burgeoning global marketplace
- exponential growth in volume, exchange, and access to information
- surging globalization, interconnectedness, and competition for scarce resources
- dislocating global climate, environmental, and demographic trends.

The Character of 21st-century Warfare

These global dynamics are intertwined with the changing character of 21st-century warfare. Having experienced—or vicariously learned—the cost of challenging the United States head-on, would-be adversaries are developing new approaches to attack vital levers of U.S. power. Their strategies seek to circumvent our core advantages and exploit vulnerabilities, while undermining international support and domestic resolve.

Airpower's unprecedented lethality and effectiveness deter opponents from massing on the battlefield, thus forcing them to adopt distributed and dispersed operations. They find maneuver space and sanctuary in dense urban areas, ungoverned hinterlands, and loosely regulated information and social networks. These enemies pose a significant challenge to our freedom of action and threaten our interests at home and abroad. Their operations are difficult to constrain with traditional force-on-force approaches, compelling all Services to think anew about the challenges of irregular warfare.

Meanwhile, ascendant powers—flush with wealth and hungry for resources and status—are posturing to contest U.S. superiority. These competitors are translating lessons from recent conflicts into new warfighting concepts, capabilities, and doctrines designed to counter our strengths and exploit vulnerabilities. They have demonstrated advances in all domains, such as:

- large numbers of "generation 4–plus" fighter aircraft that challenge America's existing "4th-generation" inventory—and thus, air superiority with overwhelming numbers and advanced weaponry; sophisticated integration of electronic attack and advanced avionics; low-observable technologies; and progressive, realistic networked training
- increasingly lethal, integrated air defense systems that threaten both the aircraft and the weapons used to suppress or destroy them

U.S. Air Force (J.W. Holms, Jr.)

USAF C–119s at Yonpo, Korea, prepare for cargo airdrop to 1st Marine Division at Chosin Reservoir, 1950

U.S. Air Force (Jerry Morrison)

A–10As on mission over Afghanistan, November 2002

- proliferation of surface-to-surface missile systems with growing range, precision, mobility, and maneuverability capable of delivering both conventional and nonconventional warheads
- proliferation of unmanned aerial systems capable of conducting low-observable, persistent, intrusive missions in both lethal and nonlethal modes
- resurgence of offensive counterspace capabilities—as evidenced by China's early 2007 antisatellite test
- cyberspace attacks creating operational and strategic effects at low cost and with relative impunity
- increasing ability of even marginal actors to surveil the disposition of U.S. and allied assets through commercially available and widely accessible means.

Even if we continue to dissuade and deter major competitors, their advanced equipment is proliferating worldwide. We are bound to confront these weapons systems wherever America engages to promote and defend its interests. All Services must be vigilant to adversary breakthroughs in fields such as cybernetics, nanotechnology, biotechnology, electromagnetic spectrum physics, robotics, advanced propulsion, and so forth. We cannot assume that the next military revolution will originate in the West. Indeed, the center of gravity in science and engineering education has shifted eastward. Therefore, we must discern and counter innovative combinations of traditional and new concepts, doctrines, weapons systems, and disruptive technologies.

even if we continue to dissuade and deter major competitors, their advanced equipment is proliferating worldwide

A Strategic Crossroads

As a consequence of these global dynamics and shifts in the character of 21st-century warfare, we are at a strategic crossroads. The Air Force has aggressively pursued air dominance through focused, sizable investment in Airmen, aircraft, weapons, training, and essential support structure to include fundamental and applied research. It has also harnessed space and cyber capabilities as the catalysts of precision, stealth, speed, reach, and persistence that became the hallmarks of late 20th-century warfare. In the process, we became increasingly dependent on space and the electromagnetic spectrum as the indispensable pillars of our ability to deliver desired effects. Airpower in the 21st century is no longer the *sum* but the *product* of air, space, and cyberspace superiority. Consequently, loss of dominance in any one of these domains risks across-the-board degradation, if not outright failure. Our freedom of action, let alone superiority, is not assured.

From this point forward, the joint team should expect to be challenged in all warfighting domains. In January 2007, China demonstrated the ability to hold satellites at risk and the willingness to contest the space domain. State and nonstate actors are already exploiting cyberspace to gain asymmetric advantage. In April 2007, Estonia was the victim of a well-coordinated cyber attack that brought its technologically sophisticated government to a virtual standstill. Insurgents in Iraq, Afghanistan, and elsewhere exploit the electromagnetic spectrum to kill and maim through improvised explosive devices, while propagating their message of hate to the world. Thus, perhaps for the first time in the history of warfare, the ability to inflict damage and cause strategic dislocation is no longer directly proportional to capital investment, superior training, or technological prowess.

The war on terror is a generational struggle that we must win. The Air Force will continue to fly and fight in the various theaters of this war. However, we owe the Nation a holistic approach that balances today's exigencies with the far-reaching, long-term implications of looming threats. America's Air Force will succeed in the 21st century only by developing and resourcing a coherent strategy that closes the gap between ends and means. The window of opportunity is shutting fast. Time is not on our side.

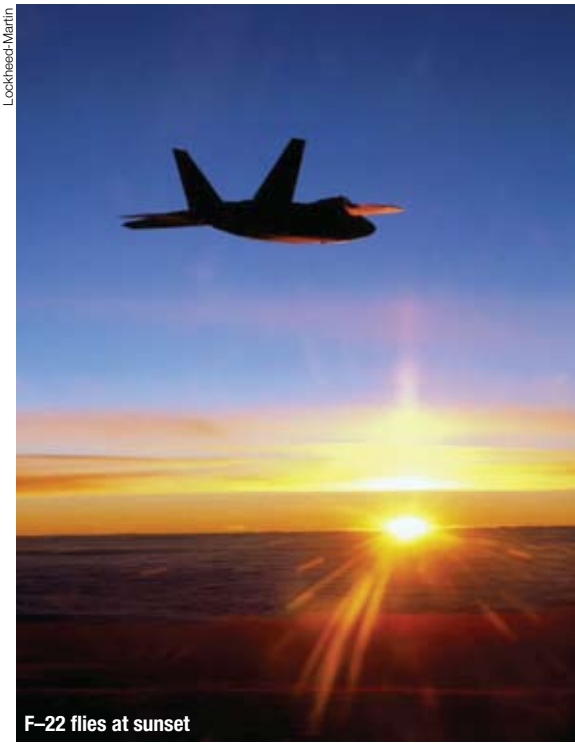
Redefining the Air Force

The Air Force strategy is framed in terms of the ends/means/ways/risk equation. The *ends* are the objectives we must achieve. The *means* are capabilities and resources. The *ways* define how we employ the means. The essence of our strategy is to use available and programmed means in innovative ways to attain the desired ends with acceptable *risk*.

Ends: Protect Democracy and Guard Freedom. The Air Force's nonnegotiable commitment to America's joint team is to provide forces proficient across the full spectrum of military operations to protect the United States, its interests, values, and allies; deter conflict and prevent surprise; and, should deterrence fail, prevail against any adversary. Airmen deliver global surveillance, global command and control, and the requisite speed, range, precision, persistence, and payload to strike any target, anywhere, anytime, in any domain—and to assess the results. Global vigilance, global reach, and global power grant joint and combined force commanders the ability to safeguard the homeland, assure allies, dissuade opponents, and inflict strategic dislocation and paralysis on adversaries—all while minimizing the loss of life associated with land warfare.

Ways: Global Vigilance, Reach, and Power through Cross-domain Dominance. Innovation, flexibility, and integration are the hallmarks of all successful strategies. Airmen must develop creative solutions (ways) to dominate air, space, and cyberspace, exploiting the synergies of cross-domain dominance to attain a quantum leap in mission effectiveness. To this end, we must refocus our organization and culture on the warfighting mission; implement advanced operational

Lockheed-Martin



F–22 flies at sunset

concepts to fly, fight, and win in all domains; leverage game-changing technologies; and recapitalize our aging equipment.

Any organizational renaissance begins with people. We must prepare our Airmen for a future fraught with challenges, fostering their intellectual curiosity and ability to ask the right questions. To this end, we are reinvigorating the warrior ethos, revitalizing the world's most advanced training system, and expanding educational opportunities. Our expeditionary Airmen must be prepared to deploy and ready to fight. While we enrich our Airmen's culture, leadership, training, education, and heritage, we will care for their families and provide for their future.

We are committed to enhancing Total Force integration. We are developing concepts, strategies, force management policies and practices, and legal authorities to access sufficient Air Reserve Component forces without the need for involuntary mobilization. Though the Air Force is already the model for melding its Active duty elements with its Guard, Reserve, and civilians, we can and will push this synergy to new levels.

We must continue to inject the Airman's global, inherently three-dimensional perspective into all levels of planning and execution. We will better prepare our officers for key joint leadership positions by bolstering cultural, language, and academic skills—as well as practical experience—to ensure that they are articulate airpower advocates, capable of fully integrating our distinctive capabilities into joint and coalition arenas.

In an era of intense competition for resources, we must avoid unnecessary duplication and overlap in acquisition, procurement, manning, and operations. To this end, we will continue a series of cross-Service initiatives already under way with the aim of generating new joint synergies across all warfighting domains. We will also enhance collaboration and interoperability with the Department of Homeland Security, Department of State, the Intelligence Community, law enforcement agencies, and other interagency partners to facilitate a more effective orchestration of all elements of national power.

America's strategic partnerships are more important than ever. Our Air Force will strengthen and broaden coalitions, capitalizing on the global community of like-minded Airmen, while attending to interoperability between allies and partners. Building these relationships not only expands, extends, and strengthens global vigilance, global reach, and global power, but also leverages airpower's value as an instrument of America's diplomacy in an increasingly interconnected world.

The Air Force is formulating innovative operational concepts to anticipate, adapt to, and overcome challenges. We are transforming our thinking from considering the space and cyber domains as mere enablers of air operations to a holistic approach that factors in their interdependence and leverages their unique characteristics. We must continue to push this conceptual envelope—and expand the boundaries of existing tactics, techniques, and procedures—to fully exploit the synergies of cross-domain dominance.

We will accelerate the deployment of evolutionary and disruptive technologies as we address the urgent need to recapitalize and modernize. We must bolster our advantage through continued investment in our own science and technology, as well as outreach and integration with industry, academia, and think tanks. We will reform our procurement and acquisition system to ensure full transparency, open competition, and adherence to operational timelines.

Means: Revitalizing the Air Force. The U.S. Air Force has been in continuous combat since 1990—17 years and counting—taking a toll on our people and our rapidly aging equipment. While we remain globally engaged, we recognize the imperative of investing in the future through recapitalization and modernization. We must field flexible systems, capable of providing full-spectrum effects across the entire range of military operations, from a catastrophic attack on the homeland, to major theater contingencies, to irregular warfare and humanitarian relief.

General Moseley announces new training mission for Tennessee Air National Guard

U.S. Air Force (Ernie Hickman)

We must position the Air Force to secure America's primacy in all domains, including appropriate mixes of standoff capabilities, penetrating manned aircraft, enhanced cyber capabilities, advanced unmanned combat systems, operationally responsive space, and breakthrough innovations in such fields as electromagnetic spectrum physics, directed energy, nanotechnology, bioengineering, superstealth, and hypersonics.

The U.S. nuclear arsenal continues to serve as the ultimate backstop of our security, dissuading opponents and reassuring allies through extended deterrence. To meet current and future challenges, it is a credible nuclear deterrent that convinces potential adversaries of our unwavering commitment to defend our nation, its allies, and its friends.

we need to deploy high-altitude, high-speed systems to mitigate risks to space-based capabilities

As the demand for global intelligence, surveillance, reconnaissance, and communications continues to grow, our reliance on assured access to space will increase exponentially. The challenge is to find an affordable pathway to secure space—striking the right balance among hardening, countermeasures, and reconstitution. We need to deploy high-altitude, high-speed systems to mitigate risks to space-based capabilities. The Air Force will continue to provide the entire joint team with exacting intelligence, surveillance, and reconnaissance. We will also develop new concepts that merge sensors and shooters into a seamless, ubiquitous force that can permeate adversary defenses.

Throughout history, warfighters at all levels have operated with limited information and constrained situational awareness. With advances in sensors, information-sharing, and network-centric systems, our operators are suffering an embarrassment of riches—they are, quite literally, drowning in information delivered at a velocity far exceeding human

ability to process and absorb. We must develop and field systems that are not only network-centric but also *knowledge-centric*. These systems process, filter, and integrate data, presenting only the most pertinent information in a format that enables quick, logical decisions. To this end, we will develop self-forming, self-healing networks that harness the power of machine-to-machine interfaces, freeing up human resources for activities where intellect and warrior spirit are indispensable.

In September 2007, the Air Force stood up Cyber Command to provide combat-ready forces trained and equipped to conduct sustained operations in and through the electromagnetic spectrum, fully integrated with air and space operations. We will continue to develop and implement plans for maturing cyber operations as an Air Force core competency. Our objective is to provide flexible options to decisionmakers to deter, deny, disrupt, deceive, dissuade, and defeat adversaries through destructive and nondestructive, lethal and nonlethal means.

Soldiers, Sailors, Marines, and Coastguardsmen share a sacred bond with Airmen: we will not leave a comrade behind. We are modernizing combat search and rescue forces to fulfill the moral imperative to locate, support, and recover our joint warriors. The Air Force is committed to fielding a new combat search and rescue aircraft; advancing our rescue concepts of operation; and enhancing survival, evasion, resistance, and escape training—all to ensure that the Air Force remains the premier combat search and rescue force for the entire joint team.

The war on terror has highlighted the importance of specialized airpower (special operations forces). We will continue to provide aircraft, unmanned aerial vehicles, agile combat support, and trained personnel to meet combatant commanders' special operations requirements. Air Force Special Operations Command is establishing a new base with world-class training ranges and facilities to accommodate its growth. In addition, the Air Force continues to refine tactics, techniques, and procedures to enhance the synergies between airpower and joint special operations forces.

An enduring element of our national security strategy is to engage forward in peace, crisis, and war. Accordingly, we must maintain a sufficient rotational base to sustain our forward-deployed and forward-based posture, as well as enhance our ability to project and protect those forces—a moral imperative as well as a military necessity. The Air Force will work with combatant commanders and partner air forces to secure basing and counter potential antiaccess strategies. We must continue to develop new ways of projecting power without projecting vulnerabilities and design systems that facilitate reachback, thus maximizing effects while minimizing forward presence.

Risk: Failure to Anticipate, Learn, and Adapt. All strategic planning is based on a set of assumptions. Surprise occurs when core assumptions are proven wrong. To succeed, we must continually validate our strategy across the ends/means/ways/risk equation. We should not assume that future conflicts will resemble the current fight in Iraq or Afghanistan lest we lose the ability to project global power, inflict strategic paralysis, deter nation-states, destroy their fielded forces, and defend our homeland, its allies, and friends.

recapitalization is about more than replacing aging aircraft; it is about ensuring the combat effectiveness of all forces

For a nation whose security is predicated on an enduring strategy of deterrence and dissuasion, the most fundamental risk is failure of deterrence. Insofar as deterrence is a function of capability, will, and credibility, and is thus in the eye of the beholder, its success—or failure—is measured only in the breech. To mitigate the risk, we must retain a modern, secure, and well-trained force and evolve new deterrence concepts. In particular, it behooves us to rethink such concepts as extended deterrence and conceive new ways to deal with actors who might be deemed "undeterrable" in the traditional Cold War construct.

Strategic risk can also mount through the accumulation of shortfalls in recapitalization and modernization, stale operational concepts, and failure to revitalize the warrior ethos. Recapitalization is about more than replacing aging aircraft; it is about ensuring the combat effectiveness of all forces. The success of the Air Force and the joint team depends upon the ability of our people and organizations to adopt new, relevant operational concepts suitable to the dynamics of the strategic environment. Cross-domain dominance is essential to victory.

From Heritage to Horizons

Complacency breeds failure. In the 1920s and 1930s, when our political and military leaders assured the Nation that we were appropriately postured for the future, we failed to anticipate the coming crucible. Despite the vocal objections of a few, we entered World War II unprepared for the demands of total war. Likewise, we engaged in both Korea and Vietnam unprepared for the challenges of limited war. America paid a heavy price in blood and treasure for this strategic myopia. Through determination, ingenuity, and innovation—as well as our industrial might—we learned from mistakes. We adapted in the midst of these fights to win decisively in World War II, restore the status quo ante bellum in Korea, terminate the conflict in Southeast Asia, and, having exorcised the ghosts of Vietnam, deliver a swift victory in Operation *Desert Storm*.

However, planning to adapt on the fly is not a strategy for success. We will have neither the buffer of time nor the barrier of oceans in future conflicts. The Air Force is smaller in April 2008 than it was in December 1941. We cannot suffer attrition rates of the magnitude we did in World War II, Korea, or Vietnam. The Nation now expects its military to win quickly and decisively. The character, tempo, and velocity of 21st-century warfare already severely test our ability to adapt. We can no longer manufacture complex weapons systems in short order. Therefore, recapitalization and modernization are urgent national security requirements—not discretionary luxuries that we can defer. If we are to defend America and promote its interests, the Air Force must continue to provide the joint team with prompt, persistent, decisive effects—massed and brought to bear anywhere, anytime.

The Air Force is often first to the fight and last to leave. We give unique options to all joint force commanders. The Air Force must safeguard its ability to see anything on the face of the Earth; range it; observe or hold it at risk; supply, rescue, support, or destroy it; assess the effects; and exercise global command and control of all these activities. Rising to the challenge is not a choice. It is our *responsibility* to bequeath a dominant Air Force to America's joint team that will follow us in service to the Nation. **JFQ**

MV–22 flies over Gulf of Mexico during training mission at Hurlburt Field

U.S. Air Force (Andy M. Kin)

MV–22B Osprey
A Strategic Leap Forward

By GLENN M. WALTERS

In early October 2007, the amphibious assault ship USS *Wasp* steamed through the Gulf of Aqaba, turned into the wind, and made final preparations for flight operations. The *Wasp*'s mission was to launch a squadron of Marine Corps assault support aircraft, so they could make their way into Iraq to replace a helicopter squadron that was nearing the end of its 7-month combat deployment in support of Operation *Iraqi Freedom*. Although shipboard flight operations occur daily throughout the world, there was nothing routine about this particular launch. As the wheels of the MV–22B Osprey aircraft ascended from the *Wasp*'s deck, aviation history was made.

At that same moment more than 500 miles away, a CH–53D Sea Stallion squadron, Marine Heavy Helicopter Squadron 362, from Marine Aircraft Group 24 (MAG–24) of the 1st Marine Aircraft Wing, in Kaneohe Bay, Hawaii, was preparing for flight operations at Al Asad Airbase in Iraq. This squadron's CH–53 predecessor aircraft flew their maiden combat voyages in 1966 south of Da Nang, Vietnam, yet their service was still required more than 40 years later. The clarion call of combat operations in Iraq and Afghanistan had touched nearly every aspect of Marine aviation, and now it was time for the Corps' newest asset, the Osprey, to fulfill decades of promising tests and technical improvements.

Marine Medium Tiltrotor Squadron 263 (VMM–263), of MAG–26, 2d Marine Aircraft Wing, from Marine Corps Air Station New River, North Carolina, is the Corps' first operational Osprey squadron. The *V* in VMM–263 signifies this is not a helicopter squadron, but a tiltrotor unit, equipped with the MV–22B. And on this day in October, the squadron's lead aircraft made the 500-mile flight into Iraq seem routine, landing with more than 2 hours' worth of fuel remaining.

History of Challenges

According to some, this was a day that should not have happened. Since its conceptualization in 1981 and its designation as a program in 1984, the V–22 has had more than an equitable share of opponents, who have cited technical challenges, reliability, physics, affordability, and safety concerns as their rationale to oppose the program. They predicted failure at every milestone. Even after the squadron deployed to combat and began to prove itself, two separate but equally malicious articles were published denouncing the aircraft, as well as the leadership and abilities of the Marines who operate it.

Bell-Boeing's V–22 program is currently producing aircraft for the Marine assault support mission, as well as filling a critical long-range requirement for U.S. Special Operations Command. Moreover, it is positioned to provide fleet support and search and rescue missions for the Navy. Originally, when it still held the nascent designation of *JVX*, the Army was a large part of the program and, in fact, was designated the lead service in JVX acquisition. During the same period, the Army was pursuing the RAH–66 Comanche program,

which was a low-observable technology, to replace its inventory of scout helicopters. Either through a desire to limit its efforts in expanding technology in vertical lift, or a prescient read of the tea leaves from rhetoric regarding JVX program support, or a more pressing need for better scout helicopters, the Army opted out of V–22 development. This left the Marine Corps and special operations community as the remaining proponents of V–22 technology.

How did the V–22 survive the many debates in the Department of Defense, nonpartisan think tanks, national media, and the halls of Congress? Numerous articles written over the years attribute its survival solely to congressional will to buy the aircraft. This claim, while a pat answer, cannot be the only reason the V–22 Osprey endured. The detractors of the aircraft cite technical challenges, including its aerodynamic viability, complexity, and sophisticated system integration requirements, faced during its development. All of these challenges were identified during modeling, developmental testing, and operational evaluations. Dedicated engineers, pilots, and program managers identified and analyzed problems, developed solutions, and implemented changes. A cursory study of the history of the V–22 program is replete with stories of this process and its success.

The key element that underscores the developmental process is the magnitude of the effort in bringing this revolutionary aircraft to the field. Opponents have often cited the relative ease of replacing the CH–46 with a newer helicopter. They are correct in that options for replacements were myriad, but the ultimate goal of the V–22 program was to replace a horse with an automobile rather than with a faster horse. Replacing the CH–46 with a newer helicopter would correct some deficiencies and vulnerabilities incurred with using 1960s rotor technology, but an improved helicopter platform would not completely change the equation. The V–22 is not only the next step in helicopter design, but also a leap forward in vertical lift. Because of this, the V–22 can accomplish the helicopter mission more efficiently while reducing those critical vulnerabilities intrinsic to conventional helicopter design. A newer helicopter would fly through the threat envelope faster yet still be constrained to similar flight parameters. Conversely, the V–22 can fly over or around threats, thereby reducing the exposure to them to minutes instead of hours. The design of the aircraft incorporates vulnerability reduction so if and when a threat engages the aircraft, it has a higher probability of survival.

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Today, in 90 minutes, a two-plane flight of V–22s can execute a battlefield circulation mission that would have taken six CH–46 aircraft to do the same thing, and the flight can be accomplished without refueling. These mounting empirical data of the V–22 successfully executing its mission as a medium-lift assault support aircraft in al Anbar province are being ignored by its critics who continue to rely on decades-old helicopter experiences in Vietnam as a basis for assessing combat operations today. Citing reduced risk in making evolutionary steps and "kicking the can down the road" is one of the central themes routinely espoused about the V–22 program.

Steadfast Vision

This phenomenon of publicly advocating risk avoidance seems to have been more prevalent in the past two decades than in the previous years when the American will to further technological boundaries was strong. The risks associated with developing nuclear submarines and jet aircraft in the 1950s were far higher than what we face now. The mishaps, missteps, and hard lessons learned then were just as costly, but the country was willing to take them in the name of advancement. So what, beyond the strong support of Congress, keeps the country on a path to developing a revolutionary vertical lift aircraft? The V–22 had support in both the Marine Corps and special operations communities. Why did senior officers across two decades support a tiltrotor concept in the early 1980s, its developmental phase through the 1990s, and finally its introduction to combat in 2007? Has not the threat shifted from the conventional/nuclear during the Cold War to irregular warfare as applied to the current war on terror? How could an aircraft developed *then* be the correct aircraft *now*?

The answer lies in establishing a vision consistent with the principles of war. In the same manner that amphibious operations planning was considered anachronistic after the failure at the Battle of Gallipoli in World War I, the Marine Corps endeavored to look beyond the last conflict and envision a future undefined by the past. Consistent with this

MV–22 in Iraq

U.S. Marine Corps

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thought process is ensuring that evolutionary steps and all new concepts remain true to those principles attributed to Clausewitz. In this way, the Marine Corps can conceptualize advances in warfare yet remain cognizant of its key tenets.

The difficulty over the two-decade process between conception and deployment has been to maintain this vision. The easy solution would have been to cancel the program and acquire a newer helicopter. If the Marine Corps had given up on its vision of the future, the result would have been additive improvements in several of the principles of war (for example, mass and economy of force) as opposed to the exponential increases seen in the majority of the principles provided by the V–22. Taken in turn, each of the principles of war is enhanced, enabled, or accelerated by vertical lift technology with the speed, range, and payload of the V–22:

Mass at the Point of Decision: The advantage of tiltrotor technology coupled with the increased power in the airframe means that the V–22 can carry 24 combat-loaded Marines regardless of ambient temperature. This equates to twice the payload of the CH–46 in the winter and a factor of four during the summer months.

Offensive: The V–22 has a significant increase in capability. It provides a six-fold differential in range, a doubling of the payload, and the ability to approach landing zones from higher altitudes, all of which give the Marine air-ground task force (MAGTF) commander a greater ability to project operations across the entire theater.

Surprise: The dynamic flight profile of the V–22 greatly reduces the probability of compromising missions. Vehicle noise, whether aviation- or ground-based, is one of the simplest methods to preempt a mission. The noise from approaching helicopters combined with a cell phone call can negate detailed raid planning. Modify the profile to high-altitude approach combined with the mass effects provided by increased payload, and the enemy's reaction time is reduced exponentially.

Objective and Maneuver: Operations up to the introduction of the Osprey were limited by the range of the helicopter and/or the limits of the aviation ground support elements to provide logistics support in order to extend the range of the helicopters. The V–22 provides the MAGTF commander a six-fold increase in possible objectives on which to operate. Additionally, the MAGTF commander and, by extension, the joint force commander are no longer limited to traditional helicopter ranges. The maneuver space for the V–22 must be considered on a theater-wide scale versus merely the specific area of operations of the MAGTF. This capability is a force multiplier for the entire joint force.

the V–22 is equipped with a dedicated console for the ground commander in the rear of the aircraft that provides situational awareness updates during the flight through to the landing zone. This ensures the ground commander has access to the same real-time information as the aircrew, which greatly increases his situational awareness and reduces the time required to take control of the landing zone once the boots are on the ground.

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Simplicity and Economy of Force: Increased payload and shorter flight times equate to fewer platforms required to accomplish the mission, reduced complexity intrinsic to an aerial assault, and greater ability to account for contingencies. Anyone who has planned a helicopter-borne operation understands that the fewer platforms required combined with fewer waves to accomplish the insert increases the probability of success for the insert.

Unity of Command: Sound planning and application of Marine Corps doctrine ensure that assault support missions delineate the chain of command in the air. Additionally,

Security: This is a culmination of the other principles in that the joint force/MAGTF commander has the ability to conduct large-scale operations into objectives previously considered untenable with a smaller number of aircraft, a major reduction in the time required, and while retaining the element of surprise. Given these elements, the enemy would be hard pressed to gain an unexpected advantage.

Exceeding Expectations

Marine Corps leaders who envisioned the utility and success of the V–22 likely also

Marine aircrew mans machinegun on back of MV–22B

U.S. Marine Corps (Michael L. Haas)


U.S. Marine Corps (Michael Kropiewnicki)

Marines tow CH–53D Super Stallion helicopter across flightline at Al Asad Air Base, Iraq

saw the potential for refinement of tiltrotor technology in follow-on and future designs. The visionaries who produced the submarine and the jet did not believe the first renditions would be the last; instead, they understood that these productions were necessary rungs on the evolutionary ladder—raising the level of technology to the advanced systems of today. If they had been focused on this first jet or submarine, we would still be operating diesel boats and subsonic aircraft. These technologies have the potential for continued refinement either to secure viability or expand usefulness. The V–22 Osprey is to vertical lift aviation what the USS *Nautilus* was to our submarine fleet and the Bell–X–59A was to our tactical fighter arm.

Today, we watch as tiltrotor technology undergoes its most critical evaluation: its use in combat. The VMM–263s bear that test now. They departed Marine Corps Air Station New River in mid-September and transited the Atlantic, Mediterranean, and Suez Canal. They flew a 500-nautical-mile flight into Al Asad, Iraq, without refueling and arrived with enough gas in their tanks to fly for another 2 hours. This kind of operational flexibility was unheard of before the Osprey arrived on the scene.

In the first 30 days in combat, the Ospreys have flown in excess of 68 hours per aircraft, which is three times their planned peacetime usage. They have overflown their assigned sorties by 15 percent and the burden on the maintenance Marines has been reduced, in terms of maintenance man-hours per flight hour, by 50 percent when compared to the traditional helicopters they replaced. The value of this technology is evident now. It is exceeding predictions and expectations. What is unknown is how much we can get out of this aircraft. That will be left to the dedicated, intelligent, and hardworking Marines and Airmen who will fly Ospreys into harm's way and develop even better tactics, techniques, and procedures that will continue to define how the V–22 Osprey, and its follow-on siblings, changes the face of assault support operations.


U.S. Marine Corps (Michael L. Haas)

MV–22B refuels at Al Asad Air Base, Iraq

There is no expectation that the opponents of the aircraft will retract their statements or admit they were wrong, but in time perhaps they could evaluate the Osprey on the merit of its accomplishments. Every discovery by failure during the development of this aircraft was exhaustively studied and has resulted in improvements to the version flying today in combat. The development of this aircraft was not perfect, and many of the lessons learned were bought at a terrible price. This is not a Machiavellian conclusion by any means, but rather an affirmation that as the Marine Corps moves forward with quiet confidence and clarity of purpose, it will not forget the lessons learned and the sacrifices that provided for its future. **JFQ**

Army Unmanned Aircraft Systems
DECISIVE IN BATTLE

By JEFFREY KAPPENMAN

Throughout the last 6 years of the war on terror, which has seen U.S. Army units deploy two and three times for year-long (or more) combat operations, the joint community has been unable to provide the coverage of unmanned aircraft systems (UAS) required to support tactical operations. Commanders plan operations based on known reliable resources. Joint UAS are frequently not allocated to division and brigade combat team (BCT) operations due to a lack of sufficient numbers of systems and higher priority theater, joint task force, joint force air component command (JFACC), or other government agency support mission requirements. When divisions and BCTs do receive joint UAS coverage based upon an allocation model, the support is frequently cut short, the supported tactical commander is unable to dynamically redirect the platform/sensor, or the unmanned aircraft system breaks station just as ground forces have begun to develop the situation.

It is *imperative* that units in physical contact with the enemy have the continuous sensor coverage needed to dominate and win the engagement. Army commanders at all tactical levels (division and below) have identified a requirement for organic UAS to support their operations. The single largest gap in UAS support to tactical maneuver forces today resides at the division level.

Army UAS continue to provide unprecedented support in the Nation's war on terror, and the demand for these systems is increasing at an extraordinary rate. From the platoon to division levels, UAS are providing ground maneuver commanders with critical and timely combat information for outstanding results. The Soldiers who operate Army UAS are extremely capable in counterinsurgency missions and maintain the ability to prevail in conventional combat operations. To date, Army UAS have flown over 375,000 hours and nearly 130,000 sorties in support of combat operations in Iraq and Afghanistan.

Capabilities of Army UAS have evolved from a theater intelligence asset to primarily tactical roles such as surveillance, reconnaissance, attack, targeting, communications relay, convoy overwatch, and cooperative target engagement through manned and unmanned (MUM) teaming. The Army is employing UAS as an extension of the tactical commander's eyes to find, fix, follow, facilitate, and finish targets. Army UAS missions are integrated into the maneuver commander's mission planning, at the start, as a combat multiplier in the contemporary operational environment.

In combat operations, the risk to platoons is often measured in seconds or minutes, with complex terrain compounding that risk. As combat echelons increase (platoon-company-battalion and so forth), the risk of significant tactical complications, possibly leading to mission

U.S. Army (Teddy Wade)

Soldier adjusts Raven UAS during operations in Iraq

failure and increased casualties, decreases while the time available to act on information or maneuver is increased. Therefore, a BCT with troops in contact needs dedicated and integrated UAS coverage that can be immediately retasked to support situational awareness and understanding and to assist in securing the force.

Troops in contact with the enemy cannot afford to wait for a UAS request to move through the division staff, the corps staff, and the JFACC staff, then await reallocation decision-matrixing by the JFACC leadership, and then, if approved, wait for the asset to travel en route to the ground forces. In addition, since these diversions of strategic assets to support tactical operations are not preplanned, the strategic UAS operator has not been integrated into the mission planning process and may not fully understand the tactical situation, scheme of maneuver, commander's intent, preplanned effects, or other assets available for teaming opportunities, thus reducing overall mission effectiveness.

Division commanders require the flexibility and control to make those dynamic action/reaction decisions immediately. This paradigm ultimately defines information warfare, in which U.S. forces have better, timelier, and more accurate information to base decisions and maneuver to positions of advantage to defeat the threat with precision fires with fewer friendly casualties or less collateral damage. The importance of proper application of force has recently been echoed by Afghanistan President Hamid Karzai, who has called for alternatives to the use of airpower in response to civilian casualties from airstrikes. By integrating UAS in direct support of ground forces, ground maneuver commanders can adequately develop the tactical situation and employ force consistent with the threat and reduce collateral damage while enhancing force protection.

More than Support

Army commanders need UAS to do more than support strategic intelligence, surveillance, and reconnaissance (ISR), which is a *process*, not a *mission*. Army commanders require UAS that execute tactical reconnaissance, surveillance, and target acquisition (RSTA) in direct support of their ground maneuver mission. A strategic concept of centralized control, in which UAS allocation is perceived to have scheduled predictability, does not *operationally* support ground commanders within the tactical dynamic battlespace. Army UAS provide tactical commanders immediate responsiveness or eyes on target without lengthy processing, exploitation, and dissemination processes associated with joint ISR assets. Through the real-time receipt of UAS sensor video, including necessary metadata/telemetry, via the One System Remote Video Transceiver (OSRVT) and direct voice communications with the UAS operator, ground commanders integrate UAS support into their formation and direct the employment of the system.

Because Army UAS are organic to their formations, commanders and staff planners fully integrate UAS operators into the mission planning process. This allows the operators to:

- understand their role in the overall scheme of maneuver and commander's intent of the mission
- build habitual relationships with ground maneuver units and manned aviation assets
- enable greater opportunities for cooperative engagement and MUM teaming.

In contrast, when a strategic asset is reallocated to support troops in contact, they are often responding to an emergency call and lack the situational awareness required to adequately support ground elements.

In addition to providing tactical RSTA in direct support of ground commanders, Army UAS tasks and missions are expanding to provide multidimensional capabilities. A recent example of the expanding tasks and missions of Army UAS is the integration of

a brigade combat team with troops in contact needs dedicated UAS coverage that can be immediately retasked

the General Atomics Sky Warrior A UAS into Task Force ODIN (Observe, Detect, Identify, Neutralize), an integration of manned/unmanned systems, new technologies, and nonstandard equipment conducting counter–improvised explosive device (C–IED) missions in Iraq. By combining advanced sensors, tactical RSTA, and MUM teaming of UAS, attack and reconnaissance helicopters, and air assault aviation assets, Task Force ODIN has been able to maximize combat power and employ lethal and nonlethal effects to deny the enemy a permissive environment to operate.

ERMP Sky Warrior-A will have longest range of any Army UAS

General Atomics Aeronautical Systems

Colonel Jeffrey Kappenman, USA, is the Training and Doctrine Command System Manager for Unmanned Aircraft Systems.

These MUM engagements are instrumental in deterring future IED emplacement by providing the insurgency a hostile environment in which to operate. Major General James Simmons, the Deputy Commanding General for Multi-National Corps–I and III Corps, was recently quoted as stating that the use of unmanned aircraft systems in Task Force ODIN has been a decisive factor in dramatically reducing the threat of IEDs. In less than a year, the Sky Warrior A UAS has been involved in 148 sensor-to-shooter target handoffs, resulting in hundreds of IED emplacers being killed, injured, or detained.

The Systems

The teaming of manned platforms with UAS is fast becoming the standard in the Army rather than the exception. MUM teaming extends the shooter's eyes on target by linking UAS sensors to the manned platforms. UAS with laser-designator payloads have the ability to laser designate for attack platforms as part of a cooperative engagement, providing maximum standoff distance for the manned aircraft and increasing survivability. UAS are also used to cross-cue time-sensitive targets and/or provide overwatch while commanders determine the optimal manner in which to prosecute a specific target.

Army UAS interoperability ensures that products are disseminated horizontally and vertically to higher and lower echelons. Through the use of the OSRVT and other network-based linkages, both combat information and processed intelligence products are made available to any user with the appropriate network connection. Additionally, future blocks of the OSRVT with level-3 interoperability will enable Soldiers, Marines, combat vehicles (both air and ground), and command centers to view, control, and disseminate sensor information. This process ensures that UAS capability is maximized for today's fight as well as informing tomorrow's.

Army UAS interoperability ensures that products are disseminated horizontally and vertically to higher and lower echelons

The development of the One System Ground Control Station (OSGCS) will further enable control of multiple types of UAS from a single control station. The OSGCS enables qualified Soldiers to control UAS within their battlespace and dynamically retask assets from one ground control station to another. This dynamically transferable level-4 interoperability ensures constant contact with the enemy, reducing gaps, seams, and potential loss of positive target identification.

To deliver tactical RSTA and lethality effects to the most forward operating Soldiers and Marines, the Army has developed three Joint Capabilities Integration and Development System–approved programs of record: the RQ–11 Raven Small UAS (SUAS), the RQ–7 Shadow UAS , and the MQ–1C Extended Range Multi-Purpose (ERMP) UAS. The Raven SUAS provides real-time tactical RSTA to commanders at the battalion level and below and is also in operation by the Marines, Air Force, and special operations forces. The Shadow UAS provides organic tactical RSTA and communications relay at the BCT level and below and has also been adopted by the Marine Corps. The

Soldier prepares Shadow 200 UAS for launch in Iraq

U.S. Army (James B. Smith, Jr.)

Soldier launches Raven UAS during Operation *Swarmer* in Iraq

U.S. Army (Alfred Johnson)

Soldiers start engine on Shadow UAS

U.S. Army (Bradley J. Clark)

ERMP UAS will provide a tactical RSTA, communications relay, and target attack capability in support of operations at division level and below.

The Deputy Secretary of Defense has directed that the Army and Air Force acquire a single air vehicle in lieu of operating both a Predator and ERMP fleet, making all three of the Army's UAS programs joint systems. In addition to these three programs of record, the Army also has two directed UAS programs, the MQ–5B Hunter UAS and the I-Gnat/Sky Warrior A UAS. The Hunter typically resides within the Aerial Exploitation Battalion of the Corps Military Intelligence Brigade but has recently seen tremendous success in Iraq as part of the 25th Infantry Division's 25th Combat Aviation Brigade (CAB).

The 25th CAB operated a Hunter UAS that had been modified to carry a Viper Strike munition and communications relay payload. By teaming the UAS with manned aviation assets within the CAB, the 25th used the UAS to cross-cue sensors and provide laser designation for cooperative engagement with manned platforms as well as utilizing the organic Viper Strike munition to prosecute time-sensitive and fleeting targets—while simultaneously providing battle damage assessment, communications relay (allowing the CAB commander to communicate with his manned platforms forward and Tactical Operations Center over 190 kilometers away), and a constant taskable presence for direct support to ground units.

The Sky Warrior A UAS, in response to the successful employment within Task Force ODIN, was recently fielded to the 82d Infantry Division CAB in Afghanistan. The Sky Warrior A is currently undergoing weaponization testing employing Hellfire missiles, with both Iraq and Afghanistan scheduled to be weaponized in late fiscal year 2008.

Operation Considerations

The Army, as well as the Navy and Marines, use highly trained enlisted personnel to operate UAS. A significant advantage of employing enlisted Soldiers to operate Army UAS, in lieu of commissioned officer pilots who serve brief tours as UAS operators, is that the former spend their entire military career as UAS operators. This allows them to hone their skills with years of experience and become highly proficient at their craft, reducing both accident rates and training costs. Army UAS also incorporate materiel technology such as automatic take-off and landing systems and waypoint navigation to eliminate labor intensive "stick and rudder"–type flight, which significantly reduces human error and training requirements while increasing system availability and reliability.

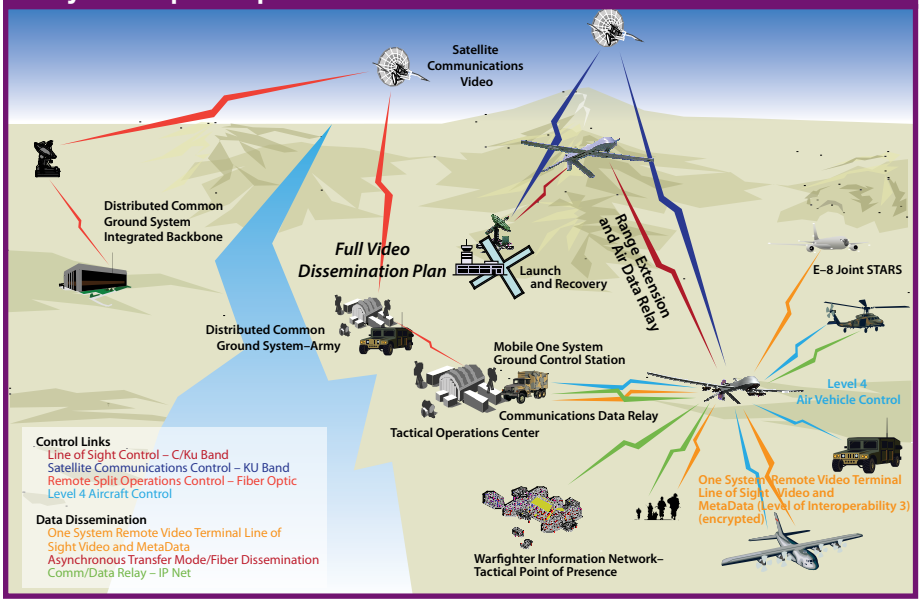
Moreover, the employment of enlisted operators as well as open competition and adherence to Department of Defense (DOD) Federal acquisition regulation best business practices make Army UAS operations fiscally efficient. Based on a 2-year average of all DOD UAS systems, the Army is projected to fly 54 percent of the total DOD UAS flight hours, while receiving only 7 percent of the DOD UAS budget dollars in fiscal year 2008. The Army acquisition community continues to strive for even greater affordability by promoting increased operational availability and reliability through the integration of new technologies and continues to reduce accident rates by addressing material failures in existing systems to reduce the cost of repairing, sustaining, and operating unmanned aircraft systems.

the Army is projected to fly 54 percent of DOD UAS flight hours, while receiving only 7 percent of the UAS budget dollars in fiscal year 2008

Joint strategic ISR UAS assets are required to meet the intelligence collection and analysis efforts at corps echelon and above, but do not provide the real-time, dedicated combat information needed by today's ground commanders. The employment of Army UAS is tailored to provide dedicated tactical RSTA, and other battlefield enablers such as communications relay and MUM teaming, to ensure that ground maneuver commanders at division echelons and below have the timely combat information required to dominate the current and future fight. In addition to providing real-time dedicated support, Army UAS provide sensor products for intelligence analysis and exploitation through the use of the OSRVT, Distributed Common Ground System–Army, and other network-based communications linkages, contributing to higher echelon collection efforts, but not at the expense of the current fight.

Lessons learned and observations gathered from deployed units influence our training base, doctrine, leader development, force structure, and acquisition programs to ensure that both our Soldiers and systems are ready and relevant to protect the Nation. The Army is leading the way on interoperability of unmanned aircraft systems through coordination with other Services on the development of the OSRVT, OSGCS, Raven, Shadow, and ERMP systems. **JFQ**

Army Concept of Operations Overview



Source: TRADOC System Manager – Unmanned Aircraft Systems

U.S. Army Air Service

U.S. Air Force

Above: BG William "Billy" Mitchell, USAAF
Right: B–17s fly bombing mission in Germany, April 1945

Following the F–16 bombing raid in June 2006 that killed terrorist Abu Musab al-Zarqawi, President George W. Bush told reporters: "Zarqawi is dead, but the difficult and necessary mission in Iraq continues. We can expect the terrorists and insurgents to carry on without him. We can expect the sectarian violence to continue."[1] The subdued comments contrasted sharply with the positive assessments of airpower made by American political and military leaders during the "shock and awe" phase of the current Iraq war. Yet the President also contended that the raid enhanced the prospects for success in Iraq. "Zarqawi's death is a severe blow to al Qaeda," he stated. "It's a victory in the global war on terror, and it is an opportunity for Iraq's new government to turn the tide of the struggle."

A Strategy Based on Faith:

THE ENDURING APPEAL OF PROGRESSIVE AMERICAN AIRPOWER

By MARK CLODFELTER

148th American Aero Squadron prepares for daylight air raid

U.S. Army (Edward O. Harris)

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It is unlikely that the President's initial observations indicate a seismic shift in how many American political and military chiefs view airpower effectiveness. Instead, President Bush's remarks illustrate an often unacknowledged aspect of American airpower thinking that traces its roots to the idealist notions of the Progressive Era. For the past eight decades, many progressive-minded airmen have argued that bombers offer a way to win wars more quickly and more cheaply than a reliance on surface forces. Vastly improved technology has reinforced the notion that bombing can achieve almost antiseptic results, and the idea of a near-bloodless victory has had a special appeal to Presidents as well as to Air Force pilots. That is not to say that progressive ideals have always dictated how America has used airpower. In some cases during the previous 80 years, progressive notions have remained dormant or been transformed; in others, they have been loudly articulated. Still, as the al-Zarqawi raid shows, they have never completely disappeared from the way American political and military leaders think about bombing. Thus, the progressive assumptions that have helped to shape the American approach to airpower merit close scrutiny.

Airpower is a term that includes both lethal and nonlethal uses of military force above the Earth's surface, but in this article, the term denotes *bombing*, the lethal application that has triggered the greatest amount of debate regarding its utility. The article's purpose is threefold: first, to examine the progressive roots of American airpower and how they have helped mold bombing concepts during the past eight decades; second, to explore why and how wartime Presidents have periodically embraced progressive tenets and married them with their war aims; and third, to show that the central premise of progressive airpower—that bombing is a rational, just military instrument because it makes war cheaper, quicker, and less painful for all sides than surface combat—is a *flawed* notion that frequently undercuts American political objectives and helps to achieve the antithesis of the desired results.

The progressive approach to airpower best supports political goals in a fast-paced, conventional war of movement conducted primarily in areas away from civilian populations. It is less suited to other types of war. In a total war for unconditional surrender such as World War II, the desire to eliminate the threat will likely eclipse the desire to reduce the enemy's pain. For limited unconventional conflicts such as Vietnam, or stagnant conventional conflicts such as Korea, Carl von Clausewitz's *friction*—the elements of danger, exertion, uncertainty, and chance that "distinguish real war from war on paper" and make "the apparently easy so difficult"[2]—often prevents airpower from helping to achieve political objectives. Friction prevents an antiseptic application of airpower in *all* types of wars. Yet in unconventional conflicts such as those the United States faces in Iraq and Afghanistan—against irregular enemies waging sporadic violence among civilians—friendly hearts and minds are vital to achieving such goals as "stability" and "security." In these heavily propagandized wars, which are the type that America will most likely fight in the years ahead, friction in the form of collateral damage not only undermines American goals but also bolsters the *enemy* cause. Accordingly, this essay argues that American leaders should jettison airpower's progressive notions and the rhetoric that accompanies them.

the progressive approach to airpower best supports political goals in a fast-paced conventional war of movement conducted primarily away from civilian populations

Friction does not, of course, impact only aerial operations; it plagues any type of military activity. American ground forces in Iraq and Afghanistan have suffered from its effects, as have Army and Marine units in previous conflicts. Ground power, however, has rarely promised bloodless victory, while proponents of progressive airpower have often proclaimed near-flawless results—their goal has been to avoid ground combat and the losses that it engenders. This belief in a war-winning instrument that produces minimal death and destruction fed the airmen's clamor for a separate air force during the 1920s and 1930s and encouraged them to stress the independent "strategic" bombing mission over "tactical" air support for ground and sea forces. Since obtaining Service independence, Airmen have often touted progressive principles as justification for it.

Unfortunately, faith, not fact, has underpinned airpower's progressive promises. That faith cannot remove friction, nor can it make bombing an effective political instrument in today's conflicts. Airpower has many valuable attributes for the wars in Iraq and Afghanistan, especially its nonlethal applications such as reconnaissance and airlift. Bombing, however, is not the answer to achieving political goals in such unconventional conflicts, and to view it in progressive terms is to make a grave error that will likely lead to unwelcome repercussions.

U.S. Army Air Forces

8th Allied Air Force bombs aircraft plant in Paris, December 1943

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Progressive Prophecy

The concept of progressive airpower stems from the Progressive movement that consumed many American political, business, and social leaders during the late 19th and early 20th centuries. Providing a single definition for *progressivism* is difficult because the movement had many disparate threads. All focused on progress and reform and included efforts to reduce inefficiency and waste in manufacturing and business practices, eliminate corruption from government and business, increase the responsiveness of government institutions, promote fairness and equality for all social classes, improve working conditions and protect workers, and enhance the public's general well-being. At its heart, progressivism promised change that was just, rational, positive, and efficient. Republican Teddy Roosevelt and Democrat Woodrow Wilson both led the Nation as "progressive Presidents" and reflected the breadth of the movement, which had an international as well as a domestic focus.

MG Benjamin Delahauf Foulois, USAAF

U.S. Air Force

President Wilson's appeal that "the world must be made safe for democracy" struck a responsive chord when he delivered his war message to Congress in April 1917. His Fourteen Points hinged on the progressive belief that his duty was not only to assure the survival of American democracy but also to foster democracy elsewhere. Compelled to project military force overseas, he would wield it in a manner that could support his postwar desire to transplant America's democratic values. His messianic message set the tone for wartime Presidents who followed him. The United States in World War I would be John Winthrop's "city upon a hill," and "the eyes of all people" would see that the Nation adhered to decency and compassion as it waged war. "We desire no conquest, no dominion," Wilson told Congress. "We shall, I feel confident, conduct our operations as belligerents without passion and ourselves observe with proud punctilio the principles of right and of fair play we profess to be fighting for."[3]

many argued that bombing alone would win wars

The harsh reality of World War I, which claimed more than 116,500 American lives and millions worldwide,[4] turned many Americans toward isolationism after the conflict, but the war had a different impact on a small group of airmen. These individuals, who included such visionaries as Billy Mitchell, Edgar Gorrell, and Benjamin Foulois, blended the ideals of the Progressive movement with their own distinctive thoughts about airpower to create a bombing philosophy that ultimately guided American defense thinking into the 21st century. Like their reformist predecessors who sought to eliminate waste and inefficiency from government and business, the airpower progressives aimed at refining the most violent of man's activities—war—and they would use the bomber and its associated technology as their instruments of positive change.

Through carefully applied doses of airpower, they intended to produce victory more quickly and more cheaply than by relying on ground forces. They planned to achieve rapid success by wrecking the key elements of an enemy's warmaking potential—components that originally consisted of industry and infrastructure but that later expanded to include leadership and its decisionmaking apparatus. The battlefield use of airpower received short shrift. With fresh memories of slaughter on the Western Front, matched by a tremendous desire for Service independence, they focused on *strategic* bombing to destroy the vital elements of an enemy's warmaking capability and to obviate the need for extensive Army operations. Many even argued that bombing alone would win wars. Moreover, bombing would make war's impact less severe for all sides; its rapid results would produce fewer deaths and less destruction than surface combat. The logic of their argument resembled that of the muckraker writers who believed that excising commercial corruption would produce ethical and efficient business practices. Comparing a future conflict to the horror of trench warfare, the progressive-minded Mitchell wrote in 1924 that bombing would "result in a diminished loss of life and treasure and will thus be a distinct *benefit* to civilization."[5]

Mitchell's vision of war was a total, all-consuming effort by a nation-state, waged to vanquish the opposition. That vision sought to avoid the widespread butchery that had typified World War I battlefields and relied on aviation, "a progressive element," to transform war.[6] By quickly and efficiently destroying an enemy's economic vital centers—the perceived essence of a state's ability to fight "modern" war—aircraft would preclude the need to fight wasteful ground battles. These views reflected the perspectives of British Air Marshal Hugh Trenchard and Italian General Giulio Douhet. Mitchell had met Trenchard, the "father" of the Royal Air Force, during World War I, and had taken his calls for an independent air force, capable of attacking strategic targets, to heart. Douhet, whose seminal 1921 book *The Command of the Air* also stressed the merits of an independent striking force, impressed Mitchell during a 1922 European tour in which the two met. Trenchard and Douhet were progressives in their own right, and their notions helped to shape Mitchell's thinking. Mitchell agreed with both that civilians were now vital to waging modern war, and, as such, they had become legitimate targets in it. He further accepted their social Darwinist view that civilian will was fragile and that bombs could wreck it, but, unlike Trenchard and Douhet, he

did not think that attacking civilians directly was the ideal way to produce victory. Instead, Mitchell called for the rapid destruction of an enemy's warmaking capability: "Air forces will attack centers of production of all kinds, means of transportation, agricultural areas, ports and shipping; not so much the people themselves."[7] Without the means to fight, surrender would result, eliminating the possibility of future slaughter such as that at Verdun or the Somme.

Though Mitchell vacillated about the propriety of bombing civilians, a dominant theme that emerged from his writing was the desire to sever the populace from sources of production. Airpower could intimidate civilians who supported the war effort, and, once bombed, they were unlikely to offer further assistance. "In the future, the mere threat of bombing a town by an air force will cause it to be evacuated and all work in munitions and supply factories to be stopped."[8] He thought that an aerial assault against Germany's heartland would have ended World War I without additional ground combat had the war continued into 1919.[9]

Mitchell's faith that bombing could rapidly produce a victory less costly than surface combat became gospel for many American airmen as they prepared for their next conflict. During the 1920s and 1930s at Maxwell Field's Air Corps Tactical School, officers studied bombing theory and learned that airpower could disrupt an enemy state's war machine by severing the seemingly delicate threads that comprised its "industrial web." Besides depriving the armed forces of needed hardware and fuel, such attacks would also wreck the enemy nation's capacity to sustain normal day-to-day life, which should in turn destroy the will of its populace to fight. American aircraft would not have to bomb enemy civilians directly to achieve decisive results. "The direct attack of civilian populations is most repugnant to our humanitarian principles, and certainly it is a method of warfare that we would adopt only with great reluctance and regret," observed Major Muir S. Fairchild in a 1938 Tactical School lecture. "Furthermore, aside from the psychological effects on the workers, this attack does not directly injure the war making capacity of the nation." Thus, Fairchild advocated attacks on the industrial web, which would have "the great virtue of reducing the capacity for war of the hostile nation, and of applying pressure to the population both at the same time and with equal efficiency and effectiveness."[10] For the industrial web theory to work, planners first had to identify correctly the essential threads of an enemy's industrial apparatus, and then airmen had to bomb them accurately. Both tasks were thorny propositions, and the second in particular was a tall order after Pearl Harbor.

Progressive Notions, Technological Limitations, and Unconditional Surrender

"Precision" bombing was a misnomer in World War II;[11] the technology for it was primitive by modern standards and required hundreds of aircraft flying in tight formation to drop their ordnance in a small area to guarantee the destruction of a single target. Opportunities for friction to disrupt the process abounded. Nonetheless, the lack of accuracy ultimately suited the character of the conflict. America's war aim of unconditional surrender signified that the Nation would wreak havoc on Nazi Germany and Imperial Japan to achieve a total victory. Distressed by the "stab-in-the-back" theory that the Nazis had used to help explain Germany's World War I defeat, President Franklin Roosevelt wanted to make certain that a similar mentality did not emerge after World War II. He also wanted to establish a postwar world grounded on his Four Freedoms. American bombers would help him achieve these goals. After listening on the radio to Adolf Hitler ranting during the 1938 Munich crisis, he told aide Harry Hopkins that he was "sure that we were going to get into war" and that "airpower would win it."[12] The

America's war aim of unconditional surrender signified that the Nation would wreak havoc on Nazi Germany and Imperial Japan to achieve a total victory

U.S. Air Force

Billy Mitchell's 1st Provisional Air Brigade conducted controversial bombing tests against ships in 1921

Phosphorus bombs used during maneuvers in France, 1918

U.S. Army (J.J. Marshall)

President was willing to use his air force with a vengeance. After learning that the 1943 Anglo-American bombing of Hamburg produced a firestorm killing an estimated 50,000 German civilians, Roosevelt called it "an impressive demonstration" of what American bombing might achieve against Japanese cities.[13]

American air leaders also believed that airpower was the proper instrument to guarantee Allied victory, but their preference was to use the bomber according to Air Corps Tactical School principles. "We must never allow the record of this war to convict us of throwing the strategic bomber at the man in the street," commented Lieutenant General Ira Eaker, who commanded the Eighth Air Force in 1942–1943 and the Mediterranean Allied Air Forces from 1943 to 1945.[14] Yet with existing technology, and the friction that resulted from trying to use it against intense air defenses and in unpredictable weather, Eaker's crews were incapable of hitting only military targets—a fact that he and other air commanders doubtless understood. Though they may have aimed at factories, oil facilities, and rail yards, their intent counted little to the 305,000 German civilians killed by the Anglo-American air campaign or the 330,000 Japanese civilians killed by American bombs.[15] In the end, "military necessity" overrode the scruples of air leaders. The need to secure air superiority over Europe before the D-Day invasion and the need to cut German oil supplies were only two of many requirements that spurred continued "strategic" bombing that was largely imprecise.[16] Moreover, especially in the Pacific as the war progressed, American air leaders felt meager compassion for an enemy they increasingly viewed as treacherous.

airpower was not the pristine vehicle of finite destruction that Mitchell and his cohorts had predicted

Although American airpower was a bludgeon, not a rapier, in World War II, many political and military leaders concluded that the strategic attacks on Germany and Japan had helped end the war faster than would have occurred without them. President Harry Truman believed that the atomic raids he sanctioned were no worse than the firebombing of Japan by Major General Curtis LeMay's B–29s and that Hiroshima and Nagasaki efficiently ended the war without the horrendous losses of an invasion. Similarly, LeMay surmised that his firebombing would have produced a Japanese surrender without either an invasion or the atomic bombs, an assertion endorsed by the postwar U.S. Strategic Bombing Survey.[17] General Carl Spaatz, who had commanded America's bomber force in both Europe and the Pacific, perhaps best summarized the progressive views in his 1946 article in *Foreign Affairs*:

Our land and sea forces, supported by air, could be expected to contain the most advanced echelons of our enemies, and gradually drive their main armies into their heavily fortified citadels. But the essential question remained. How was their military power to be crushed behind their ramparts without undertaking an attritional war which might last years, which would cost wealth that centuries alone could repay and which would take untold millions of lives? . . . The development of a new technique was necessary. Some new instrument had to be found. . . . The outcome of the total war hung in the balance until that new technique had been found and proved decisive in all-out assault. The new instrument was Strategic Airpower.[18]

World War II transformed the progressive sentiments that had fostered America's faith in an airpower solution to war. The war was the type envisioned by Billy Mitchell and the Air Corps Tactical School instructors: a state-on-state conflict for total victory against

DOD

U.S. Air Force B–29s bomb targets in North Korea

enemies viewed as a direct threat to the security of the United States. Because of the severe nature of the threat, the limitations of technology, and the intense desire to vanquish the opposition, airpower was not the pristine vehicle of finite destruction that Mitchell and his cohorts had predicted. In World War II, progressivism equated to those measures that could speed American victory—and hence reduce American losses. Those goals trumped the desire to limit enemy casualties. Still, if the promise of precision bombing remained unfulfilled, airpower's brute force had seemingly delivered the goods.[19]

Korean Uncertainties

Brute force remained a central facet of American bombing philosophy during the postwar planning for an atomic attack on the Soviet Union, but America's next conflict called for a more restrained approach. One of President Truman's primary concerns in intervening in Korea was to keep that conflict limited. He and his advisors believed that Soviet Premier Josef Stalin had orchestrated the North Korean attack as a feint to draw American forces into Asia while the Soviets launched the main communist thrust against Western Europe. Truman also thought that the North Korean aggression demanded a forceful response that would "serve as a symbol of the strength and determination of the West" to oppose future communist encroachments.[20] Despite his willingness after Inchon to expand America's war aim to eliminating communism from the Korean Peninsula, he did not intend to risk a third world war to achieve that objective. Once the Chinese entered the fray, American aims reverted to the preservation of an independent, noncommunist South Korea. In the stagnant conventional war that resulted, the progressive tendencies of American airpower contributed little.

Yet the table was seemingly set for bombing to provide an independent victory conforming to Air Corps Tactical School tenets. After American and United Nations (UN) forces stabilized a position near the 38th parallel in summer 1951, negotiations began with the Chinese and North Koreans to end the fighting. Having secured South Korea, Truman and his advisors would not endorse further ground advances, and bombing became the military instrument of choice. Because concerns remained about expanding the war, Truman, the Joint Chiefs of Staff, and the UN commanders, Generals Matthew Ridgway and Mark Clark, initially circumscribed bombing's use. Targets first consisted of roads and railroads to cut the communist flow of men and supplies to frontline positions along the 38th parallel. Next, American aircraft attacked North Korea's hydroelectric facilities. Although the transportation attacks reduced North Korea's resupply capability to a trickle, and the hydroelectric raids destroyed 11 of 13 major power plants and produced an almost total blackout in North Korea for more than 2 weeks,[21] neither effort ended the war. As long as communist troops remained static along the 38th parallel, with no threat of attack from UN ground forces that would cause them to expend additional resources, their minimal supply needs made them impervious to any aerial attacks against transportation or industry.

Airpower, applied against the designated "web" of North Korea, thus could not deliver the quick victory that its progressive proponents proclaimed. As a result, in August 1952, American aircraft bombed military targets in Pyongyang, which had not been attacked in almost a year, and caused more than 7,000 civilian casualties.[22] In May 1953, with a new Commander in Chief in Washington firmly committed to ending the war rapidly, American aircraft bombed North Korea's irrigation dam system, threatening its civilian populace with starvation. Whether those raids spurred the war's end remains a matter of conjecture. President Dwight Eisenhower claimed that he also threatened the Chinese with a nuclear assault on Manchuria, but his success in conveying that threat, and its impact if he did so, also remains subject to speculation.[23] In all probability, the key reason for the July 1953 armistice was the death of Stalin 4 months earlier, which removed the Soviet Union's impetus to continue the conflict.

with bombing, [Johnson] *could orchestrate the application of military force much like turning a water spigot*

As in World War II, airpower contributed brute force in an effort to end the conflict quickly, but Korea differed in many ways from the preceding war. For the United States, the war aim and the type of war fought did not vacillate from 1941 to 1945. America's war aim in Korea shifted three times during the first year, and the fast-paced conventional war of movement that typified the opening year then disappeared into a 2-year stalemate along the 38th parallel. Korea also differed from World War II in presenting a powerful but silently active enemy—the Soviet Union—and an unexpectedly overt belligerent—China. The uncertain behavior of the two communist powers produced friction that stymied an immediate air effort against North Korea's hydroelectric power and irrigation dam systems. Americans viewed the Korean conflict through the prism of the Cold War, and indeed the war played out with all belligerents aware that other nations watched and their views counted in the ideological struggle between communism and capitalism. Given those circumstances, the notions of progressive airpower proved tenuous at best. They would prove even more so in the next limited conflict.

Southeast Asian Dilemma

Much like the Korean War, the frictional element of uncertainty affected how America applied military force in Vietnam. The threat of an expanded conflict haunted President Lyndon Johnson and shaped much of his wartime decisionmaking. So too did his concern for his Great Society programs. Though he preferred to focus on domestic issues, Johnson was not about to permit a communist takeover of South Vietnam. "I knew from the start that I was bound to be crucified either way I moved," he later reflected. "If I left the woman I really loved—the Great Society—in order to get involved with that bitch of a war on the other side of the world, then I would lose everything at home. . . . But if I left that war and let the Communists take over South Vietnam, then I would be seen as a coward and my nation would be seen as an appeaser and we would both find it impossible to accomplish anything for anybody anywhere on the entire globe."[24] His dilemma was finding a way to fight that would prevent South Vietnam's collapse while causing minimum disruption to his Great Society—and minimum concern to North Vietnam's two powerful benefactors, China and the Soviet Union.

The progressive notions of American airpower seemed to offer Johnson the ideal solution in spring 1965. With bombing, he could orchestrate the application of military force much like turning a water spigot. If the American public's attention started to focus on the intensity of the air war rather than on Johnson's domestic agenda, he could turn down the bombing pressure; he could do the same if Chinese or Soviet reactions to bombing were bellicose. Conversely, he could turn up the

bombing if North Vietnam refused to curtail its support to the insurgency in the South. Sending American Airmen into the skies over North Vietnam risked few lives compared to opposing the insurgency with ground forces. North Vietnam's sparse rail lines and meager industrial apparatus appeared vulnerable to the might of American airpower. That force had made the Soviet Union cower less than 3 years before in the Cuban missile crisis, and now the opponent was, in Johnson's words, "a raggedy-ass little fourth-rate country."[25] The prospect of rapid, cheap victory was alluring.

Unfortunately, the key assumptions that made airpower so appealing did not prove accurate. Most significantly, flawed convictions regarding the enemy's approach to war helped create a flawed bombing program. American political and military leaders appreciated that the war in the South was a guerrilla conflict waged primarily by the indigenous Viet Cong. American leaders also believed that the Viet Cong could not fight successfully without North Vietnamese support. Thus, if bombing could eliminate North Vietnam's warmaking capability, the Viet Cong insurgency would collapse in turn. That premise spurred the recently retired General LeMay to declare in 1965 that he could have bombed the North Vietnamese "back to the Stone Age" by destroying 94 key targets.[26] Rather than a plea for massive civilian destruction, LeMay's comment hearkened to progressive precepts. His 94-target plan included no attacks on civilian population centers and specified 82 fixed sites and 12 transportation lines deemed the vital elements of the North's modern warmaking capability.[27] Yet neither the North Vietnamese nor their Viet Cong allies fought a "modern" war. Until the 1968 Tet offensive, despite the entry and significant buildup of American ground forces, the typical enemy soldier fought an average of only 1 day a month. This minimal combat activity produced correspondingly minimal supply needs. By August 1967, an estimated 300,000 enemy troops (245,000 Viet Cong and 55,000 North Vietnamese army soldiers) could exist on only 34 tons of supplies a day from sources outside South Vietnam—a total that just seven 2½-ton trucks could carry.[28]

"tactical" bombing on battlefields in South Vietnam heightened the perception that American military power had run amok

U.S. Air Force

KC–135 refuels F–105s over Vietnam

Dubbed Operation *Rolling Thunder*, Johnson's air campaign against North Vietnam persisted from March 1965 to October 1968, and President Ho Chi Minh made the most of it. Johnson's fears of Chinese or Soviet intervention, along with his emphasis on the Great Society, caused him to place significant controls on the bombing, to include a gradual increase in intensity instead of the "sudden, sharp knock" desired by air commanders. Ho understood that those restrictions would limit the pain inflicted on his country and thus allow him to *benefit* from American airpower. Courting both Moscow and Beijing to replace war materiel as well as to provide additional aid, he adroitly played one against the other, and as a result the gross domestic product of North Vietnam actually increased each year of *Rolling Thunder*.[29]

The airstrikes also provided the perfect vehicle for rallying popular support for the war. The damage that they caused had little impact on the conflict (*Rolling Thunder*'s 643,000 tons of bombs killed an estimated 52,000 civilians out of a population of 18 million[30]), but they provided tangible evidence of America's perceived intent to destroy North Vietnam. "In terms of its morale effects," RAND analyst Oleg Hoeffding observed in 1966, "the U.S. campaign may have presented the [Northern] regime with a near-ideal mix of intended restraint and accidental gore."[31] Like the Korean conflict, Vietnam occurred against the backdrop of the Cold War and on the stage of world public opinion. For many around the globe, *Rolling Thunder* conveyed the image of an American Goliath pounding a hapless David—the antithesis of the view that Johnson had hoped to portray.

The "tactical" bombing that occurred on battlefields in South Vietnam heightened the perception that American military power had run amok in the war. In contrast to the detailed restrictions placed on bombing targets in North Vietnam, attacks on targets in the South had few limitations. One-half of all air-dropped ordnance during the 8-year span of America's active combat involvement in Southeast Asia fell on the territory of its southern ally—roughly four *million* tons of bombs.[32] (American aircraft dropped three million tons on Laos and one million tons on North Vietnam.) Many of the bombs deposited on South Vietnam fell on "free fire zones," areas deemed hostile, from which all civilians had

been forcibly removed. In many cases, though, the civilians returned, and such indiscriminate bombing contributed significantly to an estimated 1.16 *million* South Vietnamese civilian casualties during the war.[33]

Johnson's tight controls on bombing the North could not change the perceptions of carnage, and those views endured for President Richard Nixon's Operation *Linebacker* air campaigns against North Vietnam in 1972. Nixon first bombed the North in response to its Easter offensive in March and began a second *Linebacker* campaign in December to spur stalled peace negotiations. By spring 1972, the war had finally become the fast-paced, conventional war of movement desired by air leaders—much of the Viet Cong had been decimated in the 1968 Tet uprising. The first generation of "smart" munitions also appeared—bombs with true precision capability that could destroy the bridges now essential to transporting the fuel and ammunition needed by a fast-moving army. Equally important, massive bombing in *South* Vietnam combined with South Vietnamese army counteroffensives to thwart the North Vietnamese advance. Nixon's diplomacy severed North Vietnam from its close ties to China and the Soviet Union, eliminating much of the uncertainty regarding Chinese and Soviet actions and allowing him to remove some restrictions that had hampered *Rolling Thunder*. December's intense attacks against targets in Hanoi and Haiphong, primarily conducted by B–52s, killed 1,623 civilians, a remarkably low number for 20,000 tons of bombs in 11 days.[34] Nonetheless, the London *Times* observed that Nixon's action was "not the conduct of a man who wants peace very badly," while Hamburg's *Die Zeit* concluded that "even allies must call this a crime against humanity."[35]

To many in the U.S. Air Force, the signing of the Paris Peace Accords in late January 1973 proved that Nixon's "unfettered" bombing could have achieved success earlier. An aging LeMay likely reflected the view of many air commanders by telling a reporter in 1986 that America could have won in Vietnam in "any two-week period you want to mention."[36] That response ignored key changes in the war that had occurred from the Johnson presidency to Nixon's. It further dismissed distinctive differences in the war aims of the two Presidents. Johnson fought to create a "stable, independent, non-communist South Vietnam," a much tougher objective than Nixon's amorphous "peace with honor." The tenets of progressive airpower appeared ill suited for a limited war against an insurgent enemy that rarely fought. *Rolling Thunder* argued strongly that bombing could not achieve a quick or an easy solution in future conflicts against similar opponents for aims that were less than total, and that an uncertainty regarding results—both in terms of how they might affect more powerful allies and how the world community at large might perceive them—would likely restrict the use of airpower. Yet most Airmen saw *Linebacker*, not *Rolling Thunder*, as the model to learn from, and they turned their attention to the prospect of a nuclear confrontation with the Soviet Union.

Warden contended that leadership was the most critical ring because it was "the only element of the enemy . . . that can make concessions"

Rings in the Desert

One Air Force officer who focused on conventional war was Colonel John Warden. He had flown as a forward air controller in Vietnam, and during the decades that followed, he developed ideas that would form the basis of America's air campaign plan for the 1991 Persian Gulf War. Like Billy Mitchell, Warden stressed airpower's "revolutionary" characteristics, and he fully shared Mitchell's progressive vision. Warden believed that the creation of stealth aircraft, extremely precise "smart" munitions, and bombs with significant penetrating power gave the United States a dramatic capability to fight limited, conventional wars by relying almost exclusively on airpower. He argued that those three technological developments enabled American air forces to attack a prospective enemy's "centers of gravity" directly, which they could do by circumventing enemy surface forces. "Airpower then becomes quintessentially an American form of war; it uses our advantages of mobility and high technology to overwhelm the enemy without spilling too much blood, especially American blood."[37]

For Warden, the key center of gravity of a nation—or of any organized group capable of fighting—was leadership. That element comprised the center ring of his five-ring model that specified the major components of war-making capability. Surrounding leadership was a ring of key production, which for most states included electricity and oil. Surrounding key production was a ring of infrastructure, comprising transportation and communications,

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F–15Es during Operation *Desert Shield*

U.S. Air Force (Phan Chad Vann)

Shaping the Joint Fight in AIR, SPACE, and CYBERSPACE

By C. ROBERT KEHLER

The game is unified action up and down the floor.

—Jack Ramsay[1]

September 18, 1947, marked the birthday of the U.S. Air Force as a separate Service. Less than a month later, Captain Chuck Yeager broke the sound barrier, and since then America's Air Force has continued to push the envelope as the Nation's sword and shield over its own skies, while serving heroically in locations around the world. In addition to flying and fighting, the Air Force has maintained a credible nuclear deterrent, exploited space, and is now tapping the potential of cyberspace as a warfighting domain. In short, the Air Force has transformed itself for over 60 years in the face of dramatic world change.

The Service's missions now extend past the Earth's atmosphere and across a boundless virtual landscape. Today's Air Force operates in three domains: air, space, and cyberspace. As a result, Airmen bring distinctive perspectives and capabilities to influence targets and actions anywhere around the globe as a multidimensional maneuver force. While the Air Force must continue to develop capabilities in its three operating domains, it must also transform and exploit shared, cross-domain attributes as it continues to provide decisive options for national leaders, combatant commanders, and joint forces. Maintaining a future joint military advantage in an era of exponential change requires a more concerted effort to integrate these domains. Airmen who are experts in the space domain will play a key role in that integration as they build upon a proud heritage to meet the challenges of a dynamic future.

General C. Robert Kehler, USAF, is Commander, Air Force Space Command, Peterson Air Force Base, Colorado.

U.S. Air Force (Jack Braden)

F–16 pilot flies close air support training mission over Korea

Early Integration and Synchronization

When the Air Force celebrated 60 years as a Service in September 2007, one of its major commands, Air Force Space Command (AFSPC), marked a quarter century of service in joint military operations. The establishment of AFSPC in 1982 signaled the Air Force's recognition of the importance of space and the need to mature capabilities within this separate warfighting domain.

Even a quarter century ago, space capabilities were impressive. The realm above Earth's atmosphere had become the strategic *high ground* in the Cold War between the United States and the Soviet Union. Air Force intercontinental ballistic missile (ICBM) forces provided the Nation with a powerful strategic deterrent. Defense Support Program satellites were poised to provide advanced warning of adversary ICBM launches; the Defense Satellite Communications System enabled worldwide command and control of U.S. forces; and Defense Meteorological Satellite Program systems provided global weather coverage. Moreover, a constellation of prototype Global Positioning System (GPS) satellites was already demonstrating the benefits of precise timing and highly accurate, space-based geolocation.

Although several brief contingencies in the late 1980s furnished tantalizing glimpses of how space systems might support forces at the theater level or in tactical situations, it took the first Gulf War to highlight their true benefits to the joint warfighter. In early 1991 during Operation *Desert Storm*, space enabled a wide range of U.S. and coalition capabilities including missile warning, communications, weather, surveillance and reconnaissance, as well as positioning, navigation, and timing—all in a major theater combat environment. Defense Support Program satellites and a reworked ground infrastructure proved sufficiently sensitive to detect Scud missiles launched from Iraq, and military satellite communications permitted transmission of voice alerts and warnings to forces in the area of operations. Military and commercial satellite links carried 90 percent of all communications into theater and most of General Norman Schwarzkopf's intratheater command and control communications. Weather satellites supported strike planning and weapons selection, aerial refueling operations, and detection of flood plains while a young GPS constellation helped troops maneuver across a featureless desert.

Capitalizing on the *Desert Storm* experience, the Air Force focused its efforts on enabling warfighters to leverage space capabilities by creating the Space Warfare Center in 1993.[2] This led to the rapid exploitation of space capabilities such as GPS, satellite communications, and national space systems to enhance joint warfighting tasks. Space capabilities allowed quicker recovery of downed pilots, fostered the development of extremely precise GPS-aided munitions, and enabled a Global Broadcast Service to pump previously unimagined amounts of data to and from theater warfighters. Air operations in the Balkans would later validate that GPS could dramatically enhance the precision and lethality of weapons systems—effectively revolutionizing the American way of war.

U.S. Air Force (United Launch Alliance/Karl Ronstrom)

Next-generation communications satellite readies for launch

The Air Force continued its efforts to bring space to the fight by establishing the Space Division at the U.S. Air Force Weapons School in 1996 (now the 328th Weapons Squadron). This effort was a seminal event for space integration. The Air Force has since worked hard to place these Weapons School graduates into joint theater organizations to develop key relationships between theater-based and continental U.S.-based space organizations and to integrate space at the operational level of war. The school continues to train tactically focused, space-experienced Airmen to better integrate with combat and mobility air forces and to deliver world-class space expertise to theaters worldwide.

At the same time, the national Intelligence Community made great strides in delivering space products to warfighters. Not only did the national intelligence team deliver space products sooner, but also joint warfighters became more influential in the tasking, processing, exploitation, and dissemination process. As a result, warfighting responsiveness went up.

The ever-increasing synchronization of military space capabilities, coupled with heightened theater demand, also drove the need to develop a capability to operationally command and control space forces. Recognizing that space forces are inherently global in effect, earlier versions of what is now the Joint Space Operations Center (JSpOC) worked to plan, task, orchestrate, and deliver space capabilities for theater commanders around the globe. Today, the 614th Air and Space Operations Center comprises the core of the JSpOC and is the primary command and control center for space operations supporting all combatant commanders.

After the 9/11 terrorist attacks, U.S. forces set and surpassed even higher benchmarks for the use of space systems and synthesis of space-savvy personnel with other warfighting experts. During the early stages of both Operations *Enduring Freedom* and *Iraqi Freedom*, U.S. forces, aided by space systems and people, decisively engaged and defeated enemy military capabilities with unprecedented speed, precision, and minimal collateral damage.[3]

Space Today: Effective Synchronization

Although the Air Force operates essentially the same kinds of space systems that it did 25 years ago, the way the joint force uses them is very different today. Space forces are now inextricably embedded in combat operations and play a key role in providing global vigilance, reach, and power for the Nation's civilian and military leaders.

Space capabilities have shaped the American way of warfare in the late 20th and early 21st centuries and, in many instances, have become essential elements of modern weapons networks.[4] Oft-cited examples include myriad combat capabilities enabled by the Air Force's GPS constellation. For years, GPS navigation and timing signals have enabled an ever-growing arsenal of precision munitions such as the Air Force and

Navy's Joint Direct Attack Munitions, which for relatively little cost effectively turned what had been *dumb* bombs into *smart* munitions. Today's operational environments have driven the military to produce even more precise lower-yield weapons to destroy targets with minimal collateral damage. Recent examples include the Air Force's 250-pound-class Small Diameter Bomb, the Army's Guided Multiple Launch Rocket System, and the new Excalibur guided 155mm artillery round. GPS also supplies the brain within the Joint Precision Airdrop System (JPADS), a revolutionary mobility system that permits aircrews to deliver supplies with pinpoint accuracy from higher, safer altitudes. Using GPS navigation and steerable parachutes, C–130 and C–17 aircrews precisely deliver JPADS bundles to ground combat units in otherwise inaccessible forward operating bases. Furthermore, GPS features add fidelity to aircrew survival and personnel recovery radios, essentially taking the *search* out of *search and rescue*. GPS also guides forces through all terrains and allows field commanders to track ground and air forces equipped with cutting-edge Blue Force Tracking devices.

GPS is not the only space capability embedded in weapons networks. Satellite communications (SATCOM) also plays a major role feeding digital information to a 21st-century military. Connecting decision-makers and combat forces across the globe, SATCOM enables information-sharing at all levels of warfare. For instance, space-enabled communications links transfer a host of information including threat data, intelligence information, and tasking orders. It even enables remote command and control of unmanned aerial systems such as the MQ–1 Predator and MQ–9 Reaper flown half a globe away from Creech Air Force Base, Nevada. It also returns telemetry and targeting information to enable warfighters to fight with a smaller deployed footprint.

In addition to these capabilities, the Air Force, along with other Services, provides space forces to combatant commanders. Counterpart strategists, planners, and executors of these tailored space capabilities reside at Combined Air and Space Operations Centers (CAOCs) around the world. For example, in addition to providing airpower to enable and support all operations in U.S. Central Command's area of responsibility, the CAOC in Southwest Asia is the primary conduit for that command's space operations.[5] Therefore, the CAOC acts as a clearinghouse for theater integration, deconfliction, and synchronization of air and space capabilities and is supported by the JSpOC.

Another level of support to the joint fight comes by way of space-experienced Airmen. Today, the Air Force injects this expertise from the start of operational planning through employment. On average, more than a dozen uniformed space experts reside in CAOC divisions that are responsible for developing air and space strategies, mastering air attack plans and air tasking orders, and assisting with execution and effects assessment. As combat integrators, these deployed Air Force and joint space experts take space capabilities down the last tactical mile.

A theater Combined Forces Air Component Commander (CFACC) is typically designated as the Space Coordinating Authority (SCA) and is responsible for orchestrating the use of space capabilities from various national and military organizations and strengthening integration and planning across all components. In most areas of responsibility, CFACCs are supported by the Director of Space Forces. This key senior, space-experienced Airman often executes day-to-day theater space coordination duties on behalf of the SCA and interfaces with Soldiers, Sailors, Marines, and Airmen positioned in key operational and tactical echelons with responsibilities to merge space capabilities into combat operations.[6] In addition to leveraging space expertise throughout the theater, these directors also reach back to the JSpOC to provide synchronized, tailored space capabilities.[7]

GPS features add fidelity to aircrew survival and personnel recovery radios, essentially taking the search *out of* search and rescue

Airman loads GBU–38 JDAM onto F–16 for combat mission over Iraq

U.S. Air Force (Beth Holliker)

The Next 25 Years

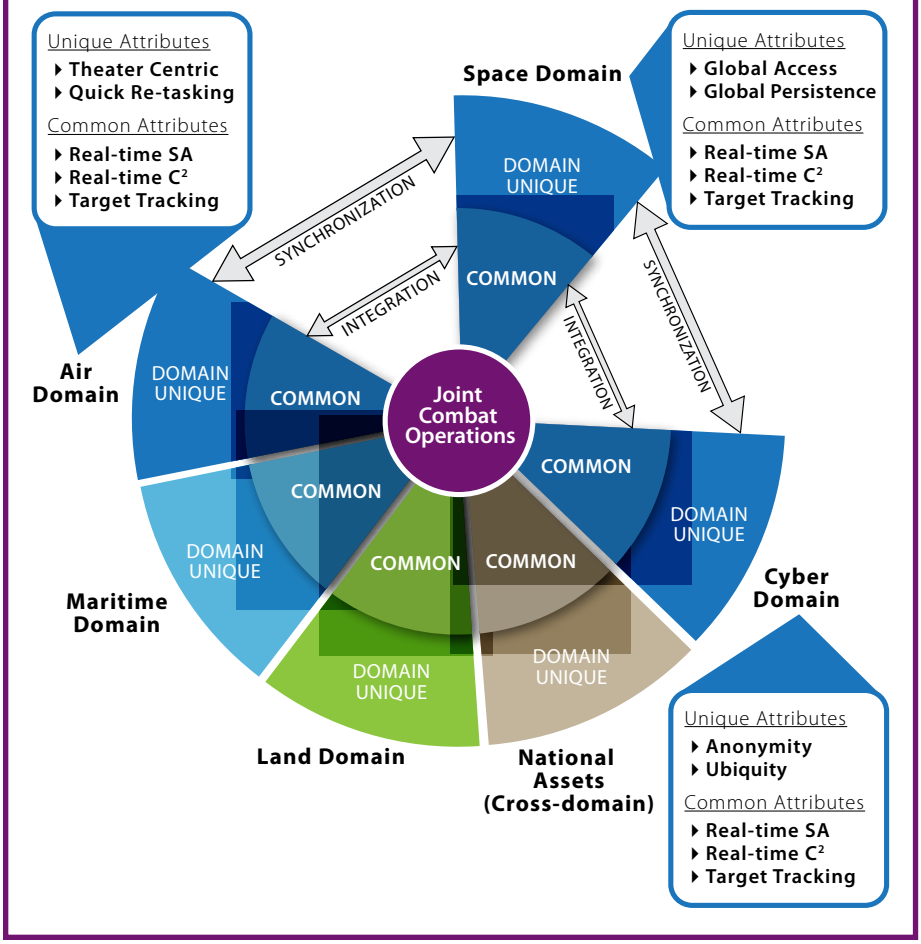
No one knows what the security environment will look like 25 years from now, but the United States will likely continue its heavy reliance on space capabilities for its national security and economic well-being. For the most part, the Air Force knows what capabilities it will have in the year 2033. Strategic planning processes provide a roadmap for what space capabilities the Service will have in the future. Space systems will continue to evolve from those used today and provide far greater capabilities. The Air Force is recapitalizing and modernizing an aging space force to keep pace with warfighting requirements. For example, next-generation GPS satellites will include better inherent antijam and enhanced civil capabilities. The Transformational Satellite Communications System will provide terrestrial forces with on-the-move communications at 100 times the capacity offered by the military SATCOM systems today. Space-based Infrared System satellites will offer far more sensitive, persistent missile warning coverage and battlespace characterization capabilities unavailable to current legacy systems. America's national security

space development and launch infrastructure will have better means to respond to warfighters and augment or replenish orbital assets in time of crisis or war. Space- and ground-based assets will fill gaps in our Cold War–era space surveillance architecture to provide the Nation and its allies better space situational awareness needed for tomorrow's increasingly congested and contested space domain.

The successful Chinese antisatellite test on January 11, 2007, unambiguously confirmed that space is not a sanctuary and will not be one in future conflicts. By using one of their aging weather satellites for target practice, the Chinese dramatically demonstrated their capability to hold low Earth orbiting systems at risk. The event also released over 2,400 pieces of potentially deadly debris into orbits transited by spacefaring nations all over the globe—to include flight paths used by the space shuttle and International Space Station. Above all, this event focused attention on the urgent need for the U.S. military to protect America's space capabilities.

However, obliterating a satellite with a kinetic kill vehicle is only one conceivable form of attack. Others include physically attacking worldwide ground stations, jamming GPS and communications links, and conducting cyber attacks on command and control nodes. Potential adversaries have witnessed U.S. military successes, and they understand our doctrine. They see that space is interwoven within the fabric of the Nation's economy and military infrastructure, and they realize that denial of space services could disrupt and destabilize that infrastructure. Adversaries will continue to study U.S. reliance on space capabilities as well as analyze and exploit vulnerabilities. Accordingly, the Air Force is shifting its space mindset to one of operating in a contested environment with an increased emphasis on space protection. Enhanced space situational awareness will be necessary to warn not only satellite operators but also the Intelligence Community and joint users about adversary actions against friendly space capabilities and services. To develop this ability, elements of air, space, and cyber power will need to work interdependently to render sufficient protection and response.

Attribute Exploitation Model



The Challenge

While the Nation's space forces can be proud of their contributions to the joint fight, increased demand and corresponding threats require the U.S. Air Force to continue to transform the way it delivers space capabilities. Many people have talked about integrating space forces, but it is arguable that what has occurred up to this point is *synchronization*. In the past, capabilities have been synchronized at the point of the spear, with domain-specific effects forged together in theater by our joint warfighters. In the future, the Air Force must *integrate* from the start.[8]

the Chinese antisatellite test confirmed that space is not a sanctuary and will not be one in future conflicts

Fortunately, the Air Force is uniquely positioned to make this transformation. Its ability to provide global vigilance, reach, and power is buttressed by three pillars of excellence—air, space, and cyberspace—all with complementary attributes. The Air Force must reconstruct the pillars in a way that will better enable and support joint combat operations in the future. The time is ripe to overcome tendencies to develop concepts, to plan, program, acquire, and operate capabilities within stovepipes, and then to synchronize in theater. Instead of synchronizing at the *point* of the spear, the Air Force must start to integrate capabilities at the *handle* of the spear.

One way for the Air Force to do this is to take a hard look at the attributes afforded by operating in the air, space, and cyberspace domains and to leverage them accordingly. The figure depicts a conceptual model for exploiting common domain attributes and provides a helpful way to think about how attributes interact across joint warfighting domains. The goals should be to integrate where appropriate and to synchronize where integration is not feasible.

For example, common attributes shared by the air, space, and cyberspace domains include real-time situational awareness (SA), command and control (C^2), and enhanced target-tracking capabilities. Properly integrated and exploited, these common attributes can help build interdependent networks and inform planning decisions that can produce data for joint forces. At the end of the day, it is all about the data, which are independent of the domains

from which they originate. A thorough analysis of each domain will likely yield higher-order attributes that contribute relatively little to a particular weapons system and yet are useful in an interconnected weapons network. Those attributes that are not common (that is, those that are unique to a particular operating domain) should be synchronized.[9] Modern technology increasingly blurs the lines between domains and may offer tremendous opportunities to better leverage joint capabilities.[10]

Intelligence, surveillance, and reconnaissance (ISR) activities present an opportunity to begin this effort toward enhancing integration and maximizing joint operational capabilities. ISR already cuts across every joint warfighting domain. Traditional platforms such as reconnaissance aircraft, ISR satellites, and ground-based elements have one thing in common: they all collect data. Nontraditional ISR sources such as fighter aircraft targeting pods, Aegis cruisers, air- and ground-based radars, and cyber platforms also collect and produce data. Unfortunately, these discrete systems develop and operate within individual Service or domain stovepipes. This approach produces data with incompatible formats that flow within insulated networks and noncommon link architectures. Information from these systems presents "low hanging fruit" that can be leveraged, integrated, and disseminated within an ISR web of interconnected data. If Google can consolidate the world's Internet data into one access portal, the world's most capable military should be able to do the same with ISR data.

U.S. Navy (William S. Parker)

Marine sets up satellite communications during relief operations in Bangladesh, 2007

Properly executed, a refocus on ISR may push a joint targeting approach from a linear, find-fix-track-target-engage-assess-kill chain to a multidimensional *influence web*. Within this web, data are no longer relegated to a command-oriented architecture, but are transformed to a demand-oriented network available to all authorized users (for example, commanders, analysts, targeteers, and execution assets) to help them *see and engage*. The challenge to this vision is that no organization currently funds the influence web, and no one owns its effects. Organizations need to focus on the whole picture from the start of developmental processes with an influence web as the integration goal, not simply an artifact of disparate capability stovepipes.

True integration is more than combining and disseminating data among interrelated architectures. Key players from each operating domain need to develop shared strategic plans, operational concepts, system architectures, and doctrine, as well as tactics, techniques, and procedures for the next conflict—a conflict in which emerging technologies in air, space, and cyberspace domains can be leveraged and mutually supported. Today, space and cyber capabilities typically support operations in the traditional land, maritime, and air domains. In the future, commanders in space and cyber domains will likely be supported commanders. Indeed, the future may necessitate a type of Air-Space-Cyber Battle doctrine, requiring even closer coordination across all three Air Force pillars as well as the joint community.

Developing the New Airman

Regardless of the domain, delivering global vigilance, reach, and power requires Airmen who can decisively operate in air, space, and cyberspace. The Air Force must continue to organize, train, equip, and develop expertise within each domain but must expand opportunities for cross-domain interaction, such as planning, education, and training. The product of this cross-pollination is a *New Airman*, who will have in-depth expertise in at least one domain and be skilled in the integration of all three.

The Air Force needs to develop, train, and educate Airmen with a cross-domain perspective as an intellectual endstate. Today's air warriors are trained and knowledgeable on the application of airpower—and they continue to hone doctrine and tactics, techniques, and procedures. From intelligence analyses to professional military education, most of the Air Force comes to work to expand its knowledge base on airpower. The same mindset has not always applied for spacepower, and if left unchecked, the Air Force may miss opportunities to develop the budding cyberspace mission.

The next generation of America's warfighters is living in a digital culture. Information surrounds them daily in their homes, schools, and cars, and they are able to sort and digest it. Tomorrow's Airmen will not be able to recall life without computers and the Internet. They will be technically savvy at early ages and will be eminently comfortable with communicating and exchanging information within a virtual domain. All will have high expectations with respect to information, including access, connectivity, and bandwidth. The Air Force must plan *now* to defend tomorrow's America by meeting those expectations and leveraging the New Airman's natural skills to turn *e-citizens* into *e-warriors*. Whether using satellite communications to pass combat orders or sharing information with wingmen in the skies, tomorrow's Airmen should not be yoked with antiquated machines and cumbersome networks. America's adversaries are calibrating themselves to operate across the span of warfighting mediums as well, with a timing and tempo defined by the speed of light. Airmen must likewise be equipped in thought and deed to address tomorrow's threats.

For the past 60 years, the Air Force has provided dominant capabilities as the Nation's global, multidimensional maneuver force. While the Service will remain steadfast in providing space capabilities for joint operations, it must continue to evolve to operate in an increasingly contested space domain with more emphasis on protection. To better serve tomorrow's joint force, the Air Force must also build on its legacy of providing synchronized effects and expand to an era where it develops and exploits even more integrated capabilities across domains. As a result, a more integrated *Air Force* will enable a more effective *joint force*. **JFQ**

NOTES

[1] Former coach in the National Basketball Association.

[2] To better exploit space capabilities, the Space Warfare Center was officially dedicated on November 1, 1993. It was redesignated as the Space Innovation and Development Center on March 1, 2006.

[3] Space capabilities enhance military operations equally across the spectrum of conflict—from peace to crisis and war. For example, the response of U.S. joint forces to natural disasters such as the Indian Ocean tsunami in 2004 or Hurricane Katrina in 2005 depended heavily on space-based capabilities—especially communications satellites, GPS, and remote-sensing platforms.

[4] Attributes that define the *American way of warfare* today include a global focus; interconnected expeditionary forces with an increasingly smaller footprint using reachback; swift, overwhelming, and decisive action followed by rapid reconstitution; and precise effects with minimum collateral damage.

[5] The commander, U.S. Central Command, delegated Space Coordinating Authority (SCA) to the CFACC; thus, SCA resides under the CFACC's purview at the CAOC.

[6] One example is the joint space support team assigned to the Marine Expeditionary Force (MEF) in Camp Fallujah, Iraq. This team is comprised of at least three Army space officers and enlisted space professionals, one Air Force space weapons officer, and often a Marine Corps space expert. These space experts understand the specific needs and requirements of MEF and appropriately plan for and provide a variety of space capabilities for use in western Iraq's unique cultural and operating environment. They count on the SCA and Director of Space Forces to coordinate the delivery of global space capabilities to meet their tailored operations.

[7] For instance, with global space assets, theater space operators provide unblinking space-based theater ballistic missile warning for coalition forces; ensure space support to personnel recovery operations; characterize, geolocate, and report on interference to satellite communications links; and inform the CFACC about the status and capabilities of space systems and space-related services.

[8] There is a subtle but important difference between synchronization and integration. *Synchronization* involves operating disparate parts in unison, simultaneously timing the effects produced by individual capabilities for mutual benefit. *Integration*, on the other hand, involves bringing those parts together early on to produce a seamless, compounded effect.

[9] For instance, airpower's support of current ground schemes of maneuver is only effective when synchronized in a supporting-supported construct.

[10] For example, the ROVER system provides ground-based forward air controllers the ability to receive full motion video from overhead unmanned aircraft systems and demonstrates the ability to link elements automatically between air, cyber, and ground domains.

Strategic Air Mobility and Global Power Projection

U.S. Army (Micah E. Clare)

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C–17 drops combat delivery system bundles in Afghanistan

By **ARTHUR J. LICHTE**

As we search for context and insight both in the past and in today's national security environment, it becomes clear that strategic air mobility has grown increasingly important to the deployment, employment, and sustainment of global combat power over our nation's history.

While the surface and naval segments of the mobility process have always been critical to global power projection, the diminishing size of our military's forward-basing structure, the change in the nature of our adversaries, the forces of globalization, and other factors have spotlighted the increasingly critical role of strategic air mobility to national security and foreign relations.

But the present role of strategic air mobility did not always exist. Prior to the birth of modern flight on the dunes of Kitty Hawk in 1903, naval power defined the potential of empires. Great Britain symbolized the height of the era in the 1920s with over 400 million people and almost a quarter of the Earth's land mass under its control. But Orville and Wilbur Wright's 12-second and 120-foot flight signaled the beginning of the end of both the age of empires and the dominance of naval transportation. Over the decades that followed, airpower destroyed the concept of distance as the limiting factor in the breadth of national control and interests.[1]

In the new era, airpower has become the critical enabler in fulfilling the classic military wisdom to "get there first with the most."[2] As such, the ability to mobilize and deploy forces rapidly remains as critical as the forces themselves in defining the upper limit of a nation's military effectiveness. One measure of this ability is the amount of time between the spark that starts a conflict and the resulting use of military force—a period, for the purpose of this article, known as the *crisis-to-employment timeline*.

Accelerating Timelines

While it is unclear whether airpower's role is a cause or an effect of this concept (or both), one thing *is* clear: the timeline has accelerated drastically since the creation of our robust strategic air mobility force. In fact, the crisis-to-employment timeline continues to accelerate with each year of our rapidly maturing information age. When combined with changes to the national security landscape, it is clear that strategic air mobility is, and will remain, a critical pillar of military power for the foreseeable future.

Starting in World War I, after the birth of aerial flight but before the emergence of strategic air mobility doctrine and capabilities, we see elongated crisis-to-employment timelines in their original form. Even if we disregard the June 28, 1914, assassination of Archduke Franz Ferdinand as a crisis point and use the U.S. declaration of war on April 6, 1917, as a more accurate milestone, there was still a 17-month lag before General John Pershing's American Expeditionary Force engaged during the Battle of Saint-Mihiel on September 12, 1918. Naval transportation was the de facto strategic transportation method of the era since airpower was still in its infancy. In fact, air mobility systems had yet to be created, as the world's first transport plane, the 12-seat Glenn L. Martin T–1, was not produced until 1919, the year following the end of World War I.

General Arthur J. Lichte, USAF, is Commander, Air Mobility Command, Scott Air Force Base, Illinois.

As we fast-forward to the opening days of World War II, there was still an 11-month lag from the attack on Pearl Harbor to the opening salvos of the invasion of North Africa on November 8, 1942. Granted, the campaign in North Africa was preceded by significant naval engagements in the Pacific (notably the battles of the Coral Sea in May 1942 and Midway in June), but these engagements were either fought on a strategic defensive or were small compared to the 100,000-troop force that waded ashore in Morocco and Algeria.[3]

In both World Wars I and II, the reasons for the long crisis-to-employment timelines owed much to the prewar pacifism and election timelines of the era and do not accurately represent the true surface and naval mobility capabilities of those times. But even while the "sleeping giant awoke" at the beginning of U.S. involvement in World War II, we began to see the birth of strategic air mobility doctrine (specifically for airlift) forming as part of the "Hump" operation in the China-Burma-India theater.

after the Japanese blocked the Burma Road into China, Allied airpower responded by launching a 3-year airlift over the Himalayas

After the Japanese army blocked the Burma Road into China, Allied airpower responded by launching a 3-year airlift resupply effort along a 500-mile route over the Himalayas. Surpassing the original April 1942 goal of delivering 10,000 tons every month to the Chinese army, improvements to doctrine, safety, and aircraft maintenance resulted in increased monthly tonnage of more than 24,000 tons by October 1944. Under the visionary leadership of Major General William H. Tunner, the "Hump" established itself as the first "air bridge" in military history and proved to be the crucible that created modern-day air mobility doctrine.[4]

U.S. Air Force

C–47 was the workhorse transporting supplies and food during the Berlin Airlift, 1948

The Cold War

With air mobility doctrine now in hand, one might expect the first major armed conflict of the Cold War to yield clear proof of strategic air mobility's role in the new era of accelerated crisis-to-employment timelines. But while significant forces were engaged within 2 weeks of North Korea's invasion of South Korea on June 25, 1950,[5] the Korean War's impressive timeline is primarily attributable to the in-theater presence of American occupation forces in Japan following World War II, a basing construct that is progressively less common in the post–Cold War era.

The Cold War, however, does provide one of the more critical insights into airpower's role through the emerging use of strategic air mobility as an instrument of U.S. policy. In perhaps the most publicized example, the newly formed U.S. Air Force responded with lifesaving[6] airlift to 2.5 million West

KC–135 prepares for midflight refueling with B–2

U.S. Air Force (Brian Kimball)

President Bush debarks Air Force One in Iraq

White House

Berliners only 2 days after the Soviet Union blocked access to Western-held sectors of the city on June 24, 1948. Solely through air mobility, the United States not only defeated the Soviet attempt to lock West Berlin behind the Iron Curtain, but it did so without firing a single shot.

Perhaps the most dramatic example of the use of air mobility as an instrument of foreign policy was Operation *Nickel Grass*, the desperate resupply of Israel during the 1973 Arab-Israeli War. After 7 days of deliberations by a White House preoccupied with the Watergate scandal and Vice President Spiro Agnew's resignation, President Richard Nixon ordered the Air Force to resupply Israel by "send[ing] anything that can fly."[7] Within 9 hours of that decision, C–141s and C–5s were ready to depart. The first aircraft landed in Tel Aviv carrying 97 tons of 105mm howitzer shells just as the Israelis were expending their last ammunition.[8] Follow-on shipments of M–60 tanks, howitzers, antitank weapons, and ammunition allowed the Israelis to go on the offensive and drive the Soviet-supplied Egyptian and Syrian forces out of the Golan Heights and from most of the Sinai Peninsula.[9] While neither the Berlin Airlift nor Operation *Nickel Grass* involved American forces in combat, the use of airpower as an instrument of U.S. policy was a watershed event, restoring the regional balance of power and influencing airpower for decades.[10]

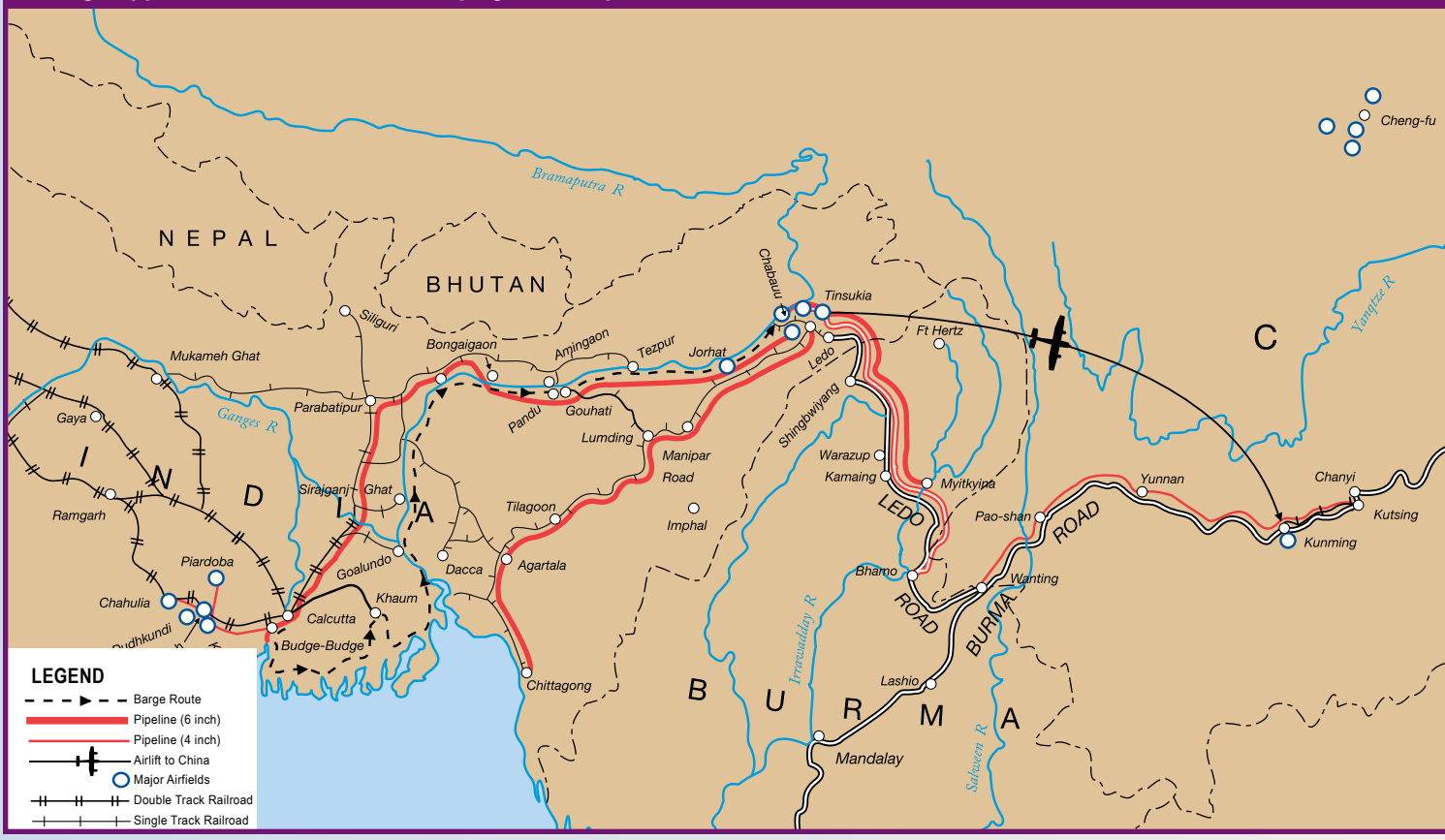
with Operation Enduring Freedom, we begin to see how fast the crisis-to-employment timeline can accelerate

The Modern Era

Taking these lessons of U.S. airpower forward to the modern era of warfare,[11] we find Operations *Desert Shield* and *Desert Storm* providing more conclusive proof of air mobility's contributions to accelerating crisis-to-employment timelines. Within days of Iraq's invasion of Kuwait on August 2, 1990, strategic air mobility transported personnel and equipment to the theater in preparation for the start of the air war on January 27, 1991. While this 6-month timeline does not appear impressive, it is important to remember that the deadline for United Nations Resolution 678, which authorized the use of force if Iraq did not withdraw its troops from Kuwait, did not expire until January 15, 1991. Despite the impact that coalition-building had on artificially extending the crisis-to-employment timeline, strategic airlift ended up carrying 500,720 people and 542,759 tons of cargo in and out of the theater, and tankers delivered over 1.2 billion pounds of fuel during 85,000 refuelings to help joint and coalition forces expel Iraqi forces from Kuwait.

Finishing with Operation *Enduring Freedom* (OEF), we begin to see how fast the crisis-to-employment timeline can accelerate, with less than 4 weeks between the terrorist attacks of September 11, 2001, to the first engagement of U.S. forces on October 7, 2001. Despite fundamental differences from other conflicts because of the operation's heavy emphasis on the use of special operations forces, air mobility still played a key role by

Moving Supplies from India to China: "Flying the Hump," 1942–1944



Source: Charles F. Romanus and Riley Sunderland, *Time Runs Out in CBI* (Washington, DC: U.S. Army Center of Military History, 1985).

performing numerous air refueling missions to extend the range of combat aircraft[12] and airdropping humanitarian daily rations to the suffering citizens of Afghanistan.[13] The latter demonstrates one of the critical insights of the modern era: the increasing importance of humanitarian assistance delivered nearly simultaneously with combat power.

With roots that trace back loosely to the Marshall Plan following World War II, it is clear that humanitarian assistance is just as critical in determining the long-term efficacy of military power as the application of force itself. And when that humanitarian assistance is provided simultaneously with combat power, mobility forces are the ones who answer the call.

In fact, the implications of today's national security environment on the role of air mobility are as clear as the historical context of airpower's contribution to the joint team. Just as accelerated crisis-to-employment timelines have demonstrated the increasing role of air mobility to global power projection (from 17 months in World War I, to 11 months in World War II, to 6 months in *Desert Storm*, to 1 month in OEF, to hours in Operation *Nickel Grass*), other factors continue to reinforce air mobility's critical role in the deployment, employment, and sustainment of global combat power.

Air Mobility Today and Tomorow

The most significant factor underscoring the role of air mobility is multifaceted and includes the diminishing forward-based force structure combined with a national defense environment that calls for military power (both combat and humanitarian) to engage more often in distant locations. The tyranny of distance created by the Integrated Global Presence and Basing Strategy, which will eventually return over 50,000 U.S. military members from overseas bases, will place an increased reliance on the mobility airlift system. Additionally, dependence on host nations for en-route basing and military support in a changing global political arena could place U.S. forces farther from the fight and influence future strategic lift requirements.[14] To overcome these geographical challenges, unique capabilities are being developed through necessity and innovation.

Expeditionary organizations have been created whose express purpose is to open airbase access for follow-on deployment and employment of forces. For example, Air Mobility Command's (AMC's) Contingency Response Groups (CRGs) establish airfields in conjunction with the Joint Task Force–Port Opening (JTF–PO) construct. While CRGs enable the airlift en-route system (the modern equivalent to the maritime coaling stations of the British Empire), JTF–PO capabilities streamline the military logistic support process for land, sea, and air forces.

in the future, the role of strategic air mobility will prove even more critical in direct support of the diplomatic community

Our nation's role as the lone global superpower has made our joint mobility team the critical enabler for responding to multiple crises anywhere in the world simultaneously. More specifically, the accelerating crisis-to-employment timelines have made air mobility the preferred capability for globally projecting that power in either hard or soft forms. It is a burden that only the United States can shoulder, within timelines that only air mobility can support, and underscores the importance of strategic lift systems such as the C–17, which is capable of supporting multiple simultaneous operations. Multirole aircraft such as the Globemaster III provide options for the joint force air component commander that include aeromedical evacuation capability, intratheater tactical airlift, or intertheater strategic airlift as dictated by operational requirements. Strategic lift, coupled with CRG and JTF–PO expeditionary combat support, allows us to take the fight to our adversaries on their soil while simultaneously providing hope to those in need through humanitarian relief.

Not to be understated, the change in the nature of the adversary is equally important when assessing strategic air mobility's role. The end of the Cold War left an America threatened less by near-peer superpowers than by failing states, aspiring hegemons, and transnational entities, giving rise to a corresponding increase in irregular challenges

in the national security environment. The new threats differ historically from those of dual superpowers, not only in size but also in tactics, techniques, and procedures. Air mobility has become increasingly important in this new world because it has been able to adapt to these challenges with new technologies, weapons systems, and tactics.

Through simple tactics and operational changes, AMC has eliminated the need to place 12,000 troops and 5,000 trucks in harm's way each month in Iraq by elevating the supply chain above the threat of improvised explosive devices and delivering critical supplies by airlift rather than truck convoy. In Afghanistan, AMC uses technology for maximum effect by airdropping supplies with the Global Positioning System–guided parachutes of the Joint Precision Airdrop System, further reducing the number of troops in bottlenecked mountain passes. And with the coming addition of the Joint Cargo Aircraft to the Air Force and Army fleets, we will enhance support to the joint warfighter in the last tactical mile.

However, mobility effects are not just seen on the battlefield. In the future, the role of strategic air mobility will prove even more critical in direct support of the diplomatic community. The continued emphasis on reorienting the State Department toward transformational diplomacy and focusing on results-oriented partnerships has many implications, one of which is more direct face-to-face diplomacy between senior State Department officials and foreign dignitaries. In the mobility community, that is accomplished through operational support airlift/VIP special airlift mission aircraft and crews, most prominently the 89th Airlift Wing at Andrews Air Force Base. In fact, the President's trip to Iraq this past Labor Day weekend aboard Air Force One further highlights the new critical dimension of air mobility in today's era of transformational diplomacy.

Finally, the new age of increasing globalization presents a series of second-order effects that continue to reinforce the critical role of air mobility in today's national security environment. While the characteristics of globalization (at least superficially) are closely interdependent economies on a global scale with common adherence to mutually accepted accounting (and sometimes political) ground rules, globalization's unintended second-order effects spread the tragedy of environmental, human, and economic devastation far beyond physical borders if left unaddressed. In this environment, humanitarian assistance is a growing part of our national security strategy.[15] The Air Force steps into this gap as one of the world's first responders in support of both international and stateside humanitarian relief. With our C–17 and C–5 strategic airlift fleet and the KC–135 and KC–10 "tanker bridge," the role of strategic air mobility is proving to be increasingly important in our globalized world.

Patient loaded onto C–17 for transport to Germany

DOD (Cecilio M. Ricardo, Jr.)

With history providing the context for accelerating crisis-to-employment timelines and today's national security environment providing insight into future requirements, it is undeniable that strategic air mobility is, and will remain, critical to the deployment, employment, and sustainment of global combat power. The implication is clear: it is our moral imperative to maintain the decisive edge in global vigilance, global reach, and global power both for ourselves and for future generations of Americans.

This imperative can be expressed in different ways but is most succinctly defined by the current Air Force priorities: to fight and win the war on terror as we prepare for the next war; to develop and care for Airmen and their families; and to recapitalize and modernize our air, space, and cyberspace systems. At every turn, Airmen are dedicated to these priorities so they can secure the legacy of airpower for future generations of joint warfighters.

The results are all around us. Every day, aerial porters and aircrews send 10 Mine-Resistant Ambush-Protected vehicles to troops on the front lines of the war on terror, in a time-critical effort to protect our troops as they take the fight to the enemy. In addition, with 46,000 Soldiers, Sailors, Airmen, and Marines aeromedically evacuated since October 2001, we reaffirm our commitment to provide hope to the sons and daughters of America as they fight for the cause of freedom. As we press ahead with the Air Force's number-one acquisition priority, the KC–X next-generation aerial tanker, we ensure that future generations of Airmen will retain the decisive combat edge that our predecessors gave us.

This imperative comes on the eve of an important milestone, the 60th anniversary of the Berlin Airlift. As we pause to reflect on the symbolic nature of strategic air mobility, we must never forget that today's Airmen are able to serve as a critical part of the joint mobility team only by standing on the shoulders of the heroes who preceded them.

The importance of strategic air mobility has risen disproportionately over the history of airpower. In fact, a mobility aircraft with an American flag on its tail takes to the air somewhere around the world every 90 seconds, providing unrivaled global reach to our troops and hope to our nation's friends in need. As future conflicts individually dictate the relative contribution of each segment of the mobility system (air, surface, and naval),

one constant will remain: an insatiable appetite for mobility of all types in the modern era of warfare.

This appetite carries with it the corresponding national obligation to preserve this capability for future generations—to continually invest in our air mobility fleet so it can, in turn, provide sovereign options for national leaders both today and tomorrow. The deployment, employment, and sustainment of the joint warfighter depends on it. Moreover, our nation's ability to project power globally—with a clenched fist or an outstretched hand—hangs in the balance.

I am proud to be a member of the joint mobility team as we influence world events through rapid, flexible, and responsive mobility. I am proud, too, to stand beside the men and women of Air Mobility Command as we continue to support the joint warfighter. **JFQ**

NOTES

[1] William Manchester, *The Last Lion: Winston Spencer Churchill, Visions of Glory, 1874–1932* (New York: Little, Brown and Company, 1983).

[2] While mass, offensive/initiative, surprise, and maneuver have remained consistent principles of war since time immemorial (but, perhaps, have been best codified since the era of Jomini and Clausewitz), they are most succinctly expressed in this statement by Lieutenant General Nathan Bedford Forrest during the U.S. Civil War.

[3] Rick Atkinson, *An Army at Dawn: The War in North Africa, 1942–1943* (New York: Henry Holt and Company, 2002).

[4] See Billy J. Hoppe, *Lieutenant General William H. Tunner in the China-Burma-India "Hump"* and *Berlin Airlifts: A Case Study in Leadership in Development of Airlift Doctrine* (Maxwell Air Force Base, AL: Air War College, 1995).

[5] While Task Force Smith represents the initial deployment and engagement of American forces in Korea (on July 5, 1950), it constituted only 540 personnel (roughly two rifle companies reinforced with heavy mortars and recoilless rifles). The follow-on actions by the 24th Infantry Division a few days later represented the first large-scale engagement of U.S. forces in Korea. See Richard W. Steward, ed., *American Military History, Volume II: The United States Army in a Global Era, 1917–2003* (Washington, DC: U.S. Army Center of Military History, 2005).

[6] At its peak, 1,398 sorties delivered 12,941 tons of supplies in a single 24-hour period (a rate of nearly 1 flight every minute). By the time the 15-month campaign ended in September 1949, 276,926 sorties were flown, delivering 2,323,067 tons of food, fuel, clothing, and medical supplies to Berlin. See William H. Tunner, *Over the Hump: The Story of General William H. Tunner* (New York: Duell, Sloan and Pearce, 1964).

[7] Walter J. Boyce, "Nickel Grass," *Air Force Magazine* (December 1998).

[8] Ibid.

[9] Ibid. Moscow supplied the Arab states with 600 surface-to-air missiles, 300 MiG–21 fighters, 1,200 tanks, and hundreds of thousands of tons of consumable war materiel.

[10] Operation *Nickel Grass* reinforced the need for fleetwide aerial refueling (the C–141 did not possess the capability at the time), as well as upgrades to command and control and organizational alignment of airlift assets under AMC's predecessor, Military Airlift Command. See Chris J. Krisinger, "Operation *Nickel Grass*: Airlift in Support of National Policy," *Airpower Journal* (Spring 1989).

[11] Several notable conflicts (for example, the Vietnam War, the U.S. invasion of Panama, Operation *Allied Force*, and the Iraq War/Gulf War II) have been excluded from this analysis since U.S. involvement followed a gradual escalation with singular employment points that are less clear or whose "crisis" points occurred over a preceding multiyear timeline of escalating tensions and international agency coordination, allowing for prepositioning of forces. Many of these cases do, however, offer contributions for strategic airlift and aerial refueling that are tempting to cite, but the selection of accurate crisis-to-employment timelines becomes overly subjective.

[12] From September 11 through the end of 2001, air mobility aircraft flew 1,757 airlift missions in support of Operation *Enduring Freedom*. C–17s and C–5s flew, respectively, 45 percent and 29 percent of the missions. Tanker aircraft played a critical role, too, by performing 953 air refueling missions. KC–135s flew 838 missions and KC–10s 115 missions.

[13] On October 8, 2001 (1 day after the bombing campaign began), two C–17s airdropped approximately 35,000 humanitarian rations over eastern and northern Afghanistan. The two airdrops were the C–17's first combat missions and combat airdrops and the first humanitarian airdrops of *Enduring Freedom*. The C–17s flew more than 6,500 miles round trip from Ramstein Air Base, Germany, and were air refueled multiple times on the 22-hour flights. By the end of the same month (October 31, 2001), airlift had dropped the millionth humanitarian daily ration over Afghanistan.

[14] In 2006 alone, AMC completed 140,814 airlift departures from 150 different countries.

[15] In addition to national security benefits, there are also potential benefits in foreign relations, especially when the relief provided goes to societies whose culture, religion, and so forth do not mirror our own (for example, earthquake relief to Pakistan, or tsunami relief to Indonesia, the world's most populous Muslim-majority country).

Domain Expertise and Command and Control

By RAYMOND E. JOHNS, JR., *and* BRUCE HANESSIAN

There was a time when brilliant men could hope to possess a depth of knowledge across the arts and sciences sufficient to act wisely in any number of realms. History celebrates these Renaissance Men as exemplars fit for any task. But these men are gone, never to return. Similarly, with respect to modern military operations, no commander today can be fully steeped in the competencies of the land, sea, air, space, and cyberspace domains.

With limited resources, commanders are more likely to be effective if they are efficient. Aircraft and spacecraft are particularly scarce, for instance. A commander must use them efficiently and not fritter them away piecemeal to subordinate commanders. Because of their knowledge, domain experts are best equipped to command and control their respective forces on behalf of a joint force commander (JFC). The key to success is *centralized* control and *decentralized* execution.

For the joint force commander, there is only one campaign. He cannot wisely allocate his forces believing that there are separate land, sea, air, and space campaigns.

A JFC needs not only the facility to command and control, but also the experts capable of exploiting a depth of knowledge in operations, tactics, techniques, and procedures to best employ the available forces. The skills of these domain experts do not come easily; they are developed over many years through detailed study, organizational development, and participation in military operations. During their decades of service, these experts are invested with both functional skill and leadership ability. However, the idea of domain experts developing organizations and enabling centralized control has not always been obvious.

Importantly, different Service perspectives on domain expertise continue to be at issue. In 1947, the creation of an independent U.S. Air Force was vehemently resisted by both the Army and Navy. Today, some still question whether the air domain is so unique as to require discrete control and capability development with respect to organizing, training, and equipping Service forces. Indeed, as far as air, each Service continues to conduct its own operations.

But what concerns us most today is the challenge that air and space forces need not be centrally controlled—that they are better utilized if they are portioned out to subordinate commanders with whom a JFC can invest complete responsibility for mission success with regard to any particular task during a military campaign phase. This issue arose during a contested exchange at a recent combatant commander's conference in a discussion about whether to devolve command and control of joint air force elements to the land and maritime component commanders. The JFC had already made clear a predilection for parceling out air capabilities to subordinate commanders. Concluding with a pointed comment on the subject, the joint forces land component commander remarked, "You either trust the joint forces air component commander [JFACC] to control air operations, or you don't."

Soldiers on patrol in Iraq, 2007

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U.S. Air Force (Adrian Cadiz)

This essay claims a link between effective command and control and domain expertise and offers that link as the foundation for intelligent employment of military forces.

Air and space forces are relatively scarce, yet they are particularly in demand during major combat operations. In the future, they will be increasingly expensive and scarce. The concept of how these air and space forces are intended for use as well as the impetus for future development of capabilities are Service responsibilities. Domain experts provide the vision to guide development for the mid and far term. Joint force commanders should rely on that same domain expertise for command and control to best employ those forces in a military campaign.

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Domain Expertise

To respond effectively to the enemy, our forefathers needed intelligence and warning, a coherent plan of action, and centralized command and control. Happily, they had a plan to deal with the threat by rapidly marshalling response forces—Minutemen—to confront the enemy. These forces had been very effective in past engagements. Unfortunately, by the time of the Revolutionary War, these superbly trained forces lacked the centralized command and control necessary to take advantage of initial battlefield successes. Like us, they needed to adapt to changing circumstances.

Of course, our world is far more complex than theirs. Could the Minutemen ever have imagined the range, speed, flexibility, and devastating precision offered by modern aircraft, the near-instant capabilities of space-based satellites operating on the other side of the planet, or the *botnet* (a collection of software robots) swarms in cyberspace awaiting the order to attack our information systems? Clearly, circumstances have changed, but the requirement for unified command and control and the imperative for innovation have not.

Land and sea—those physical realms or vectors in which or from which operations might take place—have been joined over the years by air, space, and cyberspace. Each domain offers unique opportunities that we can exploit as well as new avenues of attack for our adversaries. In each domain, we seek security and strength through superiority. In each, we work for dominance. To be successful, we must have the ability to exercise command and control. Together, these various domains can be brought to bear in a joint warfight far more effectively than if operations occur in isolation.

Diver outside submerged USS *Woodrow Wilson*

U.S. Navy (Mark Reinhard)

It is easier to relate to the contributions made in different domains if we can readily touch or see the capabilities employed. The reality—or *physicality*—of operations in each domain varies greatly. It is far easier for the public to see video of troops in action than to be aware of ships at sea, aircraft operating high above and far from home, or satellites invisible to the naked eye.

When commanders integrate effects between domains, they too must have a sense of the capabilities at hand. They must have the knowledge to compare those capabilities as well as the expertise to wield them for greatest effect. Though similar effects can often flow from each domain, specific domain attributes allow those effects to be generated at a higher or lower level of cost and efficiency. While we could achieve victory—after great expense, effort, and delay—by marching our troops down the central boulevard of an enemy's capital city, this might not be the optimal use of our instruments of power. Ideally, to paraphrase Sun Tzu, we would look our adversary in the eye and, fearing the worst, he would quit and quail. Task for task, both effectiveness and cost can vary widely.

Certainly, movement of men and materiel on land costs least, and effects can be generated with the exquisite precision afforded troops in contact. Great numbers of troops can create many discrete effects in the battlespace. Compared to operations in other domains, however, they do so sequentially, relatively slowly, and at greater risk. As a whole, large land force operations are no less expensive than operations in other domains and may be far more expensive, particularly with respect to the political effects created. Still, there is no better method of compelling the actions of affected populations.

In the maritime domain, operating from the security of international waters, bulk goods can traverse great distances at a moderate cost, and we are beholden to no other nation for access, though the vastness of our oceans imposes lengthy delay. In the air, we can transport men and machines swiftly, but at a much higher cost, cube for cube, than by sea. We can

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range globally to create effects in minutes or hours, but we cannot place physical hands on our adversaries.

As for capabilities in space, although immensely expensive, they can enable or magnify the effect of operations on land, at sea, in the air, and in cyberspace like no other capabilities. Space power is:

unique due to its global perspective, responsiveness, and persistence. Through the integration of space capabilities, Airmen conduct simultaneous operations affecting multiple theaters. Because space-related effects and targeting can be global in nature, Airmen involved in the application of space power . . . [employ] *an effects-based approach to space operations based on functional capabilities rather than geographic limitations.*[1]

While few would advocate portioning out our physical assets in space to ground commanders, prioritizing capabilities is the bread and butter of effective use in the space domain. Within a theater, "the challenge for campaign planners is to ensure space operations are integrated throughout the joint force commander's scheme of maneuver across all levels of war—strategic, operational, and tactical."[2]

Of course, airpower is also unique. In many cases, it offers the greatest economy of force to combatant commanders. The Former Republic of Yugoslavia was coerced through the use of airpower to end its war aims in Bosnia and Kosovo without the combat loss of a single allied soldier.

During the Persian Gulf War, 39 days of precision bombardment from the air so reduced Iraqi capability and will to fight that Saddam Hussein capitulated after a mere 100 hours of the ground campaign. Airpower is an inherently strategic force that can hold an enemy's strategic centers of gravity and critical vulnerabilities directly at risk immediately and continuously. It can exploit the principles of mass and maneuver simultaneously to a far greater extent than surface forces. The inherent speed, range, and flexibility of airpower combine to make it the most versatile component of military power. Whoever controls the vertical dimension generally controls the surface.[3]

Today, technological advances allow those who control the air to dominate the land and sea forces of other nations. Airpower remains, dollar for dollar, our most effective investment in domain dominance. Sometime in the future, it is reasonable to assume that with advances in

Gen. Henry H. "Hap" Arnold

U.S. Air Force

directed energy, propulsion, and power generation, control of space will allow us to dominate the air forces of others as well as their land and sea forces. Beyond that, we may posit a time when control of cyberspace will allow us to dominate space and all that operates below.

The Air Force was not created to satisfy a demand for men at arms, but instead from the urge to operate in a new domain by taking advantage of revolutionary technology. Refinements to the art of manned flight allowed military operations in the air, which meant much more than just operating from new high ground. Airpower soon had a critical effect in the battlespace. By 1944, Allied air supremacy and the defeat of the Luftwaffe enabled a potentially perilous Channel crossing and the invasion of Normandy, without which the defeat of the Third Reich might not have occurred.

airpower is an inherently strategic force that can hold an enemy's strategic centers of gravity and critical vulnerabilities at risk immediately and continuously

From its beginning in 1947, the Air Force has nurtured a culture of innovation. We are experts in our domain and know that air superiority must never be taken for granted. As Airmen, we are charged with modernizing our force by identifying new technological applications and concepts of operation. With forethought, we are creating synergistic capabilities that will make "every sensor a shooter" and perhaps "every soldier a sensor." Space operations provide integrated tactical warning and attack assessment to ground commanders charged with defending our airbases. For now, air and space superiority remains the first requirement for successful military operations; for the future, cyberspace superiority may be the sine qua non for success.

When we think of operations in cyberspace, we often imagine ethereal effects on information and data. However, operations within cyberspace not only require physical infrastructure but also can have very physical consequences. For techniques such as electronic attack and electromagnetic pulse, physical assets such as planes and missiles typically host the means to generate the effects. For supervisory control and data acquisition attacks, the Internet can provide a conduit

Landing Craft Air Cushion departs the beach at Po Hang, South Korea

U.S. Navy (Mark R. Alvarez)

for large-scale disruption of industry or infrastructure.

On the other hand, for attacks on computer servers, thousands of disparate host computers can be invaded stealthily and employed as a botnet when needed. Attacks can be scripted and automated employing resources that are distributed and exploited. These botnets can be borrowed, rented, or seized. Forces employed in cyberspace need not be expensive, scarce, or apportioned and prioritized in quite the same way as forces employed in the other domains. Our idea of dominance in cyberspace may be fleeting.

Each of the Services seeks through force development to improve capabilities to contribute to the joint battle. Sailors build ships to move faster and employ weapons systems to reach farther; Marines equip themselves with network-centric intelligence and warning to operate with greater assurance far from shore; Soldiers employ indirect long-range fires and Blue Force trackers; and Airmen use joint tactical air controllers to integrate joint fires with maneuver forces on land and leverage assets in space to enhance precision, intelligence, and communications across the domains.

As a nation, we are dominant on land, at sea, in the air, and in space, and we have declared our intentions for cyberspace. For the future, we must seek synergy between operations within these domains to create a level of effectiveness well beyond the sum of our capabilities within each domain. As important, we must be aware of new avenues of attack, especially in space and cyberspace, through which adversaries may seek to dislocate our operational coherence.

Inauguration of F–35 Joint Strike Fighter at Lockheed Martin

U.S. Navy (Eric A. Clement)

In many ways, operations within these domains are alike because the principles of war remain relevant across all domains. In other ways, they are very different. They can be defined by two dimensions or three or even the fourth—whether operations proceed sequentially or simultaneously, are focused locally or globally, occur at the speed of a foot patrol or of light, or are primarily physical and kinetic or electromagnetic. Because of essential differences in operations in each domain, we will want to tailor our command and control arrangements to best employ the attributes that distinguish each of our operating domains.

If we grant that air, space, and cyberspace are all unique, how should we order our command and control to best make use of our forces? How should we address the need for innovation in organization, equipment, concept of operations, tactics, techniques, and procedures? Moreover, as we look at history, as one domain has come to dominate the operations of others the way air operations have come to dominate both land and sea, is it time to "load the dice" and heavily favor investments in space and cyberspace?

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Command and Control

Not only has the old debate over centralized control of the air domain not been settled, but it has also burst to the forefront of command relationships. In the not too distant past, air operations by components not controlled by air tasking order were deconflicted geographically, or by altitude, or by time. Army helicopters have operated at will flying nap-of-the-earth. Route packages carved up slices of Vietnam for operations by fighter bombers. Over time, our concept of command and control for air operations has evolved from the essential deconfliction associated with the Big Sky theory during the time of Eddie Rickenbacker in 1918 to the magnificence of synergistic exploitation and apportionment via the Joint or Combined Air Operations Center.

Now, unmanned aircraft systems have proliferated to such an extent that ground force commanders have challenged centralized control on the basis of incompatibility with their concepts of operation at the tactical level of war. But it is not just small, limited, and local operations in question. For instance, in the case of the Army's MQ–1C Sky Warrior, which can drop bombs from medium altitude, the public must begin to wonder whether every Service must have its own air force and whether joint, interdependent operations mean the same thing to each Service.

There have always been minor exceptions to centralized control of the air that have historically made sense. But with respect to fixed-wing air operations, centralized control should be the *rule*. Modern combat aircraft are too precious, whether manned or unmanned. There are too few air assets and too many tasks for airpower to be employed piecemeal without synoptic control.

The joint force air component commander emphasizes efficiency, flexibility, and the paramount effects desired by the JFC. He has the greatest situational awareness of the battlespace with respect to air and space and the best ability to control those forces.[4] If a JFC did not have a JFACC, he should be keen to invent one.

Centralized control within the Air and Space Operations Center (ASpOC) allows the JFACC to see the entire air picture across the theater of operations and provides him the facility to rapidly reapportion forces to supported commanders to account for the fog and friction of war. He has the critical ability to integrate supporting activities (for example, tanker support, space assets, and airspace

control measures) in order to meet the JFC's overarching needs when managing competing requirements for airpower.

The ASpOC is at the heart of this process. It coordinates with other component commanders to achieve the specific objectives of supported commanders as well as the JFC's overall objectives. Because of the inherent flexibility of airpower, the ASpOC is capable of dynamic retasking to deal not only with the fog and friction of warfare, but also with short notice opportunities and threats.

Within the ASpOC, liaisons from other components integrate, coordinate, and deconflict plans and operations. They ensure that other supported commanders receive necessary air and space attention in terms of prioritization and apportionment. They help the JFACC and his staff advance the JFC's overall objectives by understanding other operations in the battlespace. In other functional component headquarters, Air Component Coordination Elements ensure the JFACC is aware of each commander's priorities and plans and that other functional "commanders are aware of the JFACC's capabilities and limitations (constraints, restraints, and restrictions)."[5]

In contrast to the alternative of providing specified air assets for control by other component commanders, JFACC centralized control allows scarce airpower assets to be leveraged across several mission sets as needed. Individual sorties can be multitasked to provide needed capabilities to different supported commanders. For example, a single flight of F–22s can provide air superiority, electronic attack, maritime interdiction, and intelligence, surveillance, and reconnaissance. The attribute of economy of force within a theater of operations or even globally is by itself a potent argument for the joint command and control of air operations.

Robust communications capabilities do not by themselves warrant command and control; networked command and control of distributed forces is insufficient on its own. Because of the complexity of integrating the effects of modern tools of war, commanders must have more than a passing understanding of forces at their disposal. To efficiently and effectively stage operations with limited assets, air component commanders must have a thorough understanding of the tactics, techniques, and procedures typically employed in air and space operations. Deconfliction is only one of the many tasks that must be planned.

Air operations during major combat operations comprise a system of systems with the flexibility to maneuver and mass across the depth and breadth of the battlespace, creating precise effects in accordance with the JFC's scheme of operations. To best further the JFC's overall objectives, operations within the air domain rely on the timely and effective integration of many disparate activities, including logistics and maintenance ground support, timely and pertinent intelligence and analysis, air operations, and space-based position, navigating, and timing data. Together, the air, space, and cyberspace domains exploit the vertical and emphasize speed as key dimensions in which to magnify combat effects at the time and place of our choosing.

In the cyberspace domain, the command and control function in the ASpOC can be applied through a coordinating liaison similar to that provided for mobility and space operations. Just as Air Force Space Command supports U.S. Strategic Command (USSTRATCOM) as a vital component to provide global capabilities, Air Force Cyber Command will support USSTRATCOM through its ASpOC and distributed cyber enterprise. In a parallel fashion, a director of cyberspace forces in a theater ASpOC can coordinate for reachback to Air Force Cyber Command.

However, for those effects in cyberspace generated by theater assets, including production and assessment of the electronic order of battle and attack operations in the electromagnetic spectrum, a planning, tasking, controlling, and assessment function must exist within the ASpOC. Certainly, many elements of defensive cyberspace operations associated with electronics infrastructure and digital data security must be forward in theater. On the other hand, offensive capability associated with computer network attack in theater will likely be tasked through USSTRATCOM.

To assure concentration of effort and economy of force, to exploit versatility and flexibility, the Air Force deems centralized control of airpower a "master tenet . . . the keystone of success in modern warfare."[6] Moreover, domain expertise allows us to magnify capabilities by integrating effects generated in air, space, and cyberspace; to generate timely effects for joint force commanders; to mass and maneuver with an economy of force across the planet; and to provide, with scarce resources, a system of systems for command and control, intelligence, combat effects, and combat assessment across a wide range of military operations. There is no substitute for domain expertise. **JFQ**

Controllers in combined air operations center, Operation *Iraqi Freedom*

U.S. Air Force (Gareth Davies)

NOTES

[1] Air Force Doctrine Document (AFDD) 2–2, *Space Operations*, draft (2005), 2.

[2] Ibid.

[3] See AFDD 1, *Air Force Basic Doctrine*, June 19, 2007, draft (version 3), 12–13.

[4] Joint Publication 3–30, *Joint Command and Control for Air Operations* (Washington, DC: Department of Defense, June 5, 2003), II–10, states, "If a JFACC is not designated, unity of effort in joint air operations requires the JFC to centrally plan, direct, and coordinate joint air operations with other joint force operations."

[5] AFDD 2, *Operations and Organization* (Washington, DC: Headquarters Department of the Air Force, April 3, 2007), 71.

[6] AFDD 1, 30.

Air Force MQ–9 Reaper prepares to land after mission in Operation *Enduring Freedom*

U.S. Air Force (Brian Ferguson)

Unmanned Aircraft Systems
Taking Strategy to Task

By DAVID A. DEPTULA

As recently as 10 years ago, few would have predicted the speed and impact with which unmanned aircraft systems (UAS) would burst onto the national scene and become invaluable contributors in both combat and noncombat operations (including assisting in domestic relief efforts). The rapidity with which these systems have been incorporated into the Department of Defense (DOD) inventory is unprecedented. What should not come as a surprise, however, is that in the sprint to employ these systems for American national security interests, the evolution of UAS capabilities has outpaced the development and implementation of an overarching concept of operations to govern their use. We must remedy this situation now and set ourselves to the task of forging an appropriate UAS employment strategy that will ensure the integration of these resources to optimize their use in joint force operations.

The following perspectives are offered as a starting point for building and codifying a joint UAS paradigm that gets the most out of these resources in order to increase capability for joint forces, while promoting Service interdependency and the wisest use of Americans' tax dollars.

Categories and Capabilities

Given the multitude of UAS with different capabilities already in use by each of the Services, it is important to distinguish between those that could be optimized by a comprehensive employment strategy and those that could not. This distinction is best based upon the level of capability that a particular system possesses. To design a UAS employment strategy, it is necessary to ensure a shared understanding of the issue, as UAS have been categorized in a variety of ways. Some classify these systems according to operating altitudes and others according to sensor suites and payloads, while still others refer to UAS as tactical, operational, or strategic. In order to formulate and apply an optimal joint employment strategy for UAS, it is helpful to treat these systems and their capabilities in uniform, functionally useful terms.

Categorization of UAS by operating altitude of the aircraft does not address the versatility or capacity of a given system. Likewise, cataloging systems according to types of sensors and/or weapons onboard the aircraft omits consideration both of the platform's performance characteristics and the data processing capabilities associated with the system. Finally, the practice of referring to platforms—*of any type*—as "tactical," "operational," or "strategic" is not only misleading, but also simply inaccurate. These three descriptors are correctly invoked when parsing levels of war. They are also useful when gauging the magnitude of effects of a specific action. Aircraft themselves, however, are not constrained by these partitions; they can be employed at any level of war, and there are no platform-derived constraints on the nature of their achievable effects.

Consider, for instance, that tactical missions such as close air support were conducted by B–52s in Vietnam and have recently been flown by B–52s and B–1s in Afghanistan. These platforms were designed as long-range, nuclear-capable bombers, able to deliver strategic effects when required. Yet conceptually pigeonholing them as "strategic bombers" denies the success they have achieved at the tactical level of war. Conversely, the F–16 may have been optimized for mission sets at the tactical and operational levels of war, yet a single F–16 sortie generated strategic effects when it took out the terrorist Abu Musab al-Zarqawi in June 2006. Such examples—and there are many more across Service lines—demonstrate that platforms are capable of generating a wide array of effects and of carrying out a broad spectrum of missions. More importantly, however, such examples highlight the kind of innovative employment opportunities we may forgo if inaccurate, Cold War–type binning of aircraft as tactical, operational, or strategic continues.

UAS are more appropriately thought of, categorized, and employed on the basis of the *scope of their capabilities*, which must not be confused with *level of effects*. The scope of capabilities of a UAS is a comprehensive measure of the totality of the system's capabilities based upon all the components of the

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system, such as the aircraft characteristics and capabilities, onboard sensors and weapons, data processing and offloading capacity, distribution architectures, and back-end analysis and dissemination components. Collectively, these elements distinguish UAS with *theater-capable* utility from those that provide *localized* effects. It is this latter distinction—theater-level as opposed to local-area scope of capability—that should serve as the discriminator to select UAS that come under a joint employment strategy and those that do not.

UAS are appropriately categorized and employed on the scope of their capabilities, which must not be confused with level of effects

Optimizing Availability

Unmanned aircraft systems with theater-level capabilities are currently low-density/high-demand (LD/HD) assets. In other words, the number of UAS in DOD is not sufficient to meet the demand for the capabilities they provide. Of significance, demand is continuing to outpace capacity, despite the rapidly growing DOD theater-capable UAS inventory—a trend that shows no sign of abating. As force providers, it is imperative that the Services put a deployment and employment strategy in place to optimize availability of these systems across and within the combatant commands, maximizing effects for a joint force commander (JFC).

In order to do that, Services must ensure that their force presentation of theater-capable UAS allows flexible allocation to combatant commands commensurate with their needs. Because theater-capable UAS are LD/HD assets with global demand, U.S. Strategic Command, through the Joint Functional Component Commander for Intelligence, Surveillance, and Reconnaissance (JFCC/ISR), is tasked to allocate these assets around the globe to meet the demands of combatant command. "Organic" assignment of theater-capable UAS prevents their tasking in support of the broader global need unless the entire unit to which they are assigned is deployed. Furthermore, any Service concept that tethers theater-capable UAS to subordinate units within a JFC's area of responsibility—where the "owning" unit's priorities take precedence over that of the JFC—negates the goal of maximizing UAS effectiveness for the joint campaign. Organically assigning theater-capable UAS to individual units risks making them unavailable where the priority for their use is highest.

Beyond the question of organic versus theater control, one must also consider the implications of operating concepts on UAS availability. One of the unique advantages of theater-capable UAS is their ability to be operated from remote locations using satellite datalinks for reachback in a concept known as *remote split operations* (RSO). Under this employment concept, UAS are launched via line-of-sight operations in the theater with command and control of the aircraft passed to a crew in the continental United States that executes the mission for the JFC via beyond-line-of-sight communications. Upon mission termination, command and control of the aircraft is returned to the crew in theater for recovery. The RSO concept has significant advantages over organic assignment of theater-capable UAS to individual units and strictly line-of-sight operations. It delivers capability without having to deploy the associated logistics and force protection or incur the added personnel tempo burden. In other words, it allows a JFC to *project capability while minimizing vulnerability.*

In addition to leaving the support tail stateside, RSO maximizes the number of deployable UAS assets. It separates the deployed assets from the rest of the force structure. For example, the vast majority of MQ–1 Predators come out of the factory and are shipped directly into theater to support combat operations. A fraction of the fleet is maintained at home for test and training, and the rest is engaged. Organic assets are tied to their parent unit. If a unit is not deployed, neither are the UAS associated with it.

If the Services are to meet the rapidly growing demand for theater-capable UAS, they must take all necessary steps to maximize the forward availability of these LD/HD assets. Presenting UAS forces as stand-alone capabilities enables JFCC/ISR to optimize their availability to the combatant commands. Allowing theater-capable UAS to be responsive to the JFC's priorities, as opposed to those of a subordinate unit commander, maximizes their impact and their contribution to the joint campaign across the entire theater, not just one small part of it. Finally, employment of RSO enables maximum forward combat capability within the total inventory of assets while minimizing vulnerability of the deployed force.

Integration in Joint Airspace

In addition to optimizing availability of systems with theater capabilities, another requirement of a sound UAS employment strategy is ensuring their seamless integration into the joint structure in which our forces operate. Under this construct, each of the four Services provides a unique array of capabilities through Service component commanders to a JFC, who may organize his command using Service component (Army, Navy, Air Force, Marines), or functional component commanders (land, maritime, air), or a combination thereof to achieve his prioritized objectives. Currently, multiple Service components own and operate theater-capable UAS with similar capabilities. The joint community lacks clear delineation of functional responsibilities for theater-capable UAS and lacks a consistent template for the employment of these assets in support of a JFC's objectives. The result is the presentation of duplicate (competitive versus complementary) capabilities between Service and functional components, insufficient employment deconfliction, inadequate airspace control, and the associated costs and hazards that result from these complications. Unless addressed decisively now, these problems will get worse as the number of UAS employed by the Services grows.

Today, over 1,000 UAS are deployed in the U.S. Central Command area of responsibility. Given the growth trends, it is not unrealistic to postulate future conflicts involving tens of thousands of UAS—both friendly and hostile—of all sizes and classes, operating in the same airspace as thousands of manned rotary- and fixed-wing aircraft along with an increasing variety and number of air- and surface-launched standoff weapons. The increased complexity of the joint airspace control and air defense challenge in the future will be immense. This complexity cannot be handled in an ad hoc manner at the tactical level but requires a standardized system at the theater level to ensure positive control of vehicles flying in theater airspace.

For example, current UAS airspace control procedures in Iraq rely, to a large degree, on the use of restricted operating zones to deconflict UAS from other air operations. Attempting to control large sections of airspace using restricted operating zones is not to control the airspace at all. It not only suboptimizes deconfliction of manned and unmanned operations, adding additional risks to manned aircraft, but also complicates the

timely engagement of hostile forces by indirect surface fires or rotary- and fixed-wing force application. Effective, responsive employment in joint airspace requires control of this airspace by the JFC's subordinate commander responsible for theater air operations. This is normally the Joint Force Air Component Commander, who executes the priorities of the JFC and currently serves in this capacity for all manned aircraft operating in joint airspace.

Air Defense Implications

While burdensome in the relatively uncontested airspace that we have enjoyed for the past 20-plus years, the risks of ineffective integration of UAS will be significantly more dramatic when we face an adversary that presents a credible air threat. Positive identification and control of all friendly manned and unmanned aircraft flying in theater airspace will be critical to our ability to gain and maintain air superiority and effectively employ effects from the air domain. Employment of restricted operating zones to allow UAS that cannot function under positive control will introduce seams in our air defenses that an enemy can exploit.

In future conflicts, we cannot count on the permissive environment we have enjoyed in Afghanistan and Iraq. When hundreds—perhaps thousands—of hostile UAS are added to the manned air threat, the complexity of the joint air defense problem will increase dramatically. The need to counter this threat reinforces the need to control theater-capable UAS at the theater level and retain the ability to enforce command and control standards across all UAS that may operate in positive controlled airspace.

The magnitude of the contribution that unmanned aircraft systems are making today is significant. Yet even as quickly as these systems are advancing, demands for what they bring to operational environments are growing even faster. As UAS become normalized in their application and continue to increase in numbers and capability, it is becoming increasingly important to bring theater-capable UAS more fully into an employment construct that optimizes their contribution to a joint campaign.

Some critics may suggest that theater-capable UAS assigned to the JFC do not provide "assured support" and are not responsive to the needs of ground maneuver units. This thinking confuses a *sufficiency problem* for *a lack of responsiveness,* as well as the differences in capability between theater-capable and local-effects UAS. It also discounts the lessons learned early in World War II—lessons paid for with American blood, from which joint doctrine evolved.[1] It is important to highlight that the points made here refer to *theater-capable* UAS. Local-effects UAS are appropriate for assignment "organically" to units below the JFC level to provide assured support.

However, lack of coherent control over *what* theater-capable UAS are tasked to do has too often resulted in the inefficient use of scarce UAS resources, and cannot be afforded, either from economic or operational perspectives.[2] This situation can be alleviated by clearly assigning roles and responsibilities for optimizing employment of theater-capable UAS to the component commander tasked by the JFC responsible for theater air operations.

To get the most out of theater-capable UAS requires ensuring that their capability is exploited to the fullest. The key to achieving that potential is maximizing UAS use throughout a theater wherever they are needed, which is best accomplished by centralized control in accordance with JFC priorities, and decentralized execution to meet the immediate needs of the joint forces requiring them. Furthermore, in the context of the current fiscal environment, the low-density/high-demand nature of theater-capable UAS, and future threat environments, what is needed most to enhance joint warfighting capabilities is to build interdependency by leveraging unique Service core competencies that are optimally employed with sound joint doctrine. **JFQ**

NOTES

[1] It was prescribed at the time that aircraft were to be used for the direct support of ground forces, that the mission of the air arm was the mission of the ground forces, and that ordinary air units would be under ground commanders. Under such a philosophy of air operations, the air campaign during late 1942 and early 1943 in North Africa proved to be a model of inefficiency. Consequently, in the aftermath of the battle at Kasserine Pass, American airpower was placed under centralized control of airmen. Ensuing doctrine stated: "Land power and air power are co-equal and interdependent forces; neither is an auxiliary of the other. . . . control of available air power must be centralized and command must be exercised through the air force commander if this inherent flexibility and ability to deliver a decisive blow are to be fully exploited." See War Department Field Manual 100–20, *Command and Employment of Air Power* (Washington, DC: U.S. Government Printing Office, 1944).

[2] See April 2007 Government Accountability Office (GAO) testimony to the House Armed Services Committee on its findings regarding the DOD management of intelligence, surveillance, and reconnaissance (ISR) assets. The testimony specified the need for the JFACC to have visibility into which platforms were being tasked against which targets; as justification, the GAO cited an example of a single ISR requirement that resulted in two different Services' unmanned aircraft systems being sent to the same target at the same time. See GAO, "Intelligence, Surveillance, and Reconnaissance: Preliminary Observations on DOD's Approach to Managing Requirements for New Systems, Existing Assets, and Systems Development," April 19, 2007, available at <www.gao.gov/new.items/d07596t.pdf>.

Soldier remotely operates Raven UAS

U.S. Army (Teddy Wade)

Data Transparency
Empowering Decisionmakers

By MICHAEL W. PETERSON

U.S. Air Force (Cecilio M. Ricardo, Jr.)

Airmen at Air Force Cyberspace Command update systems to thwart hackers

Today's U.S. Air Force operates in a world of diverse threats marked by the proliferation of weapons of mass destruction, unconventional warfare, enemy countermeasures, and cyberattacks moving at the speed of light. We have taken many small steps over the last 10 years to migrate stovepiped systems that do not share information toward an environment where we can fuse and use data on demand. In the end, it is all about the data—at least when it is presented as decision-quality, actionable information.

During the Gulf War, we failed to destroy any Iraqi Scud missiles during the launch preparation phase. We tracked every launch, but even then we were unable to respond and destroy the transporter-erector-launch (TEL) vehicles they relied on. We simply had not built the supporting tactics, techniques, and procedures and, more importantly, could not move information from sensor to shooter quickly enough to kill the TELs. During the air war over Serbia, we struggled for more than 4 hours to turn data into a "destroyed" SA–6 surface-to-air missile, thereby protecting the skies near Pristina, Kosovo. In that case, Serbian air defense forces were certainly operating inside our observe, orient, decide, act loop. In 2003, intelligence indicated that Saddam Hussein entered a restaurant in the Mansur suburb of Baghdad. A B–1B Lancer was diverted and flattened the target with a precision-guided munition. Unfortunately, Saddam had only used the restaurant to enter an underground tunnel system and was already gone when the strike occurred. Even though we compressed the decision cycle time from countless hours in 1991 to 35 minutes in 2003, it was not enough to operate inside the enemy's execution cycle.

We now collect more battlespace information than ever before. Global Hawks, Predators, and on-orbit assets are continuously collecting data and sending it around the world. The combined sensor data create a virtual flood of battlespace information—possibly too much information if it is not carefully managed. Increasing speed and precision on the battlefield demand unprecedented knowledge. Turning data into knowledge requires advanced data management strategies.

We are making great progress in reducing our decision cycles, exemplified by the time-sensitive targeting operation that killed Abu Musab al-Zarqawi in June 2006. However, our work is far from over. Even today, two-thirds of the time required to prosecute a time-sensitive target is allocated to manual communication processes—not machine to machine, not automated, but rather someone making a voice call, writing something down, or manually entering data. To continue evolving the delivery of decision-quality information to the warfighter, the Air Force is focusing on automating manual processes and employing advanced data management strategies.

Overview

The need for a Department of Defense (DOD)–wide strategy to manage data was formalized in 2001 through the DOD Net-Centric Data Strategy Initiative, which seeks to expose decisionmakers at all levels to authoritative data. The Air Force's implementation of this strategy, called Data Transparency, will eliminate the need for these time-consuming, labor-intensive activities and ensure that authoritative information reaches the decisionmaker. This means that battlefield commanders and their support staffs get the best, most current, and most accurate data available.

The lack of authoritative data means that battlefield commanders may actually operate with different information than what is accessible by headquarters elements. When users collect data, store it locally, and then share it with other systems, the data quickly become redundant, dated, and potentially inaccurate. This problem manifests itself when decisions are made based on inconsistent or old data. For example, our unit deployment managers (UDMs), who oversee the readiness and deployment of Airmen, must access training, medical, and equipment readiness information from multiple sources. Some of these sources include spreadsheets, databases, and paper reports that are days if not months old. When inconsistent or inaccurate information is used to make decisions, unqualified Airmen could

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initially be tasked to deploy. Once the error is discovered, we have tripled our workload since we must dedicate time and resources to finding a suitable replacement, resulting in short-notice deployment taskings.

The Technical Approach

To remedy such situations, the Air Force is transforming the current paradigm of developing and supporting isolated information systems connected by myriad interfaces to a network-centric approach based on the development and use of services, known as a service-oriented architecture (SOA). In an SOA environment, core services such as security, discovery, collaboration, and others are reused across multiple users and domains. In the previous scenario, a service-oriented approach would enable our UDMs to access the authoritative sources as soon as the data are available—without running manual reports or individual queries against multiple databases.

This service-oriented environment requires a robust, secure, singularly managed infrastructure. To support this requirement, the Air Force is developing a capability module approach to share information across functional communities. These capability modules are determined based on the community's needs and will be built gradually and affordably.

For example, an Air and Space Operations Center (ASpOC) capability module would support global and theater ASpOC command and control capabilities and require a secure connection to joint and coalition infrastructures. A combat support capability module would support business processes and require secure connection to the Internet for Airmen, their families, and retirees. An intelligence capability module would support intelligence processes and require secure connection to the defense intelligence backbone. These capability modules will operate through verified relationships to control the direction and nature of information exchanges and provide the necessary access rules.

A critical component of this strategy is the metadata environment, which is the set of technologies and business rules that allows users at all levels to find the information they are looking for—from the commander of a combatant command to the Soldier, Sailor, Marine, or Airman at a desk or in the field.

Today, when a Predator captures imagery over Iraq or Afghanistan, the data are sent both to the ASpOC in Qatar for immediate use and to the Distributed Common Ground System for analysis. The data are manually catalogued and stored in various intelligence databases. Finding the authoritative data becomes time-consuming and difficult for intelligence analysts because the data are stored in multiple locations.

With the implementation of the metadata environment, the Predator's video feed and imagery will be automatically tagged with the location, date, and other relevant information. Metadata (information about data) are important to making the information discoverable by users through search services, catalogues, and registries. In this scenario, intelligence analysts could discover and retrieve the Predator video using keyword searches, drastically reducing the time spent searching through multiple databases and file servers.

We will tackle larger and more complex problems as our Data Transparency initiative evolves. For example, one of our most critical products is the air tasking order (ATO), currently maintained as a large file formatted in United States Message Text Format. The result is an ATO that is difficult to parse and reuse for other mission planning and execution activities. Through metadata tagging, commanders could quickly and easily access historical ATO data to analyze the effectiveness of different ATOs or simulate different scenarios in an adaptive planning process. Data Transparency moves a future concept like this much closer to reality.

Governance Model

In August 2006, the Secretary of the Air Force, Michael Wynne, chartered the Transparency Integrated Process Team (TIPT) to govern the Data Transparency initiative. The TIPT addresses the need to rapidly share information with DOD, allies, and coalition partners by requiring the Air Force to make data visible, accessible, and understandable through a common vocabulary.

This governance body has already paid dividends. The TIPT recently identified significant overlaps among three joint initiatives requiring readiness data: the Global Force Management Data Initiative, the Force Management Integration Project, and the Deployment Readiness Recording System. The TIPT will ensure that each of these initiatives receives Air Force data from the authoritative source, resulting in an accurate representation of our capabilities. The TIPT also identified ways to reduce development costs by ensuring that the information for each of these joint initiatives came from a single set of interfaces.

The Next Steps

The Air Force's Data Transparency initiative supports all three of our leadership's priorities—winning the war on terror and preparing for the next war, caring for Airmen and their families, and recapitalizing and modernizing our air, space, and cyberspace systems. Data Transparency helps operational commanders make more informed decisions by providing them access to authoritative, timely, and relevant information. It gives Airmen needed tools to accomplish their missions and frees up resources for recapitalizing by slashing the cost of developing and sustaining redundant legacy systems.

The lifeblood of any decisionmaking process is access to the right information at the right time. Over the next year, we plan to implement our first true service-oriented architecture infrastructure and begin planning the enterprise-wide deployment of that infrastructure. We will deliver our first Data Transparency capabilities, exposing mission critical data to our flight schedulers and unit deployment managers. Our roadmap is dependent on working closely with our Federal, Department of Defense, and coalition partners to ensure that we deliver timely and accurate information to decisionmakers. **JFQ**

Electronic warfare officers aboard RC–135 Rivet Joint detect and locate signals

U.S. Air Force (File Photo)

AERIAL PARTNERS IN ARMS

Lockheed-Martin

F–35B Joint Strike Fighter, STOVL Variant

By BENJAMIN S. LAMBETH

One of the most remarkable aspects of American joint force capability is the close harmony that has steadily evolved since Operation *Desert Storm* in the integrated conduct of aerial strike operations by the U.S. Air Force and Navy, along with the latter's closely associated Marine Corps air assets. This underrecognized aspect of the Nation's warfighting posture stands in marked contrast to the more familiar and contentious relationship between the two Services in the roles and resources arena, where a fundamentally different incentive structure has tended to prevail and where seemingly zero-sum battles for limited defense dollars have appeared as the natural order of things from one budget cycle to the next. As a former Air Force three-star general and fighter pilot recently remarked on this key point, although there remains "lots to be done at the budget table, tactically the [two] Services are [now] bonded at the hip."[1]

Indeed, in the words of a one-time Navy Fighter Weapons School instructor and now the commander of Second Fleet, such integration "is now a part of the culture" of U.S. fixed-wing combat aircrews, regardless of whether the wings worn on their uniforms are silver or gold.[2] In strong testimony to this fact, one today might easily encounter an Air Force F–15 or F–16 pilot, a Navy F/A–18 pilot, and a Marine Corps AV–8B pilot in an animated three-way conversation about strike force employment tactics at Nellis Air Force Base, Nevada; Naval Air Station Fallon, Nevada; or Marine Corps Air Station Yuma, Arizona; and be unable to tell which pilot was from what Service without looking at the nametags and unit patches on their flight suits.

Early Apartness

This integration of the Navy and Air Force in aerial strike warfare is a fairly recent development. For more than two centuries, the Navy was proudly accustomed to operating independently on the high seas, with a consequent need to be completely self-reliant and adaptable to rapidly changing circumstances far from the Nation's shores and with the fewest possible constraints on its freedom of action. The Nation's sea Service was forward-deployed from the beginning of its existence and, throughout most of the Cold War, was the only Service "out there" in and above the maritime commons and ready for action. Largely for that reason, operations integration between the Navy and Air Force even as recently as Vietnam was not a remote planning consideration. On the contrary, the main focus was on force *deconfliction* between the two Services. Not surprisingly, a unique Navy operating culture emerged from this reality that set the Navy clearly apart from the Air Force's more rule-governed way of conducting its missions.

For its part, the Air Force was looking at a very different operating arena in which friendly and enemy aircraft would be simultaneously airborne and often commingled in the same block of airspace. Unlike the Navy, which was focused on the open-ocean environment, on the North Atlantic Treaty Organization's (NATO's) northern flank and the defense of northern Norway, and on Murmansk and the Kola Peninsula of the Soviet Union, the Air Force was preparing for joint operations in shared battlespace with the Army and with U.S. NATO allies in Central Europe. Given that dissimilarity in mission orientation, the Navy and Air Force, in a fair characterization, "simply thought about and operated within two separate conceptual worlds."[3]

As a result, a pronounced culture divide came to separate the Air Force and naval aviation in the strike warfare arena. In telling testimony to this divide, Air Force pilots who participated in joint peacetime exercises with their Navy counterparts during the early post-Vietnam years often told horror stories about such seemingly cavalier (to them) Navy practices as last-minute unannounced changes in flight schedules, controlling agencies, radio frequencies, operating areas, and even mission profiles.

By the same token, Navy pilots who flew in similar joint exercises routinely complained that the Air Force's allegedly overly rigid adherence to maintenance, operations, and crew rest requirements greatly hampered its ability to be fully flexible in executing missions. One junior naval aviator in 1991 voiced a common refrain in this respect that neatly encapsulated the essence of the cultural divide from the Navy's perspective: "Naval aviators are fond of saying that Air Force pilots may only do something if it is written somewhere that they can, while Navy pilots may do whatever they want as long as it isn't written somewhere that they can't."[4]

Adjustments to New Demands

Iraq's invasion of Kuwait in August 1990 presented naval aviation with a new and unfamiliar set of challenges. During the course of the 6-week Persian Gulf War that began 5 1/2 months later, the Navy's carrier air wings found themselves obliged to surmount a multitude of adjustment needs that only came to light for the first time in that campaign. With respect to equipment, for example, the naval air capabilities that had been fielded and fine-tuned for open-ocean engagements, such as the long-range AIM–54 Phoenix air-to-air missile carried by the F–14, were of little relevance to the coalition's predominantly overland air combat needs in *Desert Storm*.

In addition, because of the Navy's lack of a compatible command and control system that would enable receipt of the document electronically, the daily air tasking order (ATO) generated by the Air Force–dominated combined air operations center (CAOC) in Saudi Arabia had to be placed aboard two S–3 aircraft in hardcopy each day and flown to the six participating carriers so that the next day's air wing flight schedules could be written.

As for the Navy's other equipment items and habit patterns developed for open-ocean engagements, all were, in the words of the former Vice Chairman of the Joint Chiefs of Staff, Admiral William Owens, "either ruled out by the context of the battle or were ineffective in the confined littoral arena and the environmental complexities of the sea-land interface."[5]

Viewed in hindsight, one cannot overstate the shock effect that *Desert Storm* had on the Navy. As one rising naval aviator noted in 1992, "Nearly two decades of narrow focus—on one-shot, small-scale, and largely single-Service contingency operations—[had] left naval aviation temperamentally, technically, and doctrinally unprepared for some key elements of a joint air campaign such as *Desert Storm*."[6]

Fortunately, the Navy quickly made the necessary adjustments in the early aftermath of the campaign. In the realm of equipment, it stepped out smartly to upgrade its precision strike capability by fielding both new systems and improvements to existing platforms that soon gave it a degree of flexibility that it had lacked throughout the Gulf War. First and foremost, it moved to convert the F–14 from a single-mission air-to-air platform into a true multimission aircraft through the incorporation of the Air Force–developed LANTIRN (low-altitude navigation and targeting infrared for night) system that allowed the aircraft to deliver laser-guided bombs both day and night.

The Navy also rectified its shortfall in precision-guided munitions delivery capability by equipping more F/A–18s with the ability to fire the AGM–84E standoff land-attack missile and to self-designate targets. To correct yet another equipment-related deficiency, naval aviation undertook measures to improve its command, control, and communications arrangements so that it could operate more freely with other joint air assets within the framework of an ATO. Those measures most notably included gaining the long-needed ability to receive the daily ATO aboard ship electronically.

given dissimilarity in mission orientation, the Navy and Air Force "simply thought about and operated within two separate conceptual worlds"

Finally, in the realm of doctrine, there was an emergent Navy acceptance of the value of strategic air campaigns and the idea that naval air forces must become more influential players in them. As Admiral Owens noted as early as 1995, "the issue facing the Nation's naval forces is not whether strategic bombardment theory is absolutely correct; it is how best to contribute to successful strategic bombardment campaigns."[7]

To be sure, despite these salutary trends, a number of disconnects persisted between the Navy and Air Force throughout the 1990s. One recurring manifestation of the cultural divide that still separated the two Services

U.S. Air Force (Derrick C. Goode)

Coalition troops track mission in combined air operations center

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came in the form of continued Navy discomfiture over the Air Force–inspired ATO and the way in which, at least in the view of many naval aviators, it sometimes made less than the best use of the Nation's increasingly capable carrier-based strike forces.

Many of those Navy complaints, it must be noted, merely reflected an incomplete understanding of the air tasking process and the manifold constraints that governed it. In fact, most of these complaints would have been voiced under just about any alternative planning arrangements as well. Often overlooked was the fact that NATO operations over the former Yugoslavia were, for good reason, politically micromanaged exercises in force employment in which it was impossible for CAOC planners to make optimal use of *any* air assets, Navy or any other. In those cases, the ATO often provided a convenient lightning rod for Navy complaints that were actually prompted by the severe operating limitations imposed by U.S. political leaders in the interest of avoiding fratricide, collateral damage, noncombatant civilian casualties, and other violations of standing rules of engagement, with the intent both to reassure reluctant NATO allies and to prevent tactical mistakes from producing undesirable strategic consequences.

Despite these lingering disconnects, the single most influential factor in bringing the two Services together in aerial strike warfare during the 1990s was the Nation's 10-year experience of Operations *Northern* and *Southern Watch*, in which both Air Force land-based fighters and Navy carrier-based fighters jointly enforced the no-fly zones over northern and southern Iraq, first put into effect by the United Nations shortly after the conclusion of *Desert Storm*. That prolonged aerial policing function proved to be a real-world operations laboratory for the two Services, and it ended up being the main crucible in which their integration in strike warfare was forged over time. By conscious choice, both Services sent their best tacticians and intelligence officers to serve temporary duty assignments in the supporting CAOCs in Turkey and Saudi Arabia to work together in the joint planning and execution of those nonstop air operations over Iraq. Over time, their working relations became more and more transparent and seamless, with Air Force and Navy strike warfare assets ultimately operating virtually interchangeably in the daily ATO.

NATO operations over the former Yugoslavia were politically micromanaged exercises in which it was impossible for CAOC planners to make optimal use of any air assets, Navy or any other

Convergence over Afghanistan and Iraq

The terrorist attacks of September 11, 2001, levied upon the Nation a demand for a deep-strike capability in the remotest part of Southwest Asia where the United States maintained virtually no access to forward land bases. That unusual demand required the Navy's carrier force to provide the bulk of strike-fighter participation in the joint air war over Afghanistan that ensued soon thereafter. To be sure, Air Force heavy bombers also played a prominent part in that air-centric campaign, codenamed Operation *Enduring Freedom*. Nevertheless, carrier-based aviation operating from stations in the North Arabian Sea substituted almost entirely for what would have been a far larger complement of land-based strike fighters in other circumstances because of an absence of suitable forward operating locations close enough to the war zone to make the large-scale use of the latter practicable.

Much energy was wasted soon after the war in parochial fencing between some Air Force and Navy partisans over which Service deserved credit for having done the heavier lifting in *Enduring Freedom*, with Air Force advocates pointing to the preponderance of overall bomb tonnage dropped by the Air Force, and Navy proponents countering that it was carrier-based aircraft that flew the overwhelming majority of combat sorties and that performed nearly all of the "true" precision laser-guided bomb attacks. That contretemps was totally unhelpful to a proper understanding of what integrated Air Force and Navy operations actually did to produce such a quick and lopsided win over the Taliban and al Qaeda.

True enough, Air Force fighters operating out of shore bases in the Persian Gulf flew only a small percentage of the overall number of strike missions conducted in *Enduring Freedom*. Yet Air Force heavy bombers, with few exceptions, dropped nothing but satellite-aided precision munitions of various types, and Air Force B–52s dropped large numbers of accurate Joint Direct Attack Munitions in addition to unguided 500-pound general-purpose bombs. It accordingly is a toss-up as to which Service predominated in the precision-strike arena. Arguing over whether Navy or Air Force airpower was more important in achieving the successful outcome of *Enduring Freedom* was about on a par with arguing

F–35C Joint Strike Fighter, Carrier Variant

over which blade in a pair of scissors is more important in cutting the paper.

If the air war over Afghanistan was tailor-made for integrated Air Force and Navy operations, the subsequent 3-week campaign a year later to topple Saddam Hussein would prove to be no less so. For example, as during Operations *Allied Force* and *Enduring Freedom*, the availability of Navy EA–6B jamming support was an absolute go/no-go criterion for all *Iraqi Freedom* strike missions, including those that involved stealthy Air Force B–2s and F–117s.

Operation *Iraqi Freedom* also set a new record for close Navy involvement in the high-level conduct of joint air operations. As the deputy combined force air component commander (CFACC), then–Rear Admiral David Nichols was not only the "senior naval representative" in the CAOC but also the alter ego, for all intents and purposes, to the Air Force CFACC, then–Lieutenant General T. Michael Moseley, when it came to commanding and managing the air war. That representation and more by senior naval aviators and intelligence officers stood in stark contrast to the Navy's less gratifying experience 12 years before during *Desert Storm*, when Navy staffers in the CAOC were both too few in number and too junior in rank to have significant influence on day-to-day decisionmaking.

the performance of Air Force and Navy strike assets in the first two American wars of the 21st century bore witness to the strides in the integration of the Services' air warfare repertoires since Desert Storm

Emergent Trends

The performance of Air Force and Navy strike assets in the first two American wars of the 21st century bore ample witness to the giant strides that have been made in the integration of the Services' air warfare repertoires since *Desert Storm*. The two wars saw naval aviation fully integrated into the joint and combined air operations that largely enabled the successful outcomes in each case. They also showed increased Air Force and Navy acceptance of effects-based thinking and planning, as well as a common use of the joint mission planning tools that the Air Force had gradually refined after *Desert Storm*.

As attested by the Navy's experience in both *Enduring Freedom* and *Iraqi Freedom*, the CAOC-generated ATO is now disseminated electronically to carrier strike groups in an easily usable form and is updated hourly via secure email. Moreover, prompted by the experience of *Enduring Freedom* and *Iraqi Freedom*, prospective carrier air-wing commanders and other rising naval aviation leaders now routinely spend upward of 100 days forward-deployed in the new CAOC operated by U.S. Central Command Air Forces at Al Udeid Air Base in Qatar for operational planning familiarization in a senior CAOC staff assignment before assuming their new command responsibilities. They also routinely attend the Air Force's strike planning course at Hurlburt Field, Florida, and, after having moved on to postcommand billets, its week-long CFACC course at Maxwell Air Force Base, Alabama.

As for other progress toward greater cross-Service integration, there have been steady improvements in joint operational training between the Air Force and Navy since Vietnam. For years, naval aviators have routinely taken part in the Air Force's recurrent Red Flag large-force employment training exercise that first began in late 1975 and that continues to be conducted roughly six times a year at Nellis Air Force Base. Also, the Air Force's and Navy's undergraduate pilot training programs are now fully integrated, with Air Force officers commanding Navy primary undergraduate pilot training squadrons and vice versa, and there has been recurrent cross-communication and cross-fertilization between the Air Force's and Navy's weapons schools in recent years to good effect.

The two Services continue as well to provide exchange officers to each other's line squadrons and flight test units on a regular basis, with a Navy lieutenant commander recently assigned to fly the F–22A Raptor fifth-generation Air Force fighter with the 422d Test and Evaluation Squadron at Nellis. In addition, Navy E–2C Hawkeye crew members regularly fly aboard the Air Force's E–3 airborne warning and control system aircraft whenever there is an operational need for their presence at the console. Similarly, ever since the Air Force retired its EF–111 electronic warfare aircraft from service not long after *Desert Storm*, Air Force aircrews have routinely been assigned to full tours of duty as serving aircrew members with the Navy's EA–6B shore-based expeditionary squadrons.

Perhaps most constructively of all, the two Services continue to bring their respective combat assets together in a variety of joint training and experimentation exercises aimed at further honing interoperability and

U.S. Air Force (Andy M. Kin)

SEALs hoisted into Air Force CV–22 during training mission

extracting the most from their synergistic potential. Most recently, such joint Air Force and Navy involvement occurred during Exercise Valiant Shield '06, a 5-day evolution conducted in the vicinity of Guam from June 19 to June 24, 2006, under the command of Admiral Gary Roughead, commander of U.S. Pacific Fleet, who served as joint force commander for the exercise, with Air Force Lieutenant General David Deptula, commander of Pacific Air Force's Kenney Warfighting Headquarters at Hickam Air Force Base, Hawaii, as his CFACC, and with Rear Admiral Mark Emerson, commander of the Naval Strike and Air Warfare Center at Fallon, assigned as deputy CFACC for the exercise.

when it comes to integrated strike-warfare operations, the two Services are natural allies rather than competitors in the roles and resources arena

After the exercise ended with nearly 2,000 sorties having been flown by all participating aircraft, General Deptula characterized it as "an opportunity to interface large numbers of [American] air and sea forces together in a unique environment and to work out some of what we call frictions. . . . You find out things that might not go as you would have anticipated or planned. These types of exercises allow us to work out those challenges in advance." As to the unity of effort that was sought and achieved during the course of the joint force exercise, he added, "We're not interested in what Navy or Air Force airplanes are doing separately. We take the approach that air power is air power, and we're interested in ensuring [that] we take a unified stance in working those assets together with our sea-based assets in achieving the commander's overall objectives."[8]

A New Synergy

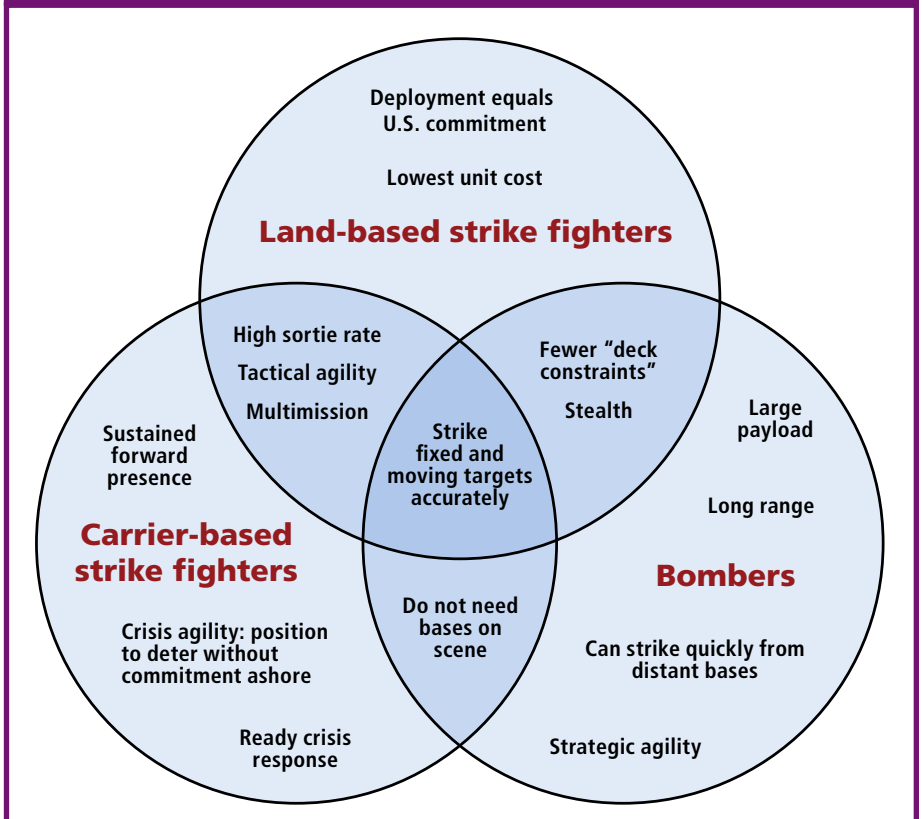
The unprecedented close integration of Air Force and Navy strike operations during the first two American wars of the 21st century confirmed the observation of a respected ship-design specialist when he wrote in 1998 that "carrier-based and land-based tactical aircraft, as well as the [continental United States]–based Air Force bomber force, are intertwined in their support of each other."[9] To be sure, the two Services have long paid lip service to their mutually reinforcing potential in their declarations. Yet in the increasingly competitive annual budget battles within the Pentagon, the strike-warfare components of the Air Force and Navy have all too often appeared as though they were mainly devoted to putting each other out of business.

The real world experience described above, however, suggests that when it comes to the crucial matter of integrated strike-warfare operations, the two Services are, and should duly regard one another as, natural allies rather than competitors in the roles and resources arena. Indeed, when viewed from an operational rather than a bureaucratic perspective, the Air Force's and Navy's longstanding involvement in air-delivered conventional force projection are complementary in the Service of joint force commanders, since land-based bombers and fighters and carrier-based fighters are not duplicative and redundant, but rather offer overlapping and mutually reinforcing as well as unique capabilities for conducting joint strike warfare. (The Venn diagram below captures this unique interrelationship.[10])

One area in particular in which land- and sea-based airpower has a symbiotic relationship that warrants further nurturing is nonorganic in-flight refueling. As was shown during Operations *Enduring Freedom* and *Iraqi Freedom*, the participating Navy carrier air wings plainly needed the support of long-range Air Force and allied tankers to generate mission-effective sorties on a sustained basis. Yet the tankers also needed the protective screening against potential enemy threats that was offered by Navy fighters in situations in which land-based fighters were unavailable in sufficient numbers due to the lack of adequate regional basing. For his part, especially in the case of Operation *Enduring Freedom* over remote Afghanistan, the air component commander needed *both* force elements in order for the air weapon to offer its greatest contribution to joint warfare—a fact that bore out the observation of one Air Force advocate almost a decade before that "there is a place on the team for *all* the nation's land, sea, air, and space forces," with the only real question being one of appropriate mix and affordability.[11]

In both wars, to sum up, each Service brought a needed comparative advantage to the fight. In light of that, rather than continu-

Attributes of Different Forms of Airpower



Source: RAND PM-304/2-CRMAF. RAND MG655-10.1

ing to engage in pointless either/or arguments over carrier- versus land-based airpower that miss this overarching point, Air Force and Navy proponents should instead use their recent combat experience as a model for seeking ways, as one writer put it nearly a decade ago, to "enhance the synergy of the air power triad of long-range projection forces" consisting of bombers, land-based fighters, and sea-based fighters that, taken together, make up the Nation's overall air power equation.[12] The former commander of Naval Air Force, U.S. Atlantic Fleet, Vice Admiral John Mazach, gave clear voice to this critically important point when he reflected after the Afghan air war:

Rather than pitting one variant of air power against the other . . . Enduring Freedom *convincingly demonstrated that such 20th-century interservice rivalries have no place in the 21st-century U.S. warfighting establishment. The operation was remarkable for its degree of seamless interoperability between the U.S. Air Force and the Navy–Marine Corps team's sea-based aviation. . . . In short, aircraft carriers and* [land-based] *bombers should not be viewed as competitors for resources, but as partners able to leverage unique synergies on the modern battlefield.*[13]

Future Challenges

As for still unresolved issue areas where further work remains to be done, senior leaders in both Services have often cited continued communications shortcomings as one important problem area in need of further attention. Within that arena, bandwidth limitations remain, by all accounts, a major constraint on the implementation of many good-in-principle ideas in the realm of command and control integration that could bring the Services closer together as a joint warfighting team. One step toward a possible resolution, in the view of both Air Force and naval warfighters, would be a dynamic bandwidth management system that automatically prioritizes incoming messages.

Another persistent sore spot between the Air Force and Navy, at least from the latter's perspective, has to do with a rapidly looming problem in the electronic attack mission area. When the Air Force decided to retire its 24 aging EF–111 Raven electronic jammer aircraft not long after *Desert Storm*, primarily because of excessive upkeep costs, the Navy and Marine Corps picked up the tactical electronic attack mission with their now greatly overworked EA–6B Prowlers. As a result, those aircraft became low-density/high-demand national assets. That arrangement has, by and large, worked satisfactorily until now, but the EA–6Bs are rapidly running out of service life, the first replacement EA–18G Growlers will not enter fleet service until 2009 at the earliest, and the agreement that made the Navy the lead Service in the provision of standoff jamming after *Desert Storm* expires in 2011. Accordingly, senior naval aviation leaders insist that the Air Force will soon have to decide, conjointly with the Navy, what it intends to do by way of proceeding with timely gap-filler measures.

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Still other possible joint ventures worth exploring in the training arena by the Air Force and Navy might include:

- more recurrent exercises between the two Services as instruments for spotlighting persistent friction points, to include greater Air Force involvement in Navy carrier air wing predeployment workups at Fallon and more Navy participation in Air Force Red Flag and other large-force training evolutions

KC–135 refuels F/A–18C over Afghanistan, 2006

U.S. Navy (Peter Scheu)

U.S. Air Force (Joshua Garcia)

Lt. Gen. Gary North, commander of U.S. Central Command Air Forces, discusses Joint Airborne Communications System on C–130

- greater joint reliance on distributed mission simulation, which will entail high buy-in costs but can offer substantial long-term payoffs as fuel and associated training costs continue to soar
- more holistic consideration of the joint use of training ranges, perhaps with a view toward ultimately evolving into a truly national range complex
- more comprehensive joint use of realistic adversary threats in training, not only in air but also in space and cyberspace operations
- extended integrated air warfare training to the surface and subsurface Navy
- enlistment of real-time involvement of air operations centers worldwide.

As for additional areas of possible closer Air Force and Navy cooperation that pertain more to investments in equipment and hardware capability, the two Services could usefully consider:

- continued pursuit of ways to bring their connectivity systems into closer horizontal integration
- greater attention to exploiting the promise of new electronic warfare means in joint warfare
- getting the greatest operational leverage for the least cost out of the high-commonality F–35 multirole combat aircraft that both Services will be acquiring in large numbers in the coming decade
- further coordination in setting agreed integration priorities.

Even with much room remaining for further progress, the overall record of Air Force and Navy accomplishment in integrated air warfare planning and conduct since *Desert Storm* has been a resounding good news story that is a credit to each Service. As such, it offers a role model for what can be done elsewhere, not just in the interface between air and maritime operations, but even more in the still troubled relationship between the Air Force and Army when it comes to the most efficient conduct of joint air-land warfare.

More encouraging yet, thanks to the commanding role played by individuals in both Services with the right focus and a determination to act on it, there is now a well-ensconced successor generation in place in both the Air Force and Navy who grew up as line aircrew members during the formative years of this integration process. These individuals have since migrated through such mid-level positions as CAOC night coordinators, combat plans and operations staffers, and strategy division principals to the more senior flag ranks and positions that will help them ensure that the strike warfare communities in both Services will continue to nurture an increasingly common operational culture. Such commonality of purpose at the operational and tactical levels has become more important than ever as the Nation finds itself increasingly reliant on the combined arms potential now available in principle to all Services for continuing to prosecute counterinsurgency and counterterrorist operations, while hedging against future near-peer competitors at a time of unprecedented lows in annual spending for force modernization. **JFQ**

NOTES

[1] Lieutenant General Tad Oelstrom, USAF (Ret.), Director, National Security Program, John F. Kennedy School of Government, Harvard University, June 1, 2006, personal communication with author.

[2] Vice Admiral Evan Chanik, USN, then–Director, Force Structure, Resources, and Assessment (J8), the Joint Staff, Washington, DC, August 1, 2006, personal communication with author.

[3] Major General John L. Barry, USAF, and James Blaker, "After the Storm: The Growing Convergence of the Air Force and Navy," *Naval War College Review* (Autumn 2001), 122.

[4] Lieutenant Dennis Palzkill, USN, "Making Interoperability Work," *Proceedings* (September 1991), 52.

[5] Vice Admiral William A. Owens, USN, "The Quest for Consensus," *Proceedings* (May 1994), 68.

[6] Commander James A. Winnefeld, Jr., USN, "It's Time for a Revival," *Proceedings* (September 1992), 34.

[7] Admiral William A. Owens, USN (Ret.), *High Seas: The Naval Passage to an Uncharted World* (Annapolis: Naval Institute Press, 1995), 96.

[8] Captain Yvonne Levardi, USAF, "Air Ops Center Wraps Up Valiant Shield," news release, Office of Public Affairs, Kenney Warfighting Headquarters, Hickam Air Force Base, Hawaii, June 26, 2006.

[9] Reuven Leopold, *Sea-Based Aviation and the Next U.S. Aircraft Carrier Design: The CVX*, MIT Security Studies Program Occasional Paper (Cambridge: Center for International Studies, Massachusetts Institute of Technology, January 1998), 11.

[10] This figure is a development of a most instructive graphic that originally appeared in David A. Perin et al., *Comparing Land-Based and Sea-Based Aircraft: Circumstances Make a Difference* (Alexandria, VA: Center for Naval Analyses, May 1995).

[11] Colonel Brian E. Wages, USAF (Ret.), "Circle the Carriers: Why Does 'Virtual Presence' Scare the Navy?" *Armed Forces Journal International* (July 1995), 31, emphasis added.

[12] Lieutenant Colonel Gene Myers, USAF (Ret.), "Bomber Debates," *Proceedings* (August 1996), 36.

[13] Vice Admiral John Mazach, USN (Ret.), "The 21st-Century Triad: Unconventional Thinking about the New Realities of Conventional Warfare," *Sea Power* (March 2002), 53.

The Joint STARS Challenge

By PRICE T. BINGHAM

U.S. Air Force (Aaron D. Allamon II)

E–8C prepares for takeoff during Operation *Iraqi Freedom*

Lieutenant Colonel Price T. Bingham, USAF (Ret.), is former Chief of the Current Doctrine Division in the Airpower Research Institute at the College for Aerospace Doctrine, Research, and Education at Air University.

The Ground Moving Target Indicator radar technology found in the E–8C Joint Surveillance Target Attack Radar System (Joint STARS) has provided the United States with unprecedented new capabilities and a major challenge. Thanks to Joint STARS, it is possible both to see and to target vehicles moving throughout a large area on the surface of the land as well as the water, even in darkness and bad weather.

Given the key roles that movement and motorized vehicles play in warfare, this ability to see and target moving vehicles provides the potential to transform military operations in four key ways. Joint STARS can:

- make it possible to fight jointly far more effectively by allowing a joint force commander to closely integrate air and land operations so as to defeat mechanized enemy land forces before the enemy can move powerful units into close proximity to friendly land forces
- enhance the effectiveness of air operations designed to prevent enemy land forces from maneuvering or being supported logistically
- prepare the battlespace, possibly preventing the need to fight, by providing far more precise intelligence regarding developing enemy threats and vulnerabilities created through vehicular movement
- contribute to success in unconventional warfare, when combined with other information such as human intelligence and signals intelligence, by revealing safe houses and improvised explosive device factories.

U.S. Air Force (Lance Cheung)

Air operations technicians conduct surveillance during Joint STARS mission

To fully exploit these new capabilities and change how wars are fought or prevented, it will be necessary to overcome the obstacle created by Service culture. While Service culture is a valuable "glue" providing a clear source of identity and experience, it can also be a huge obstacle when the exploitation of new capabilities depends on making major changes in Service doctrine and force structure.[1]

to a large extent, the Air Force has seen Joint STARS only as a battle management platform supporting airpower with timely targeting information

Indeed, the histories of the tank, submarine, and aircraft show how Service culture has caused such resistance before, and now this history is in danger of being repeated with Joint STARS. As this article argues, Service culture has been preventing exploitation of the system's immense potential. Therefore, the only feasible solution to the challenge created by Service culture is to follow the example set with special operations and transfer responsibility for the system from the Air Force to a joint organization with the authority to establish requirements and fund needed upgrades and increases in force structure.

Battle Management

Evidence of the role that Service culture plays in the failure to fully exploit Joint STARS capabilities can be found in the very different ways that the Air Force and Army have tended to view the system. To a large extent, the Air Force has seen the system only as a battle management platform supporting airpower with timely targeting information. By emphasizing its battle management role, the Air Force has been able to maintain greater control over the system's employment than if it was viewed as an intelligence, surveillance, and reconnaissance (ISR) system such as Rivet Joint or the U–2. Moreover, if Joint STARS is perceived as a system to be used only for warfighting, it becomes possible to ignore the tremendous advantages of fielding enough systems to maintain persistent surveillance over potential threats, a role that could require shifting funds from the Air Force's more highly favored fighter force structure.

Since doctrine reflects Service culture, it can help show why the Air Force has failed to exploit Joint STARS' potential for defeating opposing land forces. An Air Force doctrinal pamphlet states that "direct attack of adversary forces in the field is a long duration, high-cost and low-payoff strategy for strategic and operational campaigns."[2] Besides revealing the Air Force's view of conventional warfare, this document fails to show any awareness of the important function that vehicular movement plays in land operations. It also shows a lack of understanding of how Joint STARS' wide-area, real-time information on this movement has made it feasible to transform the way U.S. forces defeat enemy land forces as well as contribute to timely, reliable intelligence either directly or by cueing other sensors.

Neither this pamphlet nor numerous Air Force articles and briefings on effects-based operations addresses how the ability to see and precisely target vehicles attempting to move throughout a large area, even in darkness and bad weather, can transform military operations by making it possible to create widespread paralysis leading to enemy defeat. Part of the problem is the Air Force's tendency to ignore how the creation of an immense perception of danger can influence human behavior. In this case, by targeting movement it is possible to make enemy soldiers unwilling to take risk, achieving paralysis faster and more efficiently than solely through the attrition of huge numbers of enemy vehicles.

Although the Air Force sees the system as a battle management platform, even here there have been contradictions that can be traced to Service culture. For example, the Air Force has strongly resisted any tendency to recognize that by providing timely targeting information, Joint STARS serves as a powerful force multiplier for fighters performing interdiction, since this could help make a case for reducing fighter force structure. Similarly, despite complaining that Joint STARS' radar information is of limited value because it alone cannot provide reliable target identification, the Air Force has made no effort to allow Joint STARS to control directly the unmanned vehicles that could provide the desired positive target identification.[3] Such direct control would greatly increase the effectiveness and efficiency of unmanned aircraft systems that are currently equipped with high-resolution but narrow field of view "soda straw" video sensors.

Another example of a failure to enhance the system's battle management capability for fear of putting fighter force structure at risk was the Air Force's failure to quickly

E–8C prepares to refuel during Iraq mission

Air Force communications technician prepares E–8C for mission in Southwest Asia

133d Airlift Wing, U.S. Air Force (Erik Gudmundson)

U.S. Air Force (Ricky Best)

fund and deploy the capability demonstrated in the Defense Advanced Research Projects Agency's Affordable Moving Surface Target Engagement (AMSTE) program; this program showed how Joint STARS could provide such precise targeting information directly to individual weapons that moving vehicles could be destroyed without the need for the pilot of the aircraft releasing the weapon to visually acquire or even fly in close proximity to the target. With this capability, high flying bombers and unmanned combat air vehicles could perform the key task of destroying moving vehicles that until now could only be performed by a highly maneuverable fighter in good visibility through low altitude, short-range strafe or with television or laser-guided weapons.[4] It is notable that the Air Force seemed most interested in fielding this new capability when, as was demonstrated in Operation *Resultant Fury*, it allowed weapons delivered by bombers to hit and sink moving maritime targets, a task usually reserved for the Navy.[5]

Besides weakening the case for fighter force structure, fear of strengthening the case for a surveillance role may help explain the Air Force's significant delays in approving or, if approved, fully and rapidly funding other Joint STARS upgrades, each of which would make the system an even more powerful force multiplier and surveillance system. Examples of such upgrades include the following: the active electronically scanned array Multi-Platform Radar Technology Insertion Program (MP–RTIP); the Attack Support Upgrade with Link 16 datalink connectivity; E–8 re-engining; wide-area maritime surveillance; and tools for moving target information cataloging, analysis, and distribution.[6]

in contrast to the Air Force, the Army has treated Joint STARS primarily as a ground surveillance system providing information to intelligence units at the brigade level and above

The need for the MP–RTIP is especially urgent. This upgrade would make it possible to provide far more detailed information on movement, to include tracking. It would also allow this movement information to be provided while simultaneously collecting high-resolution synthetic aperture radar (SAR) imagery. In contrast, with the current radar's timeline, movement information cannot be provided while collecting SAR imagery.[7]

It is interesting from a culture perspective that in addressing the capabilities of the advanced MP–RTIP, Air Force officers seem to focus almost exclusively on its use in defending against cruise missiles. It is difficult to find any mention by Airmen of how this radar, with its ability to automatically track individual vehicles moving throughout its coverage area, would contribute to much more effective ground surveillance and the rapid defeat of opposing land forces, to include insurgents and terrorists employing improvised explosive devices and car/truck bombs. Some Air Force officers have even implied that because the F–22 can perform such effective surveillance, it is not an urgent necessity to upgrade Joint STARS with MP–RTIP. Such an opinion ignores the fact that the much less powerful F–22 radar would have a significantly smaller coverage area, and its surveillance would be much less persistent thanks to the fighter's more limited endurance and the likelihood that the fighter would be diverted to conduct other missions, including air intercepts.


U.S. Marine Corps (Andrew P. Roufs)

U.S. Air Force (Lance Cheung)

Top: Common Ground Station supports Marines during Operation *Enduring Freedom*
Above: Army airborne target surveillance supervisor communicates with ground units

Ground Surveillance

In contrast to the Air Force, the Army has treated Joint STARS primarily as a ground surveillance system providing information to intelligence units at the brigade level and above. These units then analyze the information before providing it to maneuver commanders and their battle staffs for refining courses of action. By making it an asset supporting the intelligence function, the Army has failed to exploit fully the advantage that Joint STARS' real-time information on movement can make to timely maneuver decisions during a battle. It almost seems as if the Army intelligence community does not think its maneuver commanders could effectively interpret raw Joint STARS' radar information on movement even when fighter pilots have demonstrated for decades the ability to maneuver their planes rapidly in three dimensions using real-time, raw radar information on opposing aircraft.

More importantly, with its tendency to see the system only as a ground surveillance platform, the Army has ignored how it can allow its forces to fight more effectively and jointly using maneuver to avoid getting in close proximity to enemy forces while setting up those forces for attack by friendly airpower managed by Joint STARS. Used in this way, it becomes possible for a joint force commander to create an intractable dilemma: if an enemy commander attempts to reduce

his vulnerability to air attack by refusing to move for fear of being seen and targeted by Joint STARS, our land forces would possess such maneuver dominance that enemy forces could be either bypassed or overwhelmed and defeated in detail.

the system was handicapped by the fact that those planning coalition air operations had little understanding of Joint STARS' capabilities

The immense advantages that Joint STARS could provide to maneuver commanders as a battle management system were demonstrated in an All Service Combat Identification Evaluation Team exercise held in 1997. During this exercise, a Marine Reserve Light Armored Reconnaissance battalion commander using Joint STARS' real-time information successfully defeated an opposing force equipped with simulated T–72s. Unlike Army warfighting experiments, this exercise did not make the close battle the central event, but instead allowed airpower to attack the opposing forces *before* they could move into close proximity to friendly forces. It is important to note that, unlike Army Warfighting and Marine Hunter Warrior experiments, this exercise focused on combat identification, so the battalion commander may not have been as aware of the need to operate with an eye to how outcomes might influence the force structure debate.

During the exercise, the Marines made a number of interesting comments, such as, "Detection reports by J[oint]STARS were more accurate than our own aircraft." Others comments included, without Joint STARS, "we're back to the 19th-century intelligence tactics. Run into the enemy, get shot at, and report where he is," and "Marines always win with J[oint]STARS on their side and lose without it." At the conclusion of the exercise, the Marine battalion commander commented that he would rather have one less company if he could have continuous Joint STARS support. Observing the Marine unit's success, an Army officer wondered if his Service should consider fielding ground stations down to maneuver battalion level (rather than having it only as low as brigade).

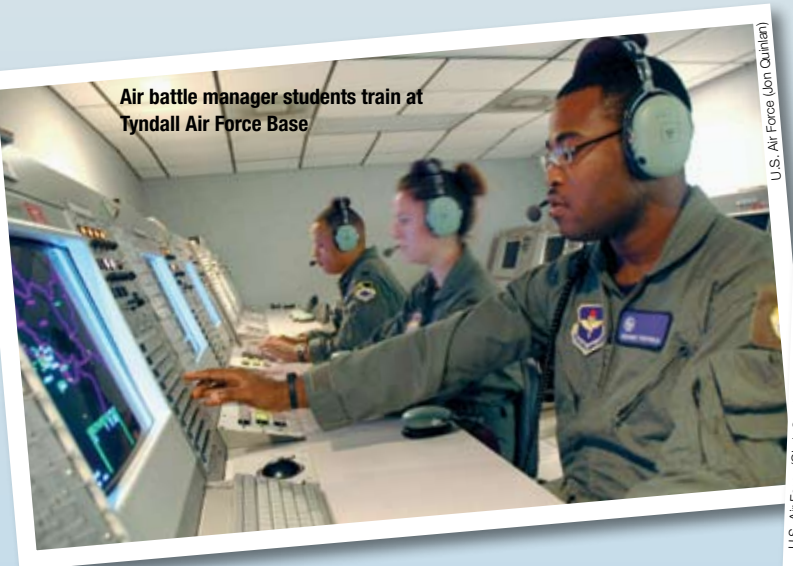
Experience

Cultural attitudes toward Joint STARS also help explain why the Services have been so slow to learn from combat operations on how to use the system most effectively. Culture helps explain why it was the Army and not the Air Force that called for the deployment of the two prototype Joint STARS to support Operation *Desert Storm*. The limited number of aircraft meant that only one was available to fly each night, and since it was often moved around the theater, persistent nighttime coverage of any one area was impossible. The system was further handicapped by the fact that those planning and orchestrating coalition air operations had little understanding of Joint STARS' capabilities and limitations. These handicaps, along with a widespread coalition belief that the Iraqis could not attack once coalition air operations had begun, help explain why information that Joint STARS provided of the developing threat of an Iraqi offensive at al Khafji was ignored.

Once the Iraqi offensive began, however, coalition air leaders allowed Joint STARS to play a key role in targeting airpower against follow-on Iraqi forces, making it possible for this offensive to be defeated almost before it could begin. Joint STARS also played a key role in detecting the movement and location of Iraqi logistic units, allowing them to be targeted by air attacks. The destruction of Iraqi trucks by these attacks, as well as the precision air attacks against parked tanks, combined to create widespread fear among Iraqi soldiers who came to see their vehicles as vulnerable targets. Their fear resulted in an unwillingness to occupy their vehicles, let alone risk movement. The effects of their fear caused a logistic and training breakdown that made an immense contribution to the rapid success of the coalition's ground offensive.

Despite the major contributions Joint STARS had made to success in *Desert Storm* as well as to *Joint Endeavor* operations in Bosnia (1995–1997), the U.S. military delayed the deployment of the system to support operations in *Allied Force* (1999). When Joint STARS finally did reach the theater, the decisions on where to base it and where to locate its orbit combined to seriously limit its coverage capabilities. In large part, these decisions can be traced to a failure by the Air Force to learn from the system's *Desert Storm* combat experience.

Eventually, faced with significant problems finding Serb forces who often moved in small units during conditions when weather limited visibility, Airmen gradually began to relearn lessons regarding the value of Joint STARS in air operations targeting mobile land forces. Yet even though Airmen officially viewed the system as a battle management asset and recognized that it could not provide target identification, they failed to allow the system to control the unmanned aircraft systems and airborne forward air controllers (AFACs) that could provide the necessary target identification. When, on occasion, AFACs and fighters were cued on movement



Air battle manager students train at Tyndall Air Force Base

U.S. Air Force (Jon Quinlan)

E–8C Joint STARS takes off for combat support mission

U.S. Air Force (Clark Staehle)

being seen by Joint STARS, they were quick to recognize how this information made them more effective and efficient, explaining why one F–16 fighter squadron commander stated that "J[oint]STARS got to be my hero."[8]

Once the Kosovo Liberation Army (KLA) began its offensive, Joint STARS' ability to detect and provide timely information on movement helped create an intractable dilemma for Serb forces. If those forces attempted to move in response to the KLA offensive, they risked being seen by Joint STARS and targeted by allied airmen, but if they did not move for fear of being seen and targeted, they limited their ability to counter the KLA at an acceptable risk. This dilemma may have made a significant contribution to the Serb willingness to withdraw from Kosovo.

After *Allied Force*, the U.S. military remained slow to institutionalize the lessons relearned from combat regarding the value of Joint STARS. As a result, it did not deploy the system to support *Enduring Freedom* until well after Taliban and al Qaeda forces fled into the mountains bordering Pakistan. This failure to exploit Joint STARS' unprecedented capabilities to detect, locate, track, and target moving vehicles when only the Taliban and al Qaeda were moving at night possibly allowed Osama bin Laden and other key terrorists to escape. With the timely information on movement occurring within a large area available only from Joint STARS, it could well have been possible either to kill these individuals with precision air attacks or to capture them through the insertion of special operations forces into ambush positions.

For a change, Joint STARS was deployed to support *Iraqi Freedom* well before the invasion began, but it is unclear who was behind this decision: civilians in the Office of the Secretary of Defense or the uniformed military. Once the invasion began, Joint STARS provided a protective overwatch of the flanks of advancing coalition forces. As these forces approached Baghdad, Joint STARS provided timely information during a severe dust storm that allowed Iraqi forces to be targeted before they could move into close proximity to advancing coalition forces. Even with these successes, it became evident that the majority of operators responsible for managing Joint STARS and other ISR systems had little experience in orchestrating such large-scale activity. Similarly, the U.S. military still had not learned to exploit Joint STARS' ability to see and track movement and reflect that capability in their measures of effectiveness, but continued to evaluate success primarily from an attrition perspective.

As the insurgency in Iraq developed, evidence grew that the U.S. military was still failing to fully exploit Joint STARS' unique surveillance capabilities. At one point, the House Armed Services Committee expressed concern that the system was being underutilized by assigning a number one mission priority of serving as a communications relay for convoys.[9] An Air Force colonel admitted that until late 2004, little postmission analysis was done on movement information collected by Joint STARS surveillance. Yet despite the immense value of this information, especially when integrated with other information, in detecting and defeating threats, the Air Force still has not acted to upgrade the system with MP–RTIP even after canceling the planned follow-on E–10A. Nor has it considered reopening the Joint STARS production that it stopped at 17 systems based on the rationale that the E–8C would be replaced by the E–10A.

Meeting the Challenge

The obstacle that Service culture has presented to the funding of sufficient force structure is clearly apparent in the fact that Joint STARS is called a high-demand/low-density asset. It is worth noting that early studies projected a need for 32 of these systems. Moreover, if it had not been for congressional add-ons, the current force structure would be even smaller than 17.[10] More evidence of the resistance caused by culture is found in the fact that even with the huge advances in surveillance and precision attack capabilities, the Air Force still has not recognized the need to rebalance its investment between sensors and shooters.

Given the little evidence that Service culture will allow for the full exploitation of Joint STARS, it is time to meet the challenge by transferring responsibility for the system from the Air Force. Since Joint STARS, like other ISR systems, provides a capability that crosses Service boundaries, making it feasible to fight differently and more jointly, Congress needs to continue its effort to solve the imbalance between Service and joint interests begun with the Goldwater-Nichols Act. Following the example it set with special operations capabilities, Congress needs to make a joint organization, such as U.S. Joint Forces Command, responsible for Joint STARS and other real-time ISR systems. Even the Air Force has admitted that there is a "need to bring some unity to all ISR pieces for combatant commanders" since each Service's ISR systems are "operating independently," defeating the desire for a unified strategy.[11]

As with U.S. Special Operations Command, this joint ISR organization should have authority for developing strategy, doctrine, and tactics; organizing, training, and equipping; prioritizing and validating requirements; ensuring interoperability of equipment and personnel; and monitoring personnel management. Finally, to ensure that the Service-provided forces are truly prepared to fight jointly, they would be required to be interoperable with these joint ISR systems, and all training would be required to include their employment. **JFQ**

NOTES

[1] See Don M. Snider, "An Uninformed Debate on Military Culture," *Orbis* (Winter 1999), 13–14.

[2] Air Force Doctrine Pamphlet 14–118, *Aerospace Intelligence Preparation of the Battlefield*, June 5, 2001, paragraph 4.4.3.1.5, *Fielded Forces*.

[3] Although the Joint STARS and Predator program offices discussed linking the two systems in 1995, it was not until 2003 that, for the first time, a Predator was linked to a manned aircraft, a C–130. See "JSTARS, Predator Unmanned Aerial Vehicle Could Be Linked Inflight," *Inside the Air Force*, April, 28, 1995, 3; and "USAF Successfully Demonstrates Predator Control from C–130," *Inside the Air Force* (May 23, 2003).

[4] Bill McCall and Price T. Bingham, "Killing MOVING Targets," *ISR Journal* (January-February 2004).

[5] Caitlin Harrington, "Joint STARS planned for Maritime role," *Jane's Defence Weekly* (September 6, 2006).

[6] "Joint STARS upgrades face uncertain future," *C4ISR Journal* (May 2007), 14.

[7] Richard J. Dunn III, Price T. Bingham, and Charles A. "Bert" Fowler, *Ground Moving Target Indicator Radar*, Northrop Grumman Corporation Analysis Center Paper, 2004, available at <www.capitol.northgrum.com>.

[8] "Allied Force pilots say improved training key to strike operations," *Inside the Air Force* (October 13, 2000), 8.

[9] National Defense Authorization Act for Fiscal Year 2007 Report to Accompany H.R. 5122 (H.R. 109–452), Title XV, "GWOT Emergency Funding," 405–406.

[10] Robert P. Haffa and Barry D. Watts, "Brittle Swords: Low-Density, High-Demand Assets," *Strategic Review* 27 (Fall 2000), 47.

[11] John A. Tirpak, "The Struggle over UAVs," *Air Force Magazine* (November 2007), 33.

Spacepower in the 21st Century

By CHARLES D. LUTES

Air Force launches Wideband Global communications satellite

United Launch Alliance

It is appropriate that during the 50th anniversary year of the dawn of spacepower, the National Defense University completed its 18-month study investigating the phenomenon of spacepower and laying the foundations for an empirical theory of it. This article provides a glimpse of the emerging themes of spacepower theory as elucidated by this study, especially as they relate to issues of national security.

The Space Ages

Since the launch of Sputnik in 1957, the world has seen two identifiable space ages, each distinct in its significance and influence on human affairs. A much longer pre–space age saw technological advancements enable the fulfillment of once-fanciful visions of space travel and exploration. This rich history of space offers signposts that point to potential space ages of the future.

The First Space Age (1957–1991). The first space age is often associated with the shorthand term *space race*. Space activity became a microcosm of the ideologically fueled geostrategic competition that defined the era. The advancement of space technology and activities in space were driven largely by the imperatives of the Cold War. For both the Soviet Union and the United States, this played out as a geostrategic competition to showcase technological, economic, and military power—especially in the form of a civil scientific contest to explore near Earth space and ultimately the Moon—and less publicly as a military and intelligence quest for strategic advantage.

A primary product of the first space age was *prestige*. Both the Soviet Union and the United States viewed their space programs through the prism of geostrategic competition. The prestige associated with civil space programs generated a new type of moral power for both nations as they vied to establish the preeminence of their respective cultural, political, and economic systems.

The Second Space Age (1991 to Present). Just as the Cold War was the defining context for the first space age, the fall of the Soviet Union and an era of U.S. unipolarity have defined the second space age. The transition to this second age was exemplified by the 1991 Gulf War, sometimes referred to as the first space war. The characteristic features of the current space age are the rise of globalization, with greatly increased information flows enabled by satellite technology; a shift in the military sphere from gaining strategic advantage in space (for example, with intercontinental ballistic missiles) to using space-based assets for operational and tactical advantage in terrestrial operations; and a precipitous decline in the relative emphasis on scientific civil space.

The primary product of the second space age has been *information*. While new players entered the space arena to enhance their prestige, advanced spacefaring actors developed and used space to enable the transition into the information age. Today's emphasis on information in space has greatly enhanced the military, economic, and political power of those actors, with the United States as the dominant power in the space-enabled information area.

The Next Space Age. It is unclear what the dominant features of the next space age will be or when it will definitively begin. However, discernible trends in the geopolitical environment suggest that a significant transition will occur within the next 50 years. This includes a shift away from the unipolarity of today's international system to a multipolar environment with a much broader and more diverse set of actors. As power is diffused among these actors, the nature of power in space will begin to change. Possible features of the next space age might include

great technological advancements that lower the economic barriers to entry for potential spacefaring actors and a renewed strategic competition in space.

The primary product of the next space age is likely to be *wealth*. The dominant paradigm in space could become an economic one, as activities in space shift from enabling wealth creation on Earth through spaceborne dissemination of information to that of actual wealth creation in space itself. The economic use of space is currently but a small fraction of its potential; unexplored wealth frontiers include tourism, energy, mining, and manufacturing. Beyond the impact that space has in supporting earthly economic enterprises, the next space age will be marked by a boom in the economic value of space itself.

Launch of Sputnik in 1957 defined beginning of first space age

NASA

Toward Theory

Thinking about the space ages provides a way of conceptualizing what has been and anticipating what might be. Theory is the tool to explain the relationships of the past to the current space age and anticipate the shift to a future space age. It suggests that spacepower is not static. Spacepower theory provides clues as to how to enable this shift favorably and, as importantly, what might impede it or influence it in undesirable ways.

Theory is often contrasted with practice as if the realm of theory were inherently impractical. In fact, it is by theorizing that we systematically define, categorize, explain, connect, and anticipate events in whatever environment we are working in. Theory informs practice, and may even imply the superiority of certain practical policies and strategies over others, but it is not itself policy or strategy. A classic example is Adam Smith's *The Wealth of Nations* (1776), which laid the theoretical groundwork upon which modern free-market economics are based. Alfred Thayer Mahan's *The Influence of Sea Power Upon History, 1660–1783*, laid a similar theoretical basis for understanding the relationship between maritime activity—or seapower—and national prosperity. Mahan addressed the essence of seapower primarily through a historical lens by looking at the nature of the maritime activity of great powers in history. Writing from the perspective of what could be considered a second-tier naval power at the time (the United States), he drew important lessons for creating American economic strength by drawing national attention to seapower.

A Mahanian theory for spacepower would consider the role of space activity in relation to the larger strategic and international environment. Mahan recognized the primacy of human behavior in developing his theory of seapower. "It must be remembered," he wrote, "that, among all changes, the nature of man remains much the same; the personal equation, though uncertain in quantity and quality in the particular instance, is sure always to be found."[1]

the next space age might include great technological advancements that lower the economic barriers to entry for potential spacefaring actors and renewed strategic competition in space

The Essence of Spacepower

One of the first tasks in developing a theory is to define the phenomenon under study. Spacepower is even more complex than the constituent terms *space* and *power*. Legal and bureaucratic debates over the definition of space have consistently hampered the development of international standards for space activity. As a practical matter, though, the minimum altitude at which an object can remain in a stable elliptical orbit provides a reasonable basis for defining the beginning of "space."

Defining power is even more elusive, even though it is probably the most important concept in the study of politics and international relations. Power is often associated with the specific instrument through which it is manifested, such as diplomatic, informational, military, or economic power. Considerable attention has been devoted to how power is created, increased, decreased, stored, communicated, used, and measured. A key consideration is whether power is fungible, or easily transferable, between dissimilar instruments such as diplomatic and military power. Most dimensions of politics and international relations revolve around how states and other actors use power.

This study builds from Joseph Nye's simple definition of *power* as "the ability to achieve one's purposes or goals."[2] Nye suggests that it is the ability to influence others that creates this power. That applies to spacepower as well, with the additional notion that space capabilities may also be able to influence natural events. *Spacepower*, then, might be defined as the ability to use space to influence other actors and the external environment to achieve one's objectives.

Spacepower both contributes to and is supported by other forms of power: diplomatic, informational, military, and economic, among others. Spacepower can be looked at through sociocultural, economic, and security lenses, each roughly equating to the civil-scientific, commercial, and military-intelligence sectors of space activity.

Any actor's space capability is shaped in a variety of ways. The physical nature of the domain both constrains and enables human ability to use space for specific applications. Technology is used to overcome these limitations but is itself constrained by costs and the state of scientific development. The political and cultural environments within and among nations also determine the level of interest and

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motivations for developing space programs. Governance issues, particularly with regard to international laws and regimes, play a role in determining the path of spacepower. Additionally, the space capability of any particular country is determined by its facilities, technology, industry, economy, populace, education, intellectual climate and tradition, geography, and exclusivity of capabilities and knowledge.[3]

The International System

Spacepower has had a marked influence on the current international system, and in turn has been shaped by the evolution of this system. Globalization, arguably the defining dynamic of the 21st century, is dependent on the space-enabled information networks that have transformed the nature of human and technological interaction. However, this transformation has been uneven, and political processes and relationships struggle to keep pace with technological change.

Soyuz TMA–11 spacecraft in transit to launch pad

NASA (Bill Ingalls)

With the Sputnik launch in 1957, fears arose that the Cold War competition was unbounded; indeed, it had literally spread to the heavens. The military-technical revolution spawned by the power of the atom was accelerated by the power of space. These disruptive technologies created new challenges for managing human affairs. As the two superpowers jockeyed for strategic advantage, each sought ways to define the competition and constrain the behavior of the opponent. The rest of the world sought ways to constrain both powers and looked for approaches to salvage the utopian hope for space as a venue for cooperation and peaceful activity.[4]

In this context, the 1967 Outer Space Treaty and associated legal regimes were developed to define the initial principles for space activity. These principles remain the norms that generally guide space activity today:[5]

- Space is the province of all mankind—a "global commons."
- Space is to be used for peaceful purposes.
- All states have an equal right to explore and use space.
- International cooperation and consultation are essential.

State parties to the treaty bear responsibility for national activities in space, whether such activities are carried out by governmental agencies or nongovernmental entities.

The context in which these norms for space activity originally developed has changed. The Soviet Union is gone; the United States enjoys unmatched power, but its ability to maintain this level of dominance is uncertain; and rising powers such as China and India offer both opportunities and challenges to the international system. There is a growing diversity in the type of actors with influence in the system, particularly those not defined by or bound within any single state, such as supranational organizations, multinational corporations, and even terrorist groups. New technologies, many of them space-enabled, are accelerating the pace of change, creating both new opportunities and new threats. Signs of progress—such as the increasing spread of democracy, flourishing free-market economies, and multilateral cooperation on a wide range of issues—coexist with signs of peril—such as the growing threat of radicalism, instability in the Middle East, and uncertainty about how some emerging powers will conduct themselves.

governance issues, particularly with regard to international laws and regimes, play a role in determining the path of spacepower

The political environment of space has been merely an extension of Earth-bound politics. Those who at the dawn of the space age predicted that it would be otherwise have thus far been disappointed.[6] There are signs that this may yet change, however. The increasing variety of space actors, both state and nonstate, not only provides opportunities for unparalleled scientific cooperation and economic competition but also raises the specter of military conflict. Rapidly changing space technologies, some with potentially destructive capacity, further exacerbate this dynamic. The challenge for the international community is to develop a system of relationships in space that encourages beneficial or benign behavior while containing threats. Unfortunately, that challenge is no easier in space than it is on Earth.

National Security

Because globalization is dependent upon the use of space, all the benefits of globalization would be placed at risk in the event of any major conflict there. Since the major spacefaring states, all of whom benefit from globalization, share an interest in preserving their ability to use space, they also presumably share a corresponding interest in ensuring that the space-based assets vital to the global economic system are secure from interference or disruption. Given the exorbitant cost of space activity, taking on the responsibility to protect commercial infrastructure in space or sustaining unilateral military dominance or hegemony there is probably beyond the capacity of any single state, especially if that state

were to be confronted by a hostile coalition or array of challenges.

While it would be desirable for all space actors to work toward preserving stability, in reality nations and other actors tend to focus first on pursuing their own parochial interests. The concept of enduring stability is an ideal peacetime condition for the international system, but it is unlikely to be the primary driver for individual actors, and in fact is likely to be achieved only when the security needs of the most powerful actors are realized.

Any actor's strategic approach to space security will depend on the actor's perception of the strategic environment and its position relative to other space actors. Spacefaring nations will pursue space security strategies based on their degree of reliance on space capabilities, perceived vulnerabilities both in and through space, and the expected behavior of other actors. Additionally, we should expect that an actor's approach will tend to mirror its approach to other strategic issues. For instance, the Europeans' view of collective security in space directly reflects their approach to terrestrial security issues.

Eight basic strategic approaches toward space security are examined below. In each of them, different combinations of the elements of power tend to be emphasized while others are downplayed—either intentionally or as a byproduct of the approach. When choosing an approach, an actor should carefully consider the impact of such tradeoffs on its overall power position.

Strategic Space Dominance. An actor can be said to have achieved strategic space dominance if it has the ability to pursue the entire range of its interests and objectives both in and through space unimpeded by another actor, *and* if it enjoys freedom from threat in or through the space domain.

Critics of the space dominance approach in general, and of so-called space control more specifically, suggest that the pursuit of space dominance would be counterproductive. It could impair global commerce, produce long-lasting environmental debris in space, and harm relations both with allies on Earth and among the major space powers.[7] By maximizing hard power and crossing the space weaponization threshold, the first nations to pursue a space control strategy (that is, developing or maintaining space dominance by maximizing hard power) risk international condemnation and severely degrading their soft power, not only in space but also in other arenas of international relations. The perception by other actors that their own interests demand that they counter such a strategy would likely lead to a costly military space race. Alternatively, rather than competing directly, adversaries might develop asymmetric access denial approaches such as low-cost, low-tech countermeasures in the form of space mines and other antisatellite devices, thereby vastly increasing the cost to the would-be controlling power.

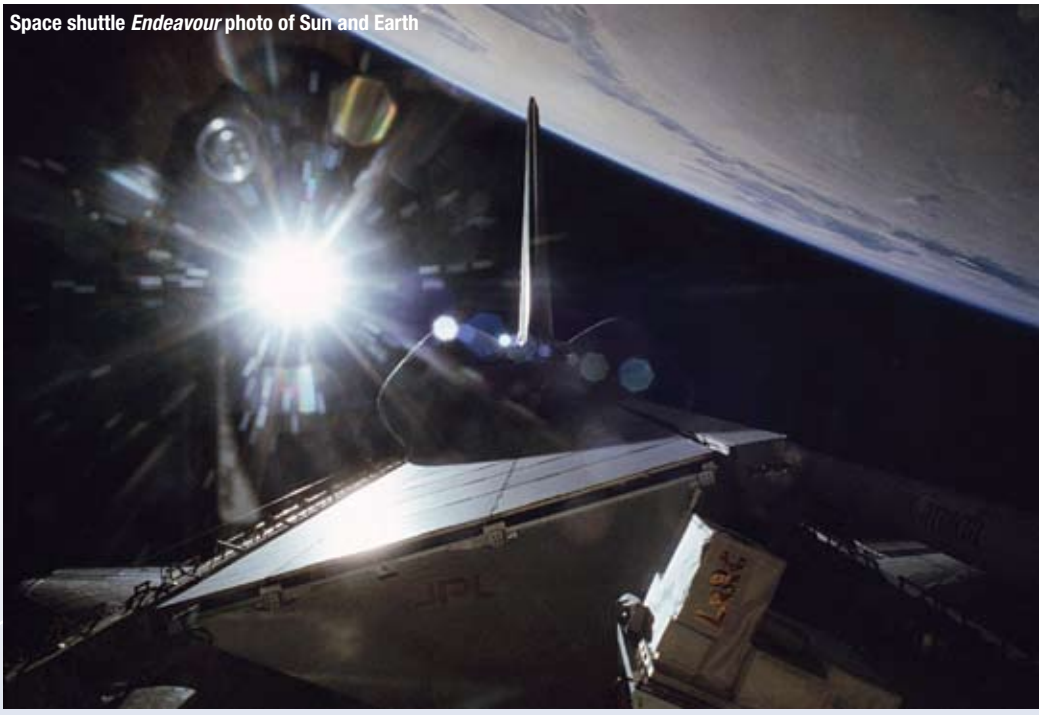
Regulating Space. A limited governance structure for space already exists, constructed primarily around the principles of the Outer Space Treaty, which establish a limited normative structure regarding use of the space environment but do *not* deal directly with security issues. To be sure, the regulations required to deconflict orbital slots, allocate the electromagnetic frequency spectrum, and deal with common issues of concern such as space debris all have security implications, but do not address security concerns directly. Despite the lack of security regulation to date, however, many space actors consider a more holistic regulatory approach to be a useful means of providing enduring stability to the space environment and, with it, security for all.

In general, regulation can be focused on processes and procedures; behaviors and norms; or capabilities. In the security area, regulation-based approaches have utilized all three, seeking to shape behaviors, norms, and capabilities through rules of the road, codes of conduct, treaties, agreements, and arms control. Successful multilateral engagement, increased transparency, confidence-building, and goodwill are all important prerequisites for the success of this process.

Inherent in any regulatory approach is the assumption that stability in the space environment guarantees security for most, if not all, actors. It also assumes that certain types of governance can influence the behavior and actions of state actors. However, there are several challenges to these assumptions and to this approach:

- In the future, security threats may not be limited to state actors.
- Arms control agreements tend to be ineffective when technology changes rapidly.
- Many space applications are inherently dual use, and it is difficult to distinguish between military and civilian purposes.

spacefaring nations will pursue security strategies based on their degree of reliance on space capabilities, perceived vulnerabilities both in and through space, and the expected behavior of other actors



Space shuttle *Endeavour* photo of Sun and Earth

NASA

■ Overregulation for security purposes could limit development of technology necessary for economic and scientific advancement.

■ Cheaters and spoilers are difficult to detect and punish.

Most countries, including potential adversaries of the United States as well as many of its friends and allies, support a ban on weapons in space. The number of countries supporting such a ban has only increased since the early 1990s as the extent of U.S. military superiority became increasingly assured. Some supporters recall the benefits of strategic weapons limitations treaties during the Cold War and hope to imitate that process to produce a peaceful result. China and Russia see a weapons ban as restraining the United States from developing a space-based missile defense system, which could also provide technologies for offensive space systems. Even if no agreement is reached, China and Russia have gained a lot of goodwill and credibility among those in the international community who are concerned about the weaponization of space, regardless of their actual motivations for seeking a weapons ban.

because of the large expense of space activity, cooperative activities may be the only way to sustain a presence in space for some lesser space actors

The United States has been reluctant to limit its freedom of action through arms control agreements in space for several reasons. As the dominant space power today, America might wish to maintain or even extend that dominance. As China has demonstrated a move toward counterspace weapons, the United States might want to keep open its options to adopt a more aggressive space control strategy. Fears that verification problems and the potential for cheating would allow other nations to develop capabilities in secret also motivate the U.S. position. Moreover, American decisionmakers tend to be skeptical about the enduring effectiveness of formal strategic arms control agreements. Such agreements are often effective only for a limited time; the Washington Naval Conference, for example, provided some measure of peace and stability in the Pacific during the 1920s and 1930s, but ultimately could not prevent the growth of Japanese naval power that led to Pearl Harbor in 1941.[8]

Cooperative Interdependence. The importance of space activity as a contributor to globalization suggests to some that any type of conflict in space would create global economic havoc. Those most dependent on space, such as the United States, would have the most to lose in a threatened environment. This argument suggests that only cooperation among the major space powers could provide the kind of stability required to maintain the current economic system. The information and economic interdependencies woven together by space capabilities indicate that all stand to lose if that medium becomes contested.

Proponents of this approach conclude that the development of such a tightly bound globalized society will tend to encourage peace and stability. Space activities, they assert, tend to be predominantly global if not universal endeavors. Much of that activity, particularly with regard to sociocultural and economic spacepower, is mutually beneficial across national lines. With space as a global commons, the argument goes, everyone gains from activity in space as the common heritage of man. Conversely, the theory would suggest, all of global society will suffer if space warfare is introduced.

To ensure the growth of such interdependence, advocates of this approach to spacepower argue for more cooperative ventures. They also tend to support a certain degree of regulation in space, not so much because regulation in itself guarantees stability but as

Missile Defense Agency

Test of Kinetic Energy Interceptor

a means to encourage the cooperation that would, in their view, lead to stability. Codes of conduct and rules of the road are likewise seen as useful tools in fostering this environment.

Cooperative ventures in space allow different nations to develop niche capabilities, such as launch or satellite servicing, which they can then leverage on the open market. Because of the expense of space activity, cooperative activities may be the only way to sustain a presence in space for some lesser space actors. At the same time, when an actor becomes dependent on space capabilities for strategic purposes, this dependence can become a strategic vulnerability. For this reason, there is danger in assuming that conflict can be avoided under conditions of interdependence. Interdependence assumes a positive-sum game in which everyone benefits to a degree. Unfortunately, some actors see interdependence as a zero-sum game in which every gain on the part of one participant necessarily comes at a price to one or more others. Seen through that lens, interdependence becomes an incentive to increasingly intense competition rather than cooperation.

Collective Security. Collective security in space is similar to concepts of terrestrial collective security. Space actors, particularly those without comprehensive spacepower, might agree to share military space capabilities or come together to jointly protect each other's space capabilities.

Not surprisingly, the European approach to security is a collective one. An outgrowth of successful European cooperative ventures, both in commercial and civil space activity and more broadly, European ideas about collective security in space are also beginning to emerge.[9] For example, desiring independence from U.S. military space activities, Europeans now share the use of French Helios reconnaissance satellites and soon will deploy the multinational Galileo satellite constellation for civilian and military positioning, navigation, and timing. Critics of collective security arrangements suggest that they may become unwieldy, sometimes spawning intransigent institutions and bureaucracy. They argue that the complexities of the space environment may make collective agreement difficult to obtain.

Protection. Space protection is an alternate strategy that might be employed by a space actor that is economically and technologically advanced and highly reliant on vulnerable space assets. The aim of a space protection approach is to guard the space actor's ability to continue benefiting from space activity despite attempts by hostile actors to interfere with its operations. Such a protection strategy would seek to maximize space situational awareness; provide effective passive or active means of defending satellites and other space assets; and maintain the capability to rapidly replace any losses resulting from hostile actions.

there is an expanding group of state and nonstate actors motivated to exploit the advantages of space without having to develop or field their own space assets

Developing a space protection strategy requires an understanding and prioritizing of what needs to be protected and why. A protection strategy would be designed to be as stabilizing as possible and would likely be pursued in conjunction with other strategic approaches. For instance, a country might seek protective capabilities in tandem with support for a system of agreements concerning offensive weapons. Alternately, it might be employed as a hedge, keeping open the possibility of shifting to a space control strategy.

Dissuasion and Deterrence. Technical challenges and the high cost of entry to develop military space capabilities provide an opportunity to employ a dissuasion strategy against an opponent. Very few nations can afford to engage in a technological space race. Those few who do have the resources to pursue game-changing capabilities have a strategic advantage.

Some have argued that the heavy U.S. investment in the Strategic Defense Initiative (SDI) in the 1980s is a case of a successful dissuasion strategy. Although the program failed to produce a viable space-based missile defense system, it has sometimes been credited for accelerating the demise of the Soviet Union. Some have suggested that the exorbitant costs of competing with the SDI program hastened the collapse of an already weakened Soviet economy.[10] Whether that is true, it is clear that the Soviets were concerned about keeping up with SDI.

Deterrence by denial means that the adversary will not have confidence that he can gain advantage through attacking. Pursuing a protection strategy coupled with investment in robust or rapidly replenishable space systems can effectively deny enemy incentives to develop an offensive strategy. Deterrence by punishment requires an adversary to believe a credible and effective response would result from any offensive action. Developing offensive space capabilities for deterrence purposes may have a negative effect internationally. However, deterrent responses need not be constructed to cross the threshold of warfare in space. For example, an effective deterrent response to an antisatellite (ASAT) attack would be a long-range strike on launch facilities or other ground-based support systems. For such a response to be effective, some type of declaratory policy would be required to make red lines and possible responses known to potential adversaries.

Asymmetric Approaches. There is a growing diversity of actors in space with a wide spectrum of capabilities. A lesser space actor, state or nonstate, that perceives itself at a strategic disadvantage may well seek vulnerabilities in more powerful actors that it can exploit at a relatively low cost. In other words, such an actor would seek to employ asymmetric methods, such as hacking into control systems, electronic jamming of communications, or sabotaging launch facilities, to take advantage of this vulnerability. These spoilers are most likely to arise in reaction to a power employing a space domination or protection strategy.

Emerging powers who see themselves at risk from the space-based systems employed by greater powers may seek to optimize discrete capabilities that have the potential to produce tactical or operational disruption of potential adversaries' operations. The most probable targets for disruption are capabilities that would enable terrestrial precision attack. Middling powers that see their own space capabilities at risk may see other states' counterspace systems, such as direct ascent ASAT or terrestrial jammers and lasers, as prime targets for asymmetric action.

Asymmetric attacks on space capabilities might be useful in attempts to secure local, operational, or regional goals, but they are less likely to achieve a fundamental shift in the international strategic balance, especially once the major powers respond and adapt. China's ASAT test in January 2007 is consistent with expectations of this type of behavior for a rising space power. It also is

conceivable that second-tier powers might pursue a modern variant of *guerre de course* with raids against an adversary's commercial assets in space.

Free Riding. In addition to states with assets in space, there is an expanding group of state and nonstate actors motivated to exploit the advantages of space without having to develop or field their own space assets. This seems particularly the case in the information and communications arenas, which could have national security implications for states and their neighbors. For instance, television and radio broadcasts transmitted over a satellite pirated by the Liberation Tigers of Tamil Eelam were intended to have a destabilizing impact in Sri Lanka.[11]

Implications for the United States

Today, the United States is the dominant power in space and has developed a solid civil, commercial, and national security space foundation. Its most recent space policy recognizes that "those who effectively utilize space will enjoy added prosperity and security and will hold a substantial advantage over those who do not."[12] In action and words, the United States affirms its resolve to maintain space leadership and continue to enjoy the advantages of space. Yet clearly, the international context in which the United States employs its spacepower continues to evolve.

The economic vitality of the Nation, and of the larger global society, will grow more dependent on the critical yet fragile infrastructure of space-enabled information networks. Additionally, it is clear that military operations at all levels of conflict will continue to depend on crucial space capabilities. Protecting the space infrastructure is a daunting fiscal and technological challenge.

The United States is at a crossroads as it seeks to adapt to 21st-century challenges. Potential adversaries will see vulnerabilities and opportunities to gain asymmetric advantage by threatening the space infrastructure. But America must seek to balance its strategic approach to space with its need to address other strategic concerns. Other actors will weigh similar tradeoffs. The United States must find partners—public and private actors, international civil agencies, and foreign militaries—to help shape the global environment before conflict can occur. Understanding of the essence of spacepower, and the ways in which other actors will approach it, is an essential first step for policymakers as they seek to ensure the tranquility of the final frontier while maximizing space activity for national good. **JFQ**

NOTES

[1] Alfred T. Mahan, *The Influence of Sea Power Upon History, 1660–1783*, 14th ed. (Boston: Little, Brown and Company, 1898), 89.

[2] Joseph S. Nye, Jr., *Understanding International Conflicts: An Introduction to Theory and History* (New York: Pearson-Longman, 2005), 59.

[3] James E. Oberg, *Space Power Theory* (Washington, DC: U.S. Government Printing Office, March 1999).

[4] For a thorough treatise of the space age in its political contexts, see Walter A. McDougall, *The Heavens and the Earth: A Political History of the Space Age* (Baltimore: The Johns Hopkins University Press, 1985).

[5] See *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies,* Bureau of Verification, Compliance, and Implementation. Signed at Washington, London, and Moscow, January 27, 1967, and entered into force October 10, 1967. 18 UST 2410; TIAS 6347; 610 UNTS 205.

[6] See Walter A. McDougall, *The Space Age That Never Arrived: A Meditation on the 50th Anniversary of Sputnik 1*, Foreign Policy Research Institute e-Notes, November 2007, available at <www.fpri/org/enotes/200711.mcdougall.sputnikanniversary.html>.

[7] For a critique of the space dominance approach, see Michael Krepon, *Space Assurance or Space Dominance? The Case Against Weaponizing Space* (Washington, DC: The Henry L. Stimson Center, 2003).

[8] Erik Goldstein. *The Washington Conference, 1921–22: Naval Rivalry, East Asian Stability and the Road to Pearl Harbor* (London: Frank Cass Publishers, 1994).

[9] See John M. Logsdon, James Clay Molz, and Emma S. Hinds, eds., *Collective Security in Space* (Washington, DC: Space Policy Institute, 2007).

[10] For a discussion of the grand strategic role of the Strategic Defense Initiative in ending the Cold War, see John Lewis Gaddis, "Strategies of Containment: Post–Cold War Reconsiderations," address to The George Washington University Elliot School of International Affairs, April 15, 2004, available at <www.gwu.edu/~elliott/news/transcripts/gaddis.html>.

[11] Peter B. de Selding, "Intelsat Vows to Stop Piracy by Sri Lanka Separatist Group," *Space News*, April 18, 2007, available at <www.space.com/spacenews/archive07/tamiljam_0416.html>.

[12] The White House, U.S. National Space Policy, August 31, 2006, available at <www.ostp.gov/html/US%20National%20Space%20Policy.pdf>.

A Deeper Shade of Blue

The School of Advanced Air and Space Studies

By STEPHEN D. CHIABOTTI

Although Alfred Hurley and others have extolled the virtues of "serving two professions,"[1] military education is, by and large, an oxymoronic expression. The reasons are manifold, but the essence has to do with loyalty and logic. The military profession revolves around loyalty. It is "the first axiom of command" and is generally expressed in following orders. Education is centered in logic. It is the touchstone of dialectic and is generally expressed through thoughtful and provoking questions.

In other words, loyalty demands answers in the adherence to orders, while education evokes questions—concerning just about everything. Hence, students attending military schools often suffer a form of psychological whiplash. The very nature of education suggests that students question established practices and, by inference, the people who institute them. The military profession, on the other hand, generally demands adherence to the established order and loyalty to the people in charge. The so-called terrazzo gap that defines the plaza between the academic building and the commandant of cadets office at the Air Force Academy is thus very real and almost unavoidable. What the gap suggests is that military students need to separate their studies from their military instincts. No institution does this better than the School of Advanced Air and Space Studies (SAASS).

History

The School of Advanced Air and Space Studies was established 19 years ago by Air Force Chief of Staff Larry Welch in response to a question from a Representative from Missouri, who is currently the Chairman of the House Armed Services Committee. The Honorable Ike Skelton was concerned about

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strategy and wondered where and how the Air Force would produce the next generation of strategists. SAASS was the answer, and its mission was narrowly defined to do exactly that: produce *strategists*—not leaders, not warriors, not even planners. Strategy became the portal to the rigorous liberal education that has defined the first generation of SAASS graduates. Although the school has never developed a formal definition of strategy, the curriculum suggests that it is best derived from a thoroughgoing study of history and theory. That was indeed the conclusion of the original 10 faculty members who deliberated nearly a year on the curriculum before entertaining their first class of 25 students in 1991.

A commitment to history is evident in the school motto: "From the Past, the Future." A foundation of theory pervades nearly every course offered. In some ways, the curriculum is fashioned after the scientific method, which Robert Boyle expressed so succinctly in 1664 as "investigation by hypothesis subjected to rigorous experimental cross examination."[2] At SAASS, military, political, and organizational theories form the hypotheses, and history and experience the cross examination. Students are then invited to further synthesis in exercises as diverse as course papers, wargames, staff rides, and thesis research and composition.

The result, as the one-time dean of American military historians Theodore Ropp once stated, "has no practical value whatsoever, but reasoning through the interplay of theory and history will make your students better at just about everything else they do." Why? Because modern war is a thinking person's game, and SAASS teaches people to think. Just how is revealed in an examination of the students, faculty, and curriculum.

SAASS is, by definition, an advanced study group. It has complements in the Army's School of Advanced Military Studies, the Marine School of Advanced Warfighting, and the Naval Operational Planners Course. All these programs require prior or simultaneous (in the case of the Naval Operational Planners Course) attendance of resident intermediate education. The Joint Advanced Warfighting School breaks ranks with the other programs and functions as either intermediate or senior education for its students, without prerequisites. All of the advanced programs exhibit more differences than similarities as they serve the needs of their constituencies. SAASS is the most clearly focused on strategy, and because of that it is perhaps the most "academic" in character.

Air Force and sister-Service students must volunteer and have attended resident intermediate education at one of the following: the four traditional Service intermediate schools, Naval Postgraduate School, Air Force Institute of Technology, National Defense Intelligence College, Advanced School of Air Mobility, or the Air Force Intern Program with its residency requirements at The George Washington University. International students must have attended an English-speaking intermediate-level residence program and score in the top 5 percent of the Test of English as a Foreign Language. These entrance requirements serve several purposes. First, they ensure a relatively high-quality recruitment base, as most of the Services send only their best officers to intermediate-level education. Second, the previous year in school affords a cognitive platform regarding makeup and general function of Department of Defense (DOD) agencies as well as a preliminary investigation of warfare at the operational and strategic levels. Finally, SAASS students benefit from socialization in seminar manners, reading, writing, and research. Their intellectual turbines are already turning when they come aboard.

modern war is a thinking person's game, and the School of Advanced Air and Space Studies teaches people to think

Qualifications

All candidates meet a central selection board in early November. Among the Air Force constituency (about 80 percent of the class makeup), nearly one in four officers who are eligible applies, and about one in five is accepted. One member each of the Air National Guard, the Air Force Reserve, Army, Navy, Marines, and three allied foreign nations round out the annual complement of students. While the exact numbers are elusive, promotion statistics and career progression data suggest that these men and women come from the top 5 to 10 percent of their groups. Early classes were heavily populated with fighter and bomber crew members and were overwhelmingly operational in their credentials. The increasing percentage of space professionals, special operators, intelligence officers, communications specialists, and people from career fields as diverse as weather, maintenance, Judge Advocate General, and public affairs in recent classes reflects both the changing nature of warfare and the maturity of the school. Strategy is a mongrel, perhaps best derived from several pedigrees. While this principle applies to the curriculum, it also pervades the selection of students and faculty.

Although most informed observers would point to students as the true strength

Student gives presentation on strategy in Normandy, France

SAASS

and most unique asset of SAASS, the faculty is not far behind. Again, mongrel in lot but all thoroughbreds, the faculty is 60 percent civilian and 40 percent military. Members represent various fields of either political science or history. Nearly half of the civilians are retired military officers, but all faculty members hold doctorates from some of the top universities in the world, and nearly all are recognized experts in their field. Of note, SAASS grows its own military faculty members by sending two of its more promising students off for PhDs each year. After completing their schooling, these unique officers "reblue" in a high-impact command or staff job before returning for faculty duty. This commitment to faculty—both in terms of quality, with terminal degrees, and quantity, with a student-to-faculty ratio of three to one or less—is unique in military education and almost unrivaled in the civilian sector as well. This combination of qualified faculty and motivated students sets a fine table for curriculum, which is, at base, a conversation among principals.

Curriculum

Michael Howard once suggested that we should study military history in width, depth, and context.[3] SAASS attempts the same with strategy. Subjects as diverse as organizational theory, quantum mechanics, information theory, politics, religion, history, and psychology are addressed to help weave the tapestry of strategy. Students normally read a book a night. By the end of the year, they have worked through over 150 volumes, which they keep as part of their professional library. Although they read nearly 35,000 pages, it is the accountability for the material that motivates the exercise. Students meet with professors in seminars of 10 or fewer for 2 hours, 4 times a week. Professors evaluate student comprehension and conceptualization of the material. Eleven mandatory courses range from military and naval theory to irregular warfare, terrorism, and information. The interlocking narrative of airpower history and theory is also featured.

the school is situated in the Fairchild Research Information Center, perhaps the best in DOD for security-related research

Courses vary from 2 to 5 weeks in length, and each requires both seminar participation and a paper, usually 10 pages in length. Oral comprehensive exams at the end of the year evaluate both retention and synthesis. The school itself is situated in the Fairchild Research Information Center (updated parlance for "library"), perhaps the best in DOD for security-related research. The same building houses the substantial archival holdings of the Air Force Historical Research Agency. Ensconced in the research laboratory, each student is issued a laptop computer and a private study carrel (sometimes referred to as a "four-by-eight den of sorrow"). Other perks include a 10-day staff ride to Europe or Asia in the fall and a week of air operations center training at Hurlburt Field in the Florida panhandle, usually in March. These exercises connect abstractions in the curriculum to the reality of history and current operations, with a little motivation thrown into the mix.

Students repay for the good times by producing a thesis. This is the only elective in the curriculum and generates the most angst among students. In fact, in the end-of-course surveys, it is the most despised event in the curriculum—though students appreciate it as the years pass. In fact, 5 years after graduation, the thesis is viewed as the most valuable and enduring exercise of the SAASS experience. Despite pressure for directed research, students are encouraged to pick their own topics—to ask questions bearing on strategy that originate from their experience in the field and ruminate in the halls of theory and history encountered in the curriculum. Each student is assigned a faculty committee of two professors, who must agree that the work meets publication standards before they approve it. Thesis work represents the most time-intensive part of the curriculum for faculty and students. Eight weeks of research and writing time are interspersed throughout the total 49 weeks of the program. Topic selection begins in August, committees are finalized in October, and advisors and students begin working drafts in February. The school funds both travel for research and publication of the manuscripts.

Many thesis topics appear offbeat, and some of the conclusions and recommendations challenge the established order, but all advance the field of strategic thinking. For example, a recent thesis on the neglect of aerial refueling resources was titled "Deranged: Global Power and Air Mobility in the New Millennium." Another seems counterintuitive: "Learning to Leave: The Pre-eminence of Disengagement in American Military Strategy." Others, such as "Centering the Ball: Command and Control in Joint Warfare," advance perspectives well beyond the mediums traditionally inhabited by Airmen. At the end of the day, SAASS theses are the second most important product of the school, falling behind only the graduates.

Students exchange ideas in seminar

SAASS

Graduates

SAASS graduate assignments fit no template. There are no coded positions for graduates in the Air Force, and the entire placement algorithm is reinvented each year. Graduates go on to key staff and command positions throughout DOD. To obtain a graduate, agencies must make a request providing justification. Since there are nearly three times as many requests as graduates, the Air Force Deputy Chief of Staff for Operations and Plans racks and stacks the requisitions while the SAASS commandant plays the traditional commander's role in recommending which faces should fill the spaces deemed most important. Background, performance, and disposition color recommendations. Ultimately, the Air Force Personnel Center makes the assignments, although it is not unusual for four-star generals to get involved, as they do in other assignments.

There is perhaps too much emphasis on the first posting after school and not enough on subsequent assignments. SAASS is, after all, an education for the remainder of a career, and the program is almost completely devoid of training for specific staff, planning, or command jobs. Consequently, dialogue with the personnel system can be problematic. Phrases such as "pay-back tour" and "coded positions" have little meaning when it comes to graduate assignments. Some graduates return immediately to operations because career imperatives dictate as much. Others go to jobs never before occupied by SAASS graduates because the flavor of work or the situation in the security community calls for a strategist.

In general, this "ad hocery" in assigning graduates has worked well. The flexibility of the process allows last-minute changes that correspond to shifts in the security climate, and few graduates are left to molder in the crevices and backwaters that arise from static systems. As a result, they contribute with impact where things are happening on the Air Staff, in combatant commands, numbered air forces, and key government agencies. Supervisors continually laud "the different quality of thinking" that graduates bring to new situations and ill-defined problems. Modifying theory to fit context appears to be the signature capability afforded by their education, and this behavior has been rewarded handsomely.


Students confer in study carrel area of library
SAASS

Although SAASS was not designed to fill a square in the promotion ladder, the extra year of schooling appears to have hurt very few of its graduates. While statistics represent a moving target, we know the following after 16 classes: 100 percent of graduates have been promoted to O–5, nearly 95 percent to O–6, and among those senior enough to meet the general-officer board, almost 25 percent to O–7 or higher. In all, 18 graduates have made flag rank, with many more anticipated as subsequent classes hit the window of opportunity.

Anecdotal evidence from the school's selection boards suggests a continued upward trend. Not only is the number of applications increasing each year (from 25 in 1992 to over 150 in the years beyond 2004), but so is the quality of applicants. Most of the colonels scoring records at the selection boards are graduates—by design. At the end of the day, many admit they would not have made the cut among the applicants they scored. Some of the faculty who have been with the school since its inception also comment on the improving intellectual capacity of each inbound class. Spectacular performance of graduates pursuing faculty-development PhDs in some of the country's most highly regarded programs speaks to first-rate intellect and work ethic, as well as solid preparation. In other words, SAASS has produced warrior-scholars of the first magnitude, but not without turbulence.

One of the issues continually facing faculty and students is the line between zealotry and responsible advocacy. Although SAASS was configured as an airpower school within the air Service, its charter to produce strategists generates a curriculum concerned with the use of military force in support of statecraft. Some would contend that there is no such thing as an airpower strategy, only the role that airpower might properly play in strategy writ large. Others would opine that strategy is inherently a joint activity and that the focus on strategy makes SAASS an inherently joint school. Clearly, the curriculum is more directed at producing a joint force commander than the leader of an air component, although graduates emerge fully equipped to discuss and analyze airpower in all its complexity. Some of the more strident air and space proponents are disappointed by this approach and its outcome. They contend that SAASS has succeeded only in producing smarter critics or more clever apologists, high praise indeed from the fire-breathers and afterburners! The biggest problem with zealots is that they are seldom listened to. Responsible advocates, on the other hand, whether airminded or otherwise, create influence in proportion to the power of their logic and persuasion of their rhetoric.

The desideratum of the American military is joint warfighting. Although it can stand improvement, the United States has, throughout much of its history, fought jointly better than any other nation. *Joint Force Quarterly* itself testifies to a continued commitment, and the School of Advanced Air and Space Studies maintains a similar disposition. Despite those who would steer a more parochial course, the faculty and students continue to view strategy as an exceedingly complex problem that eludes any form of single-factor or single-Service solution. Students and faculty may sit in Aeron chairs, but the webbing is a subtle shade of purple, as are the carpeting and wallpaper that deck the halls. More importantly, so is the thinking. **JFQ**

NOTES

[1] Alfred F. Hurley and D.M. Bishop, "Serving Two Professions: History at the Air Force Academy" (Colorado Springs: U.S. Air Force, 1979).

[2] Robert Boyle, *Some Considerations Touching the Usefulness of Experimental Natural Philosophy* (n.p., 1664), 12–13.

[3] Michael E. Howard, *The Causes of War* (Cambridge: Harvard University Press, 1963), 195–196.

Rebuilding Global Airpower

By BARRY R. McCAFFREY

American defense strategy is unbalanced, incoherent, underfunded, and not focused on next-generation deterrence and warfighting missions. Moreover, it is distorted by the monthly drain of 10 billion dollars' worth of U.S. defense modernization funding and manpower resources into the ground combat meat-grinder of the civil war in Iraq.

The looming challenge to U.S. national security and foreign policy sovereignty issues in the coming 15 years will be posed by the legitimate and certain emergence of the People's Republic of China (PRC) as a global economic and political power with the military muscle to challenge and neutralize the deterrent capacity of the U.S. Navy and Air Force in the broad reaches of the Pacific maritime frontier. In less than one generation, China will have the military capacity to pose a national survival threat to America and to challenge its ability to project power along the Pacific littoral.

To counter this threat, the U.S. national security strategy should be based primarily on unrelenting and transparent diplomacy, multilevel and balanced economic engagement, strong international multination arms control, and mutual cooperation engagement. New treaties and political relationships with other Pacific Rim partners must bring in the Chinese. Most importantly, American diplomacy must organize extensive and heavily funded people-to-people programs with tourism, military exchanges, student scholarships, partner city programs, and unrestricted mutual media access and transparency. In sum, we will need large doses of wisdom and tolerance by senior U.S. and Chinese political elites.

However, there is little likelihood of U.S. smart engagement power having adequate deterrence impact on Chinese unilateral military capabilities unless we maintain the enormous technological lead to command the air and sea operational maneuver areas surrounding our regional allies—Japan, Korea, Taiwan, the Philippines, Thailand, Vietnam, and Indonesia—as well as the Alaskan sea frontier. The PRC clearly is not the only military presence that we must consider. By 2020, we will face resurgent and expanding Russian Federation military power projection capacity as well as the likely emergence of other major maritime and air nuclear powers, such as India, Iran, Pakistan, and Japan.

The U.S. Air Force is badly underfunded, its manpower is being drastically cut and diverted to support counterinsurgency operations, its modernization program of paradigm shifting technology is anemic, and its aging strike, lift, and tanker fleets are being ground down by nonstop global operations with inadequate air fleet and maintenance capabilities.

The debate over the war in Iraq may soon be replaced by a greatly diminished defense budget as an exhausted joint force winds down our combat presence in the coming 36 months. We may swing from Donald Rumsfeld's focus on the magic of technology as the sole determinant of national security to an equally disastrous concentration on building a ground combat force that could have won Iraq from the start.

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Aircraft participating in firepower demonstration arrayed at Nevada Test and Training Ranges

U.S. Air Force (Kevin J. Gruenwald)

As a central proposition, we should create a U.S. national security policy based principally on the deterrence capabilities of a dominant, global air and naval presence that can:

- guarantee the defense of the continental United States
- provide high levels of assurance for the security of key allies from air, missile, space, cyber, or sea attack
- use conventional weapons to deliver an air, sea, or cyber strike capable of devastating the offensive power of a foreign state.

We must be able to hold at risk the vital national leadership and economic targets of a potential adversary. (This is not an argument to underfund or undervalue a powerful, high-intensity ground warfare capability or a fully modernized and global-reach special operations force capability.)

The resources to create such airpower capabilities are not available in the current (historically weak) wartime defense funding environment of 4 percent of gross national product. Understandably, our current national security priorities are to sustain U.S. forces engaged in a bitter ground struggle that has generated 34,000 U.S. casualties and cost $400 billion.

The U.S. Air Force is our primary national strategic force. Yet it is too small, is aging, has been marginalized in the current strategic debate, and has mortgaged its modernization program to divert funds to prosecute wars in Iraq and Afghanistan that are inadequately supported by Congress.

The next administration must fix the manpower, aircraft, and funding shortfalls of the Air Force, or we will place the American people in enormous peril.

Seven Imperatives

F–22A Raptor. There is no single greater priority in the coming 10 years than for the Air Force to fund, deploy, and maintain at least 350 F–22A Raptor aircraft to ensure air-to-air total dominance of battlefield airspace in future contested areas. The Air Force has been obliged to trade away its modernization budget because the aircraft has minimal value in low-intensity ground-air combat operations such as Iraq and Afghanistan. (The current 91 aircraft are simply inadequate for anything but special missions.)

This combat aircraft is sheer magic; it cannot be matched by anything the world can produce in the next 25 years. It is vital that we never let this technology be eligible for any foreign military sales.

The F–22A provides a national strategic stealth technology to conduct undetected long-range penetration, at altitudes greater than 15 kilometers, into any nation's airspace, at Mach 2+ high speed. It can destroy key targets and then egress with minimal threat from any possible air-to-air or air-defense system. It cannot be defeated in air combat by any known current or estimated future enemy aircraft (thrust vector technology).

C–17 Globemaster III. We must create the strategic airlift and air-to-air refuel capability (at least 600 C–17 aircraft) to project national military and humanitarian power in the global environment. We currently have an inadequate force of only 150 aircraft supported by an aging refueling fleet. The C–5 aircraft must be retired; these planes are shot. The Army must back off the dubious proposition that it will size its ground combat force around the volume and lift metrics of the C–130 and instead use the C–17 as the sizing template.

The Rumsfeld doctrine postulated bringing home deployed Army and Air Force capabilities from Europe, Okinawa, and Korea. This seismic strategic shift was unexamined and not debated by Congress or the American people. We are bringing home ground- and airstrike assets thousands of miles from basing infrastructure paid for by allies to unprepared U.S.-launch platforms. If we are to pose a serious deterrent capability in the world arena, then we must credibly be able to project power back into future combat areas to sustain allies at risk.

The C–17 represents the capacity to carry out this strategic power projection mission as well to provide intratheater logistics and human-

we may swing from the magic of technology as the sole determinant of national security to an equally disastrous concentration on building a ground combat force that could have won Iraq from the start

F–22A Raptors on flightline during operational readiness exercise

U.S. Air Force (Austin Knox)

itarian lift for pinpoint distribution of thousands of truckload equivalents of supplies per day. The C–17 is a global national transportation asset, not merely a military or Air Force system.

Air Force Global Unmanned Aerial Vehicle Intelligence, Surveillance, and Reconnaissance, and Strike Capability. Primary control of these assets should be exercised by centralized joint air component command and control.

We have already made a 100-year warfighting leap-ahead with the MQ–1 Predator, MQ–9 Reaper, and Global Hawk. Now we have loiter times in excess of 24 hours, persistent eyes-on-target, micro-kill with Hellfire and 500-pound Joint Direct Attack Munitions, synthetic aperture radar, and a host of intelligence, surveillance, and reconnaissance (ISR) sensors and communications potential that have fundamentally changed the nature of warfare.

We are confusing joint battlespace doctrine. Air component commanders should coordinate all unmanned aerial vehicles based on combatant commander situational warfighting directives.

Air Force Space Primacy Capabilities. Our global communications, ISR, and missile defense capabilities cannot operate without secure, robust, and modernized space platforms. We will revert to World War II–era capabilities if we suddenly lose our space advantage. Space is an underresourced and inadequately defended vital U.S. technical capability.

Air Force Defensive and Offensive Cyber Warfare Capabilities. We must exponentially expand the resources, research and development, and human talent devoted to the massive and ongoing war against the U.S. communications-computers-control systems; cyber attack is the "poor man's" weapon of mass destruction. Every classified brief I receive underscores the absolute certainty that all our potential adversaries, terrorist organizations, and many private criminal groups conduct daily electronic reconnaissance and probes of the electromagnetic spectrum and devices fundamental to our national security strategy. We lead the world in technical creativity in these associated engineering and scientific areas. This calls for a serious joint combatant command status with a heavy Air Force lead.

We must sort out the international legal and policy considerations upon which we will base widely understood joint directives governing the centralized employment of offensive cyber warfare. This is the first sword to be unsheathed in time of modern combat.

Next-generation Long-range Bomber. We need a follow-on long-range system to the B–2 Spirit Bomber. The B–52 needs to be retired within the decade. The B–2 is inadequate and too vulnerable as a long-range strike platform. At over $1 billion a copy—with only 21 combat aircraft—the B–2 is too difficult and too outmoded a technology to again start up a production line.

Our offensive capability should include not only long-range intercontinental ballistic missiles with conventional capabilities and sea-launched missiles but also a fully modernized stealth heavy strike bomber with global range.

Ballistic Missile Defense. It is extremely gratifying to see the enormous scientific and engineering successes of the ongoing deployment of a layered national ballistic missile defense (BMD). I have been to Fort Greely, Alaska, and verified the genuine shoot-down capability that we now have for midcourse and terminal engagement. The Air Force airborne laser is just short of operational deployment. The Navy Aegis systems now have valid intercept and radar integration into the defensive concept. The system needs substantial ongoing research and development investment and continued operational incremental upgrades in the coming 15 years.

Ballistic missile defense will be a central aspect of any successful arms control strategy to convince North Korea, Iran, and other rogue states to eventually back off the proliferation of missile-delivered nuclear weapons. Notwithstanding the continued debate among national security experts, it is my firm judgment that there is no higher defensive responsibility for the Armed Forces than the deployment and continued upgrade of a coherent, global, treaty-based BMD system.

During four combat tours and 32 years of Active military service, I learned to count on the professionalism, courage, and support of the most technically sophisticated Air Force in the world. Air Force fighter-bombers and AC–47s kept my Vietnam 1st Cavalry Division rifle company alive under intense combat conditions. Air Force forward air controllers were instrumental to both my company and battalion surviving desperate engagements. I have been evacuated to Air Force hospitals and twice flown to safety by Air Force medical flights. My combat 24th Infantry Division in Operation *Desert Storm* was supported with Air Force–delivered logistics and with responsive and crucial intelligence assets. As a geographic combatant commander, I have had Air Force security and medical units organize and sustain detainee and refugee operations. I have parachuted from types of Air Force transports too numerous to list.

This is the most effective, dedicated, and well-trained Air Force we have ever put into combat. Its courage and leadership are simply awesome.

We have underresourced this proud and crucial fighting force. We lack the equipment, Airmen, and money to adequately defend America in the coming 15 years. We are placing our national security at enormous risk if we do not act soon to correct these crucial shortfalls. **JFQ**

Air Force Secretary Wynne and Air Force Chief of Staff Gen Moseley at House Armed Services Committee hearing

U.S. Air Force (Jim Varhegyi)

U.S. Air Force (Gina Cinardo)

Airman in immersive virtual training environment calls for close air support

Air and Space Power Going Forward

By **DAVID A. DEPTULA**

Airpower was brought forth from its infancy by forward thinkers who envisioned roles for it that previously had not existed. Today, conversely, prospective roles for air and space power seem if anything to be limited by our ability to conceive of them, so vast are the capabilities yet to be harnessed.

—Lt Col Suzanne Buono, USAF

As we work to optimize security investment for the future, the Department of Defense (DOD) should adopt an approach that rewards the Services for developing innovative methods to attain national security objectives with the least risk and lowest cost in both blood and treasure. To accomplish this, DOD might have to revisit its tendency to provide each Service with relatively equal slices of the military budget. Under such an approach, the Services are motivated to make incremental changes to the weapons and concepts of the last war and have little reason to take risks to increase productivity of man and machine alike. What is needed, particularly in these times of increasingly complex national security challenges, rising costs, and shrinking budgets, is a plan for going forward that is centered on a shared vision of the variety of threat conditions we are likely to face, an honest evaluation of their significance, and a mature appraisal of what will be required to deal with them.

This is not to suggest that we devote ourselves to anticipating the detailed specifics of every future threat in order to develop the best means to specifically counter each. Rather, we should dedicate ourselves to

U.S. Air Force (Amelia Donnell)

Global Cyberspace Integration Center Hot Bench team assesses software and information systems for potential problems

crafting an overall defense strategy that will allow us to shape the environment and act flexibly across the range of operations and that will provide a framework on which to base our jointly focused resource and investment decisions.[1]

Basing Future Direction on the Direction of the Future

Garnering unanimity from the four Services on what the future security environment will look like presents no small challenge, but it must not delay developing and fielding vitally needed capabilities. A reasonably common view of what the future is likely to hold can help us chart a proactive national security course. One approach is to draw out some of today's more incontrovertible trends and realities as a means to identify broad areas of agreement on which a rational defense strategy can be based.

There can be no denying that the geostrategic landscape of today is significantly different from the Cold War bipolarity it supplanted. Accordingly, future defense strategy must take into account the increasing prevalence of nonstate and transnational actors, insurgencies, emerging peer competitors, declining states, regional powers with nuclear weapons and the potential for proliferation, and a dynamic web of terrorism.

Likewise, the pace and tenor of our lives have been irrevocably altered by the accelerated pace of change. The advent of global trade, travel, and telecommunications has produced dramatic shifts in the way we live. Speed and complexity, once in opposition, have now merged and permeate all our endeavors from business to war. In yesterday's world, we could afford the luxury of prolonged buildups and deployments stretching over many months. In tomorrow's world, we will need to act in hours or days to preclude an opponent from achieving a fait accompli, change the opponent's decision calculus, and enhance deterrent effects. The profound impacts of globalization and the information revolution are mirrored, if not magnified, in the realm of conflict, where they have recast the character of our adversaries, redefined the fabric and scope of the operating environment, and reinvented the tools and techniques used to conduct warfare. The future will hold more of the same. The inherent contradiction notwithstanding, rapid and radical change will continue to be a reliable constant.

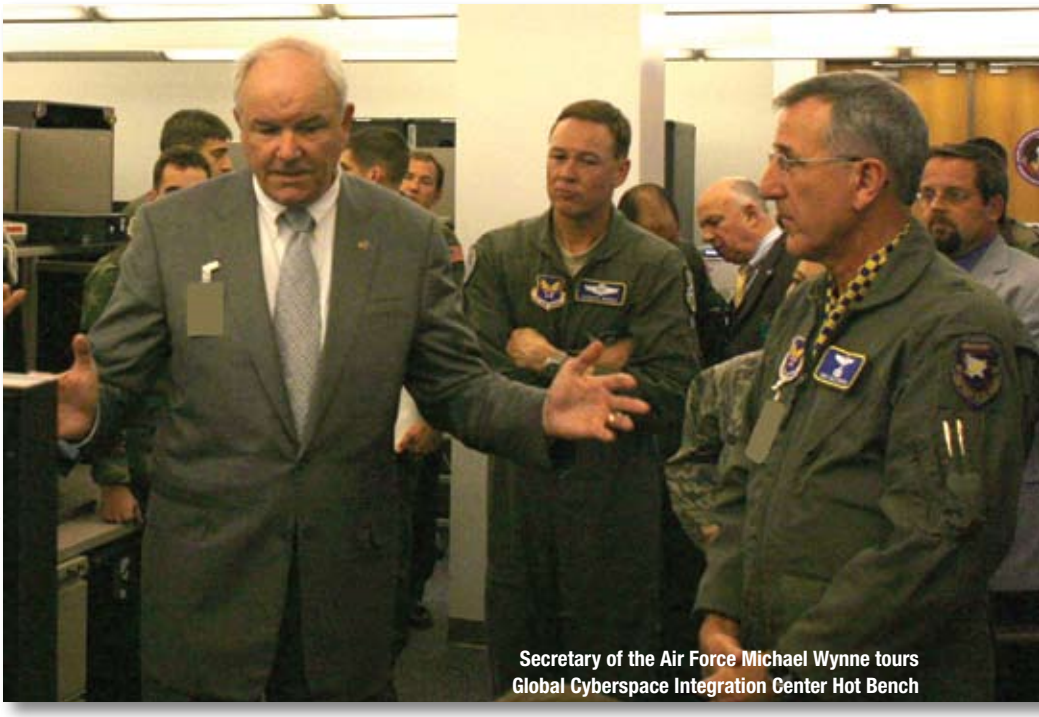
We will have to contend with increasing military costs and decreasing military budgets. These realities, perhaps more than the rest, necessitate immediate consideration of a revised defense strategy and associated force structure. We simply do not have the resources to move down multiple, divergent paths in an attempt to meet our nation's future security requirements. Nor can we afford to spend more money and time on concepts and weapons that hold little or no prospect of increasing our probability for combat success while lowering associated cost and risk. Furthermore, we must prepare to counter—or, better yet, dissuade—enemies yet to emerge in environments yet to materialize. Accordingly, the provision of flexibility of action across a wide spectrum of circumstances should be foremost among the decision criteria we apply.

Another trend is that the deployment of large numbers of U.S. forces on foreign soil is increasingly at odds with securing America's goals and objectives. Consider the array of domestic repercussions resulting from ongoing operations in Iraq and Afghanistan. Invariably, anti-American backlash plays out on the world stage any time the Armed Forces are involved in the affairs of a sovereign state, no matter how justifiably.[2] Moreover, large deployments of U.S. forces may create destabilizing effects within the very state or region they are intended to secure (for example in Iraq and to a lesser extent Afghanistan).[3] Such second- and third-order effects, visible even among our allies, increasingly result any time the United States exercises power unilaterally. Such trends are not likely to subside, particularly given the growing transparency of the information age.

the impacts of globalization and the information revolution are mirrored, if not magnified, in the realm of conflict

Force structure options that project power without projecting mass with all its related challenges and vulnerability should be considered.

There is also the likelihood that force deployments will increasingly confront antiaccess challenges and strategies. Few states can contest U.S. military power in force-on-force combat; fewer still will try. Rather, the means by which adversaries will attempt to counter our strengths are likely to take the form of efforts designed to counter our presence.



U.S. Air Force (Charlie Spaulding)

Secretary of the Air Force Michael Wynne tours Global Cyberspace Integration Center Hot Bench

Lieutenant General David A. Deptula, USAF, is Deputy Chief of Staff for Intelligence, Surveillance, and Reconnaissance, Headquarters U.S. Air Force.

Some Prescriptions

Our future defense strategy, and by extension the force structure it necessitates, must be driven by the requirements set forth in our National Security Strategy. The broad trends identified above provide a starting point for considering the types of circumstances that our defense strategy must be designed to address. The following are suggested measures geared toward keeping the United States in front of these extant trends.

Include All Pillars of National Security. One of the first efforts—albeit an indirect one—toward drafting a viable defense strategy should be to strengthen the nonmilitary elements of our security architecture. Bolstering and better integrating our diplomatic, informational, military, and economic instruments of national power is a must as we move into the future. Our defense strategy must be embedded in a multifaceted approach to international engagement and alliance-building, with the goal of achieving international stability, a condition directly related to our national defense. The decision to use offensive military force should come as a last resort and should not be made in a vacuum.

Artist rendering of X–47B carrier-capable, multimission, unmanned combat air vehicle

Northrop Grumman

Embrace Interdependence—The Next Level of Jointness. Crafting our nation's future defense strategy requires first codifying and solidifying the nature of the joint force framework in which our Services operate. The extent to which we leverage or move away from jointness—and by extension the synergies it creates—will have cascading effects on how we arm the Services and on which roles and functions each will be expected to execute. In particular, we must make interdependence the centerpiece of the Nation's defense strategy and DOD's force planning construct to maximize the capabilities we can bring to bear within the constraints under which we must operate.

Full appreciation for the importance of embracing an interdependent approach requires an understanding of the joint force construct that America uses to fight and the resultant synergies promised by its diligent application. In short, we do not fight wars as individual Services. Rather, each of the Services should offer a unique array of capabilities to a joint force commander who then draws from this "menu" of capabilities to apply the right force, at the right place, at the right time for a particular contingency. Joint operations entail—and require—much more than simply deploying separate Service components to a fight and aligning them under a single commander.

The greatest value of joint employment results less from bringing separate Service components together during an operation than from having deconflicted their strengths and specialties well in advance. This gets at the heart of why joint force operations create synergies: embracing an interdependent approach allows each Service to focus on its own core competencies while relying on the others to do the same. The opportunity costs of not embracing this approach include mission overlap and confused responsibility areas, redundant capabilities, lost opportunities for specialization, and the associated costs. This underscores why America cannot afford anything but the most dogged pursuit of interdependence as its frontline defense against resource limitations and growing threats.

Advocacy for interdependence among the Services would seem noncontroversial, particularly in light of the obvious advantages. However, it has been next to impossible to get Services to relinquish mission areas

they have claimed even when those areas clearly belong with another. This situation is the product of attempts to attain self-sufficiency, the antithesis of jointness but nonetheless the desire of some unit commanders. Therefore, one of our biggest priorities going forward must be to wrestle the intricacies of jointness to the ground and to mandate Service adherence to clearly defined and delineated capability sets.

We must also recognize that the days of sustained real defense budget growth, which for many years facilitated the ability to ensure equitable Service budget shares, are long gone. DOD and national leadership, including Congress, must understand the exigencies of fully committing to the tenets of joint force operations, and their leadership in enforcing those tenets will be necessary to ensuring its success. To be sure, we have made solid strides toward jointness since the days of the failed Iranian hostage rescue owing in large measure to the 1986 Goldwater-Nichols Act, yet some of the most critical ground remains to be covered. The military has yet to internalize the requirement to elevate the interests of jointness above those of individual Service budgets. DOD can alleviate costly overlaps and excessive redundancies once the Services are given, and adhere to, clear and distinct lanes in the road, and once the leadership takes an active role in enforcing the traffic rules. That is the price of admission if DOD is serious about optimizing force structure for the future.

the time and resource expenditure required to find our enemies now eclipses anything required to deal with them

Invest for Mission Flexibility. Increasing our flexibility of forces offers another means of preparing for a wide range of missions despite budgetary constraints that preclude large force buildups. Mission flexibility is a function of how we size the Services, balance forces, and select equipment. It also derives from creatively teaming multidomain forces and capabilities to achieve powerful effects while minimizing the number of forces employed.

Likewise, employing our forces to train and assist indigenous forces in defending their own countries would be another prudent and highly effective use of resources. This approach makes optimal use of local language and culture familiarity, which is always a challenge to U.S. forces. Devising such highly capable combinations, specifically tailored to dominate the circumstances they will be operating in, should be a mainstay of our strategy and employment repertoire. The more versatility we can build into our force structure, the greater will be the range of operations in which the U.S. military can be effectively employed.

Selecting and arraying forces for flexibility of response is the best means of girding against the twin evils of complex adversaries and the reduced resources to counter them. Add to that what will undoubtedly continue to be a sizeable role for the military in the provision of disaster relief and humanitarian aid around the world, and the rationale for ensuring that forces will be capable of carrying out full-spectrum operations is clear. Lacking the virtually infinite resource base required to arm for every possible contingency, posturing for flexibility will provide the best means and best odds for meeting the demands of "big world, not so big budget."

Measure Merit Based on Value. Force structure can be further optimized if DOD changes the way it measures and evaluates the potential return on investment from concepts of operation and systems. As a result of increases in per-unit capability—largely owing to advances in technology—the notion of unit cost as a measure of merit no longer makes much sense; the optimal measure is what kind of effects can be achieved per dollar spent (that is, value). For example, a stealthy, long-range aircraft with the number of weapons it would take hundreds of other aircraft to deliver becomes one of the most valuable platforms in our inventory, even with a unit cost higher than any of the other aircraft. Our expenditures must be geared toward those concepts and systems of greatest value that underwrite the appropriate force structure to realize the national security strategy. DOD's planning, programming, budgeting, and execution system should be adjusted accordingly.

Assure Access. To counter the increasingly advanced antiaccess strategies that our adversaries are likely to employ, we should be actively pursuing and investing in options that negate these strategies. It is perhaps in this regard that air, space, and cyber forces yield some of their greatest benefits and strengths. They allow us to deliver a wide variety of effects in forward areas around the world, doing so largely from locations that are well beyond adversary reach.

Future forces increasingly must be able to operate on short notice from normal peacetime bases over long distances. The compression of time and the inability to station forces everywhere they are needed mean we must move toward creating forces able to engage rapidly from a peacetime posture. Additionally, once forces are within engagement range, the tactical antiaccess threats posed by the proliferation of modern technology will have to be dealt with to create a permissive environment for friendly force operations. Continued investment in stealth, speed, standoff, and other technologies for aerospace vehicles—manned or unmanned—and increased numbers and coverage of space-based systems are required if we are to stay ahead of the antiaccess systems our adversaries are seeking to field.

Balance Sensors and Shooters. Similarly, adversaries have worked to thwart our asymmetric advantages with asymmetries of their own. They target civilians, hide in population centers, and do not wear uniforms. They have assiduously worked to deny us the ability to "find" and "fix" them, fully aware that there can be no "finish" piece of that equation until the first two are satisfied. To counter these efforts, we must acknowledge that our intelligence, surveillance, and reconnaissance (ISR) capabilities will be required as a heavy lifter in future strategy and need integration into all elements of our forces. The time and resource expenditure required to find our enemies now eclipses anything required to deal with them.

Unfortunately, ISR capabilities have labored under the mantle of "low density, high demand" for some time, and our reliance on ISR will only grow. Therefore, one of the main challenges in planning the future force structure is to address the balance in investment between sensors and shooters. Our problem is no longer how to engage a set of targets to achieve a particular set of effects, but rather to determine where the appropriate targets are, and what kinds of actions are required to achieve the desired effects. The funding percentages allocated among find, fix, and finish may need to be brought closer to the proportions in which these mission types require resources.

A complementary approach is to examine the sensor-to-shooter balance, not in terms of dollars, but in terms of concepts of operation. With today's technology, we can accomplish this rebalance in a fashion that does not reduce our force application capacity or require dramatic budget shifts. The potential exists to do that by ensuring that every platform's inherent ability to contribute to our distributed sensor architecture is optimized. Consider the F–22 and F–35. Both are flying sensors that allow us to conduct ISR operations inside adversary battlespace any time, in addition to making use of their vast array of attack capabilities. Moreover, the fact that they are not opposed by equally capable adversary aircraft means that we can make use of those robust capabilities all the more. Similarly, almost every force application aircraft flying in Southwest Asia today has a targeting pod just as usable for ISR as for weapons employment. Such capabilities have become known as "nontraditional ISR." By taking advantage of such features on platforms we already have, we can increase sensor capacity before a single investment dollar is moved between program elements. We need only build the concepts of operation that will take us from viewing such capacity as nontraditional ISR to conceiving of and employing it as routine ISR.

22d Marine Expeditionary Unit (Peter R. Miller)

Bangladeshi disaster relief planner addresses U.S. and Bangladeshi military members and government delegates

Structuring for the Future

Two enduring elements of our National Security Strategy, regardless of administration, are that America will engage forward in peacetime and fight forward in wartime. Accordingly, to execute our National Security Strategy, the Air Force requires sufficient force structure to maintain a rotational base capable of accomplishing these dual mandates. The mechanism for doing so is the Air and Space Expeditionary Force (AEF) construct. AEFs provide joint force commanders with ready and complete air and space forces to execute plans.

Ten AEFs provide the framework to achieve sufficient expeditionary aerospace forces to sustain rotational base requirements and personnel tempos to meet the dual requirements of our security strategy. The key to Air Force expeditionary force structure is to ensure that those 10 AEFs are each structured, equipped, and equal in capability and capacity for each of the Air Force's mission areas: aerospace superiority, global attack, rapid global mobility, precision engagement, cyber superiority, and agile combat support. Aerospace capability does not stop with expeditionary assets. Space, ISR, cyber, national missile defense architecture, intertheater airlift, and others provide the foundation upon which the AEF structure stands. What the Air Force will require in the future is sufficient force structure to maintain both an adequate rotational base of expeditionary capabilities and its foundation.

today, nearly 800 aircraft—14 percent of the Air Force fleet—are grounded or operating under restricted flying conditions

Enemies and potential adversaries have not stood idly by as the Air Force has become a geriatric force, with bombers older than their pilots, 30-year-old fighters, and tankers over 45 years of age. With current program plans, the average age of Air Force aircraft, 24 years—much older than the average age of Navy ships and Army vehicles—will grow.

The impact of this aging is becoming dramatic. "It was a looming crisis, and now, because of Iraq and Afghanistan, it's a looming disaster," notes Richard Aboulafia, an analyst with the Teal Group.[4] That was written before the entire Air Force F–15 fleet was grounded in early November 2007 due to an F–15 falling apart in mid-air from structural failure. Today, nearly 800 aircraft—14 percent of the Air Force fleet—are grounded or operating under restricted flying conditions. As defense analyst Loren Thompson notes:

after 20 years of neglect by both political parties, a period of consequences has arrived for American air power. We either spend more [on recapitalization of the Air Force]*, or in the very near future we lose our most important war-fighting advantage. The Air Force that prevented any American soldier from being killed by enemy aircraft for half a century may not be up to the task in the years ahead due to lack of adequate investment.*[5]

Retired Army General Barry McCaffrey warns that the Air Force is

badly under-funded, its manpower is being drastically cut and diverted to support counter-insurgency operations, its modernization program of paradigm shifting technology is anemic, and its aging strike, lift, and tanker fleets are being ground down by non-stop global operations with an inadequate air fleet and maintenance capabilities.

His vision of the future includes creating

a U.S. national security policy based principally on the deterrence capabilities of a dominant, global Air Force and Naval presence which can: guarantee the defense of the continental United States; provide high levels of assurance for the security of our key allies from air, missile, space, cyber, or sea attack; and which can guarantee a devastating punitive air, sea, and cyber strike using conventional weapons capable of devastating the offensive power of a foreign state—and which can hold at risk their vital national leadership and economic targets.[6]

It is imperative that the Air Force modernize and replace its aging air- and spacecraft

to ensure America's freedom to maneuver, operate, and command and control the full array of joint forces in the face of emerging and proliferating highly sophisticated threats.

A future defense strategy based on the trends identified earlier points to the following capability demands on the Air Force:

- impose paralysis at strategic, operational, and tactical levels of adversary capacity
- rapidly dominate (within days) adversary air defenses to allow freedom to maneuver, freedom to attack, and freedom from attack
- render an adversary's cruise and ballistic missiles ineffective
- rapidly reconstitute any loss to friendly space capability and negate adversary space capability
- create desired effects within hours of tasking, anywhere on the globe
- provide deterrence against attack by weapons of mass destruction and coercion by maintaining a credible nuclear and flexible conventional strike capability
- create precise effects rapidly, with the ability to retarget quickly, against large, mobile, hidden, or underground target sets anywhere, anytime, in a persistent manner
- assess, plan, and direct aerospace operations anywhere in near real time, tailored across the spectrum of operations and levels of command
- provide continuous, tailored information within minutes of tasking with sufficient accuracy to engage any target in any battlespace worldwide
- ensure use of the cyber domain unhindered by all attempts to deny, disrupt, destroy, or corrupt it, and ensure the ability to manipulate an adversary's information in pursuit of friendly objectives
- provide airlift, aerial refueling, and en-route infrastructure capability to respond within hours of tasking
- build an aerospace force that can conduct robust, distributed military operations, fully sustained over finite periods with secure reachback
- build a professional cadre to lead expeditionary aerospace and joint forces
- implement innovative concepts to ensure recruitment and retention of the right people to operate the future air, space, and cyber force and achieve an unrivaled degree of innovation founded on integration and testing of new concepts, innovations, technologies, and experimentation.

Finally, our defense establishment will need to address some difficult questions: How do we deal with the fragility of our space architecture? Does DOD need to seek legislation to unshackle the constraints that force us to operate outside an adversary's observe-orient-decide-act loop and that hamper our ability to lead in the invisible but ongoing cyberwar? How does the Nation move from a security architecture designed in the aftermath of World War II to one more relevant for the 21st-century security environment? What needs to be done regarding our ability to counter "unrestricted warfare?"[7]

Just as combat tomorrow will look different than it did yesterday and does today, so too should the military that we prosecute it with. We should take maximum advantage of the asymmetric capabilities America possesses with its air, space, and cyber forces. A concerted focus on further developing and expanding these forces would serve the Nation well, as they are uniquely positioned to underpin the kind of defense strategy and force structure appropriate to America's future.

Capabilities employed through air, space, and cyberspace allow the United States to project precision effects over great distances, with asymmetries and speed not available in any other domains. They allow America's military to project power while minimizing vulnerability, decreasing the requirement to put surface forces at risk. Adversaries have a limited opportunity to contest our presence when we are delivering effects from outside their reach, often operating outside their awareness. That also results in imposing a degree of psychological advantage not available any other way.

Additionally, the nature of America's air, space, and cyber systems is such that they can be directed, redirected, prepositioned, repositioned, and even recalled. They offer virtually limitless targeting possibilities both in terms of the effects levied and the recipients they can be levied upon. Air, space, and cyber systems deliver the kind of flexibility in which America should be making substantial investment—both in terms of planning and of system acquisition—as they provide options that will be key to the Nation's future security.

To be sure, the U.S. military must retain and enhance the core competencies of all four Services; however, these core competencies must be well defined. This should be on top of the Nation's security in-box for the next Quadrennial Defense Review, if not sooner. The Services all stand to gain if their collective efforts result in the creation of a well-informed, rationalized defense strategy for the future that can then guide the corresponding resource investment. **JFQ**

NOTES

[1] In "A New Division of Labor: Meeting America's Security Challenges beyond Iraq" (Santa Monica, CA: RAND, 2007), Andrew R. Hoehn et al. suggest a number of changes in our DOD architecture based on the emerging security environment. Their recommendations focus on "reallocating risk to produce needed capabilities" and deserve serious attention by defense and national leadership as they establish an appropriate strategy blueprint for the likely security future.

[2] Even during the well-documented atrocities the Serbian military perpetrated against Albanians in Kosovo in 1998, China and Russia opposed U.S.-led action taken under the auspices of the United Nations; military action to halt the destruction had to be conducted instead under the flag of the North Atlantic Treaty Organization.

[3] Of note, U.S. deployments are not the only catalyst for such destabilizing effects; negative effects have been evident for years when "great powers" have sent forces into smaller sovereign states.

[4] Dave Montgomery, "An Aging Fleet has Air Force Worried," *Seattle Times*, March 4, 2007.

[5] Loren Thompson, "The Slow Death of American Airpower," Lexington Institute Issue Brief, January 16, 2007.

[6] Barry R. McCaffrey, Memorandum for U.S. Military Academy, October 15, 2007.

[7] *Unrestricted Warfare* is a book on military strategy written in 1999 by two Chinese air force colonels. It addresses how a nation such as China can defeat a technologically superior opponent through means other than military confrontation, such as using international law and a variety of economic and unconventional measures to present the opponent with unanticipated dilemmas, obviating the need for military action. See Qiao Liang and Wang Xiangsui, *Unrestricted Warfare* (Los Angeles: Pan American Publishing Company, 2002).

Airman ensures approach to site is safe after controlled detonation, Ali Air Base, Iraq

U.S. Air Force (Jonathan Snyder)

Developing Joint Counterinsurgency Doctrine
An Airman's Perspective

By **CHARLES J. DUNLAP, JR.**

Anybody who thinks that you can win these kinds of things in one dimension is not being honest.

—General Peter Schoomaker, USA[1]

How does the U.S. military plan to win in Iraq? According to some, "The Book" on Iraq is the Army's new Field Manual (FM) 3–24 (designated by the Marine Corps as Warfighting Publication 3–33.5), *Counterinsurgency.*[2] Though this manual may have been meant as "simply operational level doctrine for two Services,"[3] as one contributor insists, it quickly became viewed as much more. Senator John McCain (R–AZ), reflecting the received wisdom of many senior leaders (and probably the public at large), describes FM 3–24 as the "blueprint of U.S. efforts in Iraq today."[4]

FM 3–24 does superbly articulate a thoughtful *landpower* perspective on the complicated challenge of counterinsurgency (COIN). It does not purport to be, however, a full-dimensional joint approach. Indeed, the official Department of Defense (DOD) announcement unveiling the doctrine crowed that it "was a real team effort of Army and Marine writers,"[5] underlining the absence of the other Services, who emphasize the air, space, sea, and cyberspace warfighting domains.

The result? Among other things, the discussion of airpower is largely relegated to a 5-page annex in the nearly 300-page text. Moreover, that short discussion inexplicably discourages the use of the air weapon in a way not applicable to other fires. Ironically, notwithstanding the doctrine, airstrikes in Iraq soared fivefold in 2007.

COIN operations present the kind of multifaceted problem that defies solution by any one component. Despite the ferocious efforts and eye-watering valor of America's Soldiers and Marines, the various ground-centric COIN strategies attempted in Iraq over the years may have proven costly and time-consuming. Exploiting the full capabilities of the *whole* joint team would seem the wiser course given the complexities of COIN.

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Accordingly, in late May of 2007, the four Services finally agreed to write joint doctrine for COIN. This development presents the ideal opportunity to meld the strengths of the whole joint team into a unified doctrinal concept. Significantly, *Inside the Pentagon* announced that the "Army will lead the pan-service effort."[6] Alone, this is not problematic; however, it does raise concerns when juxtaposed with the further report that "several officials" said that FM 3–24 will serve "as a primary building block for the new service-wide effort."[7]

It remains to be seen what a doctrine-development architecture so constructed will produce. While Soldiers and Marines would justifiably rely on the outstanding work already found in FM 3–24 in crafting their inputs, that is a rather different proposition from obliging a "pan-service" team to consider it, from the beginning, a "building block." It might have been more creative and equitable to have started with the proverbial clean sheet of paper. As it is, there is an imperative for Airmen (and Sailors) to insist that their views be included on a fully equal basis with those of the other Services.

Soldiers observe airstrike to destroy cave near Barla, Afghanistan

982d Combat Camera (Michael L. Casteel)

Airmindedness

Of course, Airmen bring distinct weaponry to the COIN fight but equally—or more—important is the Airman's unique *way of thinking*. General Henry ("Hap") Arnold termed the Airman's "particular expertise and distinct point of view . . . *airmindedness*."[8] According to Air Force doctrine, an Airman's "perspective is necessarily different; it reflects the range, speed, and capabilities of aerospace forces, as well as the threats and survival imperatives unique to Airmen."[9] This article contends that an Airman's approach to military problems, including COIN, may differ markedly from that of a Soldier,[10] and that such differences provide the opportunity to capitalize on fresh perspectives.

Insisting on including the Airman's perspective in developing joint doctrine is not pandering to abstract notions of jointness; it is a hard-nosed assessment of what makes Americans winners. The United States is the world's greatest military power because it is built on the free enterprise system, the most successful economic theory in history. Underlying that system is the concept of *competition*, which drives efficiency and effectiveness, and its application is just as valid in the military realm as in any other.

Competitive analysis of contrasting component approaches will serve the COIN fight immeasurably. Authentic jointness is not meant to remove competition and advocacy in defense issues, but in practice it sometimes seems to have that result. Too often, superficially genteel bureaucratic consensus is misinterpreted as "successful" jointness when in truth it erodes the essence of the competitive spirit that makes America great.

Complementing competition is the concept of cooperation. That involves taking the fruits of competition fairly evaluated and blending them into a warfighting design in a way that productively exploits America's total COIN potential.

This article intends to help regenerate and leverage that competitive and cooperative spirit by analyzing the differing approaches that landpower and airpower experts take with respect to military problems generally and COIN specifically. It aims to help complete the exceptionally fine work of FM 3–24 by facilitating the development of authentically joint doctrine.

It certainly does *not* argue that joint COIN doctrine must be "air-centric" or even "air-dominant." It does demand, however, that any *complete* COIN analysis for implementation in the joint environment must benefit from an *airminded* perspective. That means taking into account the potential of airpower technologies as well as an Airman's distinct approach to resolving issues across the spectrum of conflict, to include COIN. In short, it affirms that a *fully* joint and interdependent approach will produce the most effective doctrine for the COIN fight.

Airmen bring distinct weaponry to the counterinsurgency fight, but equally or more important is the Airman's unique way of thinking

Ground Force Conventionality

Soldiers praise FM 3–24 as "brilliantly" created,[11] a proposition with which Airmen would agree. Airmen, however, would also find that its defining provisions espouse rather traditional ground force philosophies. In fact, what is paradoxical, given the publicity surrounding FM 3–24, is its surprisingly *conventional* approach to *un*conventional war. In particular, it reverts to much the same solution that Soldiers typically fall back on when confounded by a difficult operational situation (COIN or otherwise): employ ever larger numbers of Soldiers and have them engage in "close" contact with the "target," however defined.

At its core, FM 3–24 enthusiastically reflects the Army's hallowed concept of "boots on the ground." It is an approach sure to delight those (albeit not necessarily FM 3–24's authors) who conceive of solutions to all military problems mainly in terms of overwhelming numbers of ground forces. And the numbers of "boots" that FM 3–24 demands are truly significant. It calls for a "minimum troop density" of 20 counterinsurgents per 1,000 residents.[12] This ratio (which may be based on questionable assumptions) has enormous implications for the U.S. COIN effort in Iraq. For Baghdad alone, for example, the ratio would require over 120,000 troops;[13] for all of Iraq, over 500,000.[14]

Evidently, FM 3–24 conceives of accumulating combat power not through the massing of *fires* as would normally be the case, but by massing COIN *troops*. Both Airmen and Soldiers recognize the importance of *mass* as a principle applicable to COIN as with

any other form of warfare. To an Airman, however, mass is not defined "based solely on the quantity of forces" but rather in relation to the *effect* achieved. Although doctrinally the Army recognizes the concept of effects,[15] FM 3–24 seems to see the means of achieving them primarily through deploying significant numbers of COIN forces.

FM 3–24's predilection for resorting to very large force ratios of Soldiers to address the challenge of COIN caters to the Army's traditional and deeply embedded philosophies. For example, the Service begins both of its *seminal* doctrinal documents, FM 1, *The Army*, and FM 3–0, *Operations*, with the same passage from T.R. Fehrenbach's *This Kind of War*, and it glorifies the boots-on-the-ground approach:

You can fly over a land forever; you may bomb it, atomize it, pulverize it and wipe it clean of life but if you desire to defend it, protect it, and keep it for civilization you must do this on the ground, the way the Roman Legions did, by putting your young men into the mud.[16]

The selection of Fehrenbach to introduce these documents so central to the Army suggests that the institution harbors something of an antiairpower (if not anti-technology) bent. That in the 21st century the Army still clings to a vision of airpower from a conflict nearly 60 years past says much about the mindset and culture being thrust on today's Soldiers.

Airmen must understand and respect, however, that the Army is rightly the proud heir to a long tradition whose ideal might be reduced in "heroic" terms to a close combat contest of champions on the order of Achilles and Hector. The centerpieces of such struggles often are not the weapons the warriors brandish, but the élan with which they wield them.

Today, the Army still views the infantry as the "Queen of Battle" and considers the quintessential Soldier as the infantryman, whose mission is "to close with the enemy" and engage in "close combat."[17] Moreover, General David H. Petraeus, the principle architect of FM 3–24, romanced the ideal of close combat when he recently remarked that there "is something very special about membership in the 'brotherhood of the close fight.'"[18]

the Army is rightly the proud heir to a long tradition whose ideal might be reduced in "heroic" terms to a close combat contest on the order of Achilles and Hector

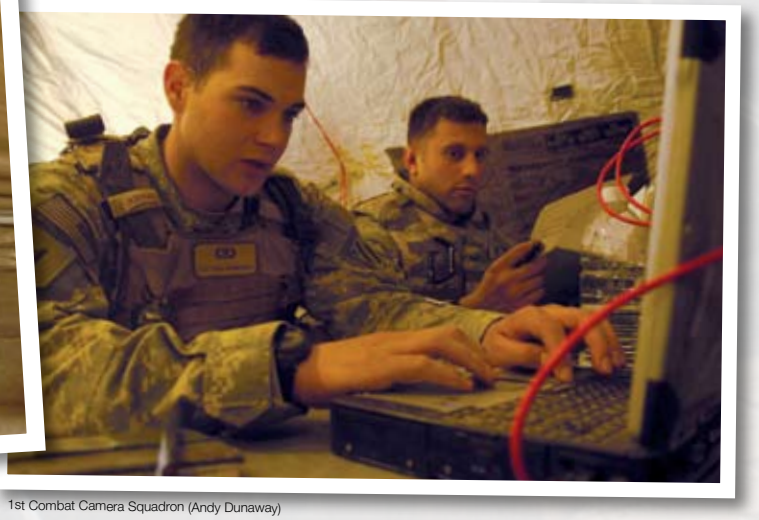
Without question there are—and will always be—situations (in COIN operations as well as in others) where it is prudent and *necessary* for ground forces to close with the enemy. The problem is that FM 3–24 discourages combating insurgents in almost any other way.[19] Furthermore, it extends this notion of closing with the "target" to more than simply kinetic force application situations involving enemy insurgents.

Specifically, "targets" of COIN efforts typically include *non*kinetic contacts with the friendly population. Like most COIN writings, FM 3–24 promotes as a main objective the people themselves[20] and seeks to win their "hearts and minds."[21] To accomplish that, the doctrine contemplates huge numbers of COIN forces physically "closing" with the target population through various engagement strategies—a process that is, unfortunately, ill suited for *U.S.* forces in many 21st-century environments, including today's Iraq.

In other words, the same affinity for close contact in *combat* situations is applied to contacts in *non*combat winning-hearts-and-minds settings. Again, it is certainly true that COIN forces will (and even *must*) interface with the target population if an insurgency is to be defeated, but the specific circumstances of when, where, how—and most importantly *who*—are all factors that need to be carefully evaluated in advance.

Regrettably, FM 3–24 gives too little consideration to the possibility that hearts and minds might sometimes be more efficiently and effectively won by having far fewer numbers of U.S. ground forces engaging in direct physical contact with the host-nation

U.S. Air Force (Jonathan Snyder)



1st Combat Camera Squadron (Andy Dunaway)

Left: Airmen attach counterbalances to horizontal stabilizers on MQ–1 Predator at Ali Air Base, Iraq

Right: Airmen work controls of unmanned aircraft system conducting reconnaissance over southern Arab Jabour region, Iraq

population, perhaps through the better utilization of technology. In fact, it may be imperative to explore such courses of action.

Given the expected resentment of the presence of foreign troops, even attempting to use *American* troops in a close-with-the-population role is not only problematic but also counterproductive in many 21st-century COIN scenarios. In Iraq, for example, despite the widely accepted COIN principle that success requires years of effort, a recent poll showed that 71 percent of Iraqis want U.S. forces to leave within a year.[22] Consequently, inadequate delineation between COIN forces generally and American forces specifically is one of FM 3–24's most serious conceptual flaws.

It may be then that the substitution of technology for manpower is a must for 21st-century COIN operations. Soldiers seem predisposed, however, as the Fehrenbach passage intimates, to be uncomfortable with *any* technology that might diminish or even displace the large ground force formations so vital to their tradition-driven self-conceptualization. This kind of adherence to tradition is in stark contrast to airmindedness.

An Airman's Way of Thinking

FM 3–24 is an exquisite illustration of the differing paths Airmen and Soldiers can take in addressing warfighting matters. Considered more broadly, the contrasting philosophical perspectives underlie the fact that since airpower is "inherently a strategic force,"[23] Airmen *tend* to reason in *strategic* terms. Soldiers, intellectually disposed to favor "close combat," *tend* to think *tactically*.

These are certainly not exclusive focuses of either component; many Soldiers are extraordinary strategic theorists and many Airmen have enormous tactical expertise. Rather, they are merely cultural propensities of the respective Services that are helpful in analyzing FM 3–24's manpower-intensive approach.

The Strategic Inclination. The strategic inclination of Airmen as applied to COIN requires some explanation. FM 3–24 does make a few references to strategic matters but gives them relatively short shrift.[24] There is no across-the-board recognition of the need for anchoring all aspects of modern COIN operations in strategic considerations. Effective doctrine for *American* COIN forces today *must* always account for U.S. strategic political goals. With respect to Iraq, this means a "unified democratic Iraq that can govern itself, defend itself, and sustain itself, and is an ally in the War on Terror."[25]

Thus, FM 3–24's statement that "long term success in COIN depends on the people taking charge of their own affairs and consenting to the government's rule" is not quite right. If the government that emerges in Iraq is intolerantly majoritarian, supportive of terrorism, or otherwise hostile to U.S. interests, in real terms the COIN effort there fails.

Strategic thinking also means understanding "politics" in the Clausewitzean sense, that is, the relationship of the "remarkable trinity" of the people, the government, and the military. When COIN operations become disconnected from political goals and realities, even technical, *military* success can become strategic defeat.

Furthermore, for Airmen, strategic thinking encompasses the aim of achieving victory without first defeating the enemy's fielded military capability. Put a different way (especially apt for the COIN operations conducted by *American* troops), it means defeating the enemy's military capability without excessive reliance upon the close fight (that is, the fight so costly in human terms that it can generate intractable political issues).

> *effective doctrine for American counterinsurgency forces today must always account for U.S. strategic political goals*

Strategic, *airminded* thinking can also mean developing ways of pacifying the host-nation population that avoid the potential difficulties arising from excessive interaction by American troops with an Iraqi population that resents them as occupiers.

Officially, the definition of *strategic air warfare* speaks about the "progressive destruction and disintegration of the enemy's war-making capacity to a point where the enemy no longer retains the ability or the will to wage war." In COIN, destroying an enemy's *warmaking capacity* is a complex, multilayered task, but the point is that an Airman's perspective on doing so would not necessarily require the tactical, "close" engagement by ground forces FM 3–24 favors. In fact, it may involve nonkinetic means employed from afar.

Not only do Airmen naturally look for opportunities to neutralize the enemy from afar, but they also instinctively look for ways to *affirmatively* frustrate the adversary's opportunity for the close fight. In insurgencies, the close fight that FM 3–24 supports usually optimizes the adversary's odds because the ground dimension is typically the only one in which the insurgent can fight symmetrically. Airmen prefer to deny the enemy the chance to fight in the way he prefers, or even on more or less equal terms.

Airmen seek *engagement dominance*, which denies an adversary the opportunity to bring his weapons to bear. As a matter of doctrine, therefore, Airmen first seek to achieve air superiority so that airpower's many capabilities can be employed with impunity. Generally speaking, American airpower achieves such dominance in COIN situations. Because insurgents are often (albeit not always) helpless against U.S. airpower—and especially fixed-wing airpower—it represents a unique and powerful kind of asymmetric warfare that *favors* the United States, an advantage an effective COIN doctrine must exploit.

U.S. airpower allows Airmen to control their domains to a far greater degree than Soldiers have been able to achieve on the surface dimension (particularly in Iraq). Much of the reason for the worldwide U.S. superiority in airpower is a result of top-quality equipment. Unsurprisingly, therefore, Airmen are inclined toward high technology.

The Technological Inclination. One of the most pervasive if inexplicable staples of COIN literature (including FM 3–24) is an attitude toward technology that frequently ranges from overlooked to misunderstood to outright antagonistic. Much of this antipathy is aimed directly at airpower. Typical of the latter perspective is Air War College Professor Jeffrey Record's essay describing the "American Way of War" as "obsessed" with a technology "mania" that is "counterproductive" in COIN.[26] He explicitly cites the air weapon as the "most notable" cause of the counterproductivity:

The U.S. military's aversion to counterinsurgency . . . is a function of 60 years of preoccupation with high-technology conventional warfare against other states and accelerated substitution of machines for combat manpower, most notably aerial standoff precision firepower for large ground forces.[27]

Even more scathing is James Corum's *Fighting the War on Terror: A Counterinsurgency Strategy*. His previous book, *Airpower in Small Wars*, sought to consign airpower (which he considers exclusively in an aircraft context) to a limited *supporting* role in COIN campaigns. Although debatable, the view expressed in *Airpower in Small Wars* is at least comprehensible given the state of aviation technology during the time period of the campaigns he examined. Corum's current book is puzzling, however, as he appears to use it to demean technology generally, and the U.S. Air Force specifically.[28] It does not fully appreciate the potential of *today's* airpower in COIN strategies.

For its part, FM 3–24 mentions technology only about a half-dozen times outside of the airpower annex, and several of those references are rather disparaging. Airmen see the world differently. They believe that high tech has the potential to change COIN operations as dramatically as it has transformed military operations at other points along the conflict spectrum. Accordingly, Airmen proudly proclaim that they are, among many things, "technology-focused professionals,"[29] a cultural attribute that distinguishes them from the Army COIN culture (although perhaps not other parts of the Army).

Soldiers may consider technology differently from Airmen because of the relative role tradition plays in their *Weltanschauung*. Historian Charles Townshend observes:

Soldiers have seldom led the way in technological development, and have often been reluctant to welcome new weapons. Tradition has always been important in fostering the esprit de corps of fighting units, and can lead to fossilization.[30]

Adherence to ground force tradition may explain FM 3–24's preference for manpower-intensive COIN solutions as opposed to an Airman's inclination to look for ways to replace troops with technology. In discussing the reluctance of World War I soldiers to embrace the introduction of the then-new technology of the machinegun, author Anthony Smith recognizes the strong role of tradition in their thinking. He described the attitude of many soldiers toward machinegun technology and the "close fight":

Where was the luster in merely mowing down the enemy? . . . Where was the excitement and the honor one might gain in a fight which was man to man? . . . The [machinegun] was as wrongful in its status as showing up at Agincourt with rifles or grenades. It might win the day, but without a trace of glory.[31]

This is certainly not an *airminded* approach to war. From the very beginning, advocates of the air weapon sought means of using it that avoided the sort of "glory" that led to the close-combat slaughter and stalemate of World War I.

Historian Lee Kennett states that airpower "seemed to offer a real alternative to the bloody, indecisive collisions along [World War I's] static front."[32] As a result, today's Airmen see no glory in the close fight if the enemy can be stopped at a distance with the latest technology. Airmen have no tradition that discourages new technology, and they embrace it as readily in COIN situations as in any other.

By contrast, Soldiers, it seems, are apt to hold onto traditional approaches even when they appear to be outdated. The Army, for instance, conducted horse-cavalry combat operations as late as 1942. More contemporarily, the Army retains its fabled paratrooper formations despite their limited utility in modern war as became clear during Operations *Enduring Freedom* and *Iraqi Freedom*.

Some soldiers admit to the lack of bona fide, 21st-century *military* rationale for this once-important capability. A former paratrooper concedes that "it seems clear that we have far too many airborne-qualified soldiers on active duty and that we should not have any large units that are equipped, staffed, and practicing for large-scale airborne operations."[33] He contends, however, that *tradition* is much of the reason the Army keeps its legendary parachute units.

While all military members appreciate the value of tradition, the Airmen's view is more temperate. Soldiers tend to think tradition, Airmen tend to think science. Why? The nature of airpower is such that the science that produces superior technology empowers its possessor to dominate the dimensions in which Airmen operate far more rapidly than is the case with landpower. Thus, Airmen see airpower, accord-

Airmen proudly proclaim that they are "technology-focused professionals," a cultural attribute that distinguishes them from the Army counterinsurgency culture

U.S. Air Force

F–16Cs operate over Iraq, January 2008

ing to Chris Gray, as "integrally linked to science."[34] Because of that, Gray claims, the "Air Force has led the way in institutionalizing postmodern war," as well as what he calls the "innovation of innovation."

Uses of History

An Airman's fascination with innovation, especially cutting-edge technological innovation, is just one of the reasons that Airmen and Soldiers interpret the past differently. FM 3–24's overarching intellectual touchstones are history and the Army's lessons-learned culture. And the doctrine *is* an outstanding example of both. In fact, its historical focus is itself one of the paradoxes of the document. While that focus gives it great strength, it is also likely one of the reasons that FM 3–24 does not fully exploit airpower and other cutting-edge technological solutions.

Instead, FM 3–24 enthusiasts gush that it "draws on lessons from history [and cites] Napoleon's Peninsular Campaign, T.E. Lawrence in Arabia, Che Guevara, and the Irish Republican Army, as well as recent experiences in Afghanistan and Iraq."[35] Therein, however, lies the problem: *none* of FM 3–24's case studies involves the latest airpower technology. The air weapon is constantly evolving with a velocity that is difficult for surface warriors with a tradition-imbued deference to the past to fully grasp.

Even drawing upon *Enduring Freedom* and *Iraqi Freedom* experiences does not mean airpower's current potential is explored completely. Despite a publication date of December 2006, what might have been the limits of airpower during FM 3–24's drafting may already have been superseded by more recent advances. One example is the deployment of the MQ–9 Reaper unmanned aircraft system. Armed with a bevy of precision weaponry and surveillance equipment, the Reaper is a long-endurance hunter-killer that can revolutionize the pursuit of insurgents at *zero risk* to U.S. forces.

If using all the capabilities of the joint team is important, then lessons of *past* COIN operations conducted in the context of now-obsolete aviation technology should not be indiscriminately applied in assessing the value of airpower in *future* COIN operations. As the new joint doctrine is drafted, this limitation on the uses of history must be carefully considered.

The swiftness of technological change has, for Airmen, very real and immediate consequences in combat. The history of airpower is littered with examples of the rapid fall from grace of aircraft that once dominated the skies only to be superseded—sometimes in mere months—by platforms with better capabilities. "Historical" aircraft and other older technologies have sentimental but not operational value to Airmen.

Airmen are constantly confronted with the hard truth that so much of today's airpower capabilities are linked to computer power. Accordingly, they are keenly aware of the Moore's Law phenomenon that explains the rapid obsolescence of weaponry that relies on the microchip. Naturally, this makes Airmen especially disposed to relentlessly seek the most advanced systems available. This is why the Air Force, whose airplanes now have an average age of over 25 years, is so focused on modernization and recapitalization.

the air weapon is evolving with a velocity that is difficult for surface warriors with a tradition-imbued deference to the past to fully grasp

Dated infantry weapons can maintain their relevance far longer than the air weapon. Other factors (organization, training, and spirit) may offset the technological deficiencies. For example, the AK–47 assault rifle remains effective despite experts who believe the M–16 supersedes it.

This is not the case with aerial combat. Even the most skilled and motivated aviator cannot overcome the physics of flight as governed by the aircraft's design. Though technology does eventually transform land warfare, the *pace* is not nearly as rapid as it is with most aviation systems.

It is true that there are important examples of insurgents who prevailed against high-tech surface opponents. Such instances are, however, properly interpreted as the insurgents winning *in spite of* technological inferiority, not *because of* such deficiency, as some contemporary COIN enthusiasts seem to think. In an opinion piece in *The Wall Street Journal*, Bing West and Eliot Cohen made the apt observation that "the American failure [thus far] in Iraq reflects not our preference for high technology—as facile critics claim—but our inability to bring appropriate technology to bear."[36]

To the frustration of Airmen, much ink has been spilled over the notion that high-tech airpower "failed" during the 2006 Israeli operations in Lebanon against Hizballah.[37] The supposed "lesson learned," it seems, is that only landpower "works" in low-intensity conflicts (to include COIN).

What is ironic about these assessments is that today, Israel's border with Lebanon is secured by a force that is internationally manned and funded—and which has largely ended Hizballah rocket attacks. Not a bad strategic result. In fact, many analysts are becoming convinced, as Edward Luttwak is, that the "the war is likely to be viewed in the long term as more satisfactory than many now seem to believe."[38] Moreover, if airpower is to be denigrated because it allegedly "failed" to achieve "decisive" results in a 34-day war, what should one make of the performance of *groundpower* in over *1,500* days in Iraq? That groundpower fails as a COIN force?

Even an articulate and helpful analysis of the war such as that of Susan Kreps suffers from an unwarranted transference of generic assessments of airpower to that of *American* airpower.[39] Although Kreps recognizes that "no two wars are the same," she nevertheless belittles airpower's low-casualty success in the Gulf War and Kosovo by saying that those conflicts "may have been the anomalies." At the same time, Kreps' analysis of Israeli airpower in the Lebanon war leads her to propound as a given the proposition that the "effects of airpower against asymmetric adversaries" are limited. Underpinning that conclusion is the mistaken assumption that the capabilities and doctrine (and perhaps *creativity*) of American airpower and Airmen today are conterminous with those of the Israeli air force at the time of last summer's operations against Hizballah. Unfortunately, this kind of lessons-learned thinking unproductively "fossilizes" judgments about the current utility of U.S. airpower to the COIN warfighter.

To be sure, Airmen respect and study history, but they are keenly aware of its limits, especially as to the airpower lessons it suggests. They see history as a "foundational component of education for judgment."[40] Importantly, Eliot Cohen insists that he does not want his students to "learn the lessons of history" as they "do not exist" but rather to "think historically." Airmen would agree.

Airmen would also agree with General Petraeus, who said (albeit more than 20 years ago) that while history has "much to teach us," it "must be used with discretion" and not "pushed too far."[41] This is especially so with respect to strategizing COIN doctrine for Iraq. One former Soldier insists that since the conflict there "has mutated into something more than just an insurgency or civil war . . . it will take much more than cherry-picking counterinsurgency's 'best practices' to win."[42] Clearly, the unwise use of history risks, as one pundit put it, attempting to "wage war through the rearview mirror."[43]

Misunderstanding history can perpetuate myths about the air weapon and these can hurt America's counterinsurgency fight. As joint doctrine is developed, it is critical that representations of component capabilities be fully current and accurate. Finally, Airmen—and airpower—will be most effective in the counterinsurgency fight if truly accepted as equals on a *genuinely* joint and interdependent team. **JFQ**

NOTES

[1] Timothy B. Clark, "Ground Truth," interview with General Peter J. Schoomaker, USA, Government Executive.com, September 14, 2006, available at <www.govexec.com/features/0906-15/0906-15s1.htm>.

[2] Field Manual (FM) 3–24, *Counterinsurgency* (Washington, DC: Headquarters, Department of the Army, December 15, 2006), available at <www.fas.org/irp/doddir/army/fm3-24.pdf>.

[3] Frank Hoffman, "Non Cents," Smallwarsjournal.com, May 23, 2007, available at <http://smallwarsjournal.com/blog/2007/05/non-cents-1/>.

[4] John McCain, "General David Petraeus," *Time,* May 14, 2007, 76, available at <www.time.com/time/specials/2007/time100/article/0,28804,1595326_1615513_1615454,00.html>.

[5] Jim Garamone, "Army, Marines Release New Counterinsurgency Manual," American Forces Information Service, December 15, 2006, available at <www.defenselink.mil/news/NewsArticle.aspx?ID=2453>.

[6] Elaine M. Grossman, "Services Agree to Write Joint Doctrine for Counterinsurgency Ops," *Inside the Pentagon*, May 24, 2007, 1.

[7] Ibid.

[8] Air Force Doctrine Document (AFDD) 2, *Operations and Organization* (Washington, DC: Headquarters, Department of the Air Force, April 3, 2007), 2, available at <www.dtic.mil/doctrine/jel/service_pubs/afdd2.pdf>.

[9] Ibid.

[10] When the word *Soldiers* is capitalized in this article, it is meant to refer to infantrymen of the U.S. Army (and usually the Marine Corps).

[11] See Robert H. Scales, "To Win the Long War," *The Washington Times*, October 10, 2006.

[12] FM 3–24, para. 1–67.

[13] See Joe Klein, "Good General, Bad Mission," *Time*, January 12, 2007, available at <www.time.com/time/magazine/article/0,9171,1576838-1,00.html>.

[14] Linda Robinson, "Why More May Not Be Enough," *U.S. News & World Report*, January 14, 2007, available at <www.usnews.com/usnews/news/articles/070114/22troops.htm>.

[15] See, for example, FM 3–0, *Operations* (Washington, DC: Headquarters, Department of the Army, June 2001), 4–13, available at <www.dtic.mil/doctrine/jel/service_pubs/fm3_0a.pdf>.

[16] Ibid., note 15.

[17] FM 3–21.10, *The Infantry Rifle Company* (Washington, DC: Headquarters, Department of the Army, July 27, 2006), "Introduction," available at <https://atiam.train.army.mil/soldierPortal/atia/adlsc/view/public/23168-1/FM/3-21.10/chap1.htm>.

[18] As quoted in Paul Bedard, "Not a Bad War Book . . . for a Girl," *U.S. News & World Report*, April 23, 2007, 16.

[19] See discussion of airpower in FM 3–24, appendix E, para. E–5.

[20] See, for example, FM 3–24, para. 4–1.

[21] Ibid., A–5.

[22] "Most Iraqis Want U.S. Troops Out Within a Year," September 27, 2006, available at <www.worldpublicopinion.org/pipa/articles/brmiddleeastnafricara/250.php?nid=&id=&pnt=250&lb=brme>.

[23] AFDD 1, *Air Force Basic Doctrine* (Washington, DC: Headquarters, Department of the Air Force, November 17, 2003), 41, available at <www.dtic.mil/doctrine/jel/service_pubs/afdd1.pdf>.

[24] See, for example, FM 3–24, para. 6–27.

[25] National Security Council, *Highlights of the Iraq Strategy Review*, "Summary Briefing Slides," slide 8, January 2007, available at <www.whitehouse.gov/nsc/iraq/2007/iraq-strategy011007.pdf>.

[26] See Jeffrey Record, *The American Way of War: Cultural Barriers to Successful Counterinsurgency*, Cato Institute Policy Analysis No. 577 (Washington, DC: The Cato Institute, September 1, 2006), available at <www.cato.org/pubs/pas/pa577.pdf>.

[27] Ibid., 5.

[28] See, for example, James S. Corum, *Fighting the War on Terror: A Counterinsurgency Strategy* (Osceola, WI: Zenith Press, 2007), chapter 2.

[29] Department of the Air Force, *The Air Force Story* (Washington, DC: Department of the Air Force, September 2006), 6, available at <www.af.mil/shared/media/document/AFD-060919-007.pdf>.

[30] Charles Townshend, ed., *The Oxford History of Modern War* (Oxford: Oxford University Press, 2000), 4.

[31] Anthony Smith, *Machine Gun: The Story of the Men and the Weapon that Changed the Face of War* (New York: St. Martin's Press, 2004), 164–165.

[32] Lee Kennett, *The First Air War* (New York: The Free Press, 1991), 221.

[33] See John T. Reed, "'Elite' military units: Army Airborne (paratroopers)," available at <http://www.johntreed.com/airborne.html>.

[34] Chris Hables Gray, *Postmodern War: The New Politics of Conflict* (New York: Guilford Press, 1997), 217.

[35] See "How to Predict the Future," *Military History*, April 2007, 23.

[36] Bing West and Eliot A. Cohen, "Our Only Hope," *The Wall Street Journal*, January 8, 2007, available at <www.sais-jhu.edu/insider/pdf/2007_articles/cohen_wsj_010807.pdf>.

[37] See, for example, Phillip H. Gordon, "Air Power Won't Do It," *The Washington Post*, July 2006, A15.

[38] Edward Luttwak, "Again, Israeli Gloom Is Misplaced," Thefirstpost.com, August 18, 2006, available at <www.thefirstpost.co.uk/index.php?menuID=1&subID=688&p=4>.

[39] Susan E. Kreps, "The 2006 Lebanon War: Lessons Learned," *Parameters* 37, no. 1 (Spring 2007).

[40] See Fredric Smoler, "History and War: An Interview with Eliot Cohen," March 12, 2007, available at <www.americanheritage.com/articles/web/20070312-eliot-cohen-military-theory-iraq-vietnam-antietam-guerrilla-warfare-nation-building-winston-churchill-military-history-condoleezza-rice.shtml>.

[41] David H. Petraeus, "Lessons of History and the Lessons of Vietnam," in *Assessing the Vietnam War*, ed. Lloyd J. Matthews and Dale E. Brown (Dulles, VA: Pergamon-Brassey, 1987), 171, 181.

[42] Phillip Carter, "There Are Four Iraq Wars: How Many of Them Can We Win?" Slate.com, February 9, 2007, available at <www.slate.com/id/2159460>.

[43] Shankar Vedantam, "Waging War Through the Rearview Mirror," *The Washington Post*, April 9, 2007, A3, available at <www.washingtonpost.com/wp-dyn/content/article/2007/04/08/AR2007040800975.html>.

C–17 combat cargo drop over Afghanistan

U.S. Air Force (Brian Ferguson)

On Airpower, Land Power, and Counterinsurgency

Getting Doctrine Right

By JAMES S. CORUM

Airmen inside Stryker vehicle plan route to targets, Baghdad

U.S. Air Force (Cecilio M. Ricardo, Jr.)

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Since 2001, the U.S. military has been going through a painful process of relearning the art of counterinsurgency. Fighting nonstate forces, be they insurgents, terrorists, or criminals, is a fundamentally different type of war from the state-on-state conventional war to which the Armed Forces are oriented. Getting warfighting right requires an understanding of not only an environment that is far more complex than conventional war but also of a wide variety of organizations, tools, and methods. Airpower is an important tool in counterinsurgency, and the Army/Marine Corps doctrine in Field Manual (FM) 3–24, *Counterinsurgency*, lays out some basic guidelines for the employment of airpower in counterinsurgency.

This essay is not about defending the airpower doctrine in FM 3–24. Given the space limitations of the Army/Marine Corps doctrine, which at 267 pages ended up considerably longer than the authors expected, the discussion of the various aspects of military operations in counterinsurgency was kept to basic theory and guidelines. The doctrine was addressed to the strategic planner and operator and was not intended as a guide to the employment of specific technologies and tactics. Indeed, those subjects are better addressed in tactical level manuals. What the doctrine does stress is the need to understand the context of counterinsurgency and how airpower fits into that context.

Back to Basics

In discussing counterinsurgency doctrine, it is best to start with basic principles. By reviewing the dozens of major insurgencies of the last 60 years, we can identify two requirements for the conduct of effective counterinsurgency—and success is not possible without them: good strategy and good intelligence. *Good strategy* is comprehensive, effectively applies all the elements of national power, allows for coordination of those elements, and sets intermediate goals and a realistic endstate. The strategy must be flexible enough to meet changing conditions, and it must be supported by the right kind of civilian and military organizations and personnel.

In a conventional conflict, the military normally has the paramount role. In counterinsurgency, this is not the case. A counterinsurgency strategy that relies overwhelmingly on military forces and military operations—and ignores the social, political, and economic aspects of the insurgency—will not lead to the

desired endstate or even close to it. In fighting an insurgency, addressing the political, informational, and economic aspects of the strategy is just as important as the military side. One lesson is emphasized throughout the new Army and Marine Corps counterinsurgency doctrine: the solution may not be a military one.[1] A military approach may kill a lot of insurgents, but unlike conventional war and its focus on fielded forces, killing insurgents is not all that matters. Successful counterinsurgency campaigns are usually concluded with political settlements. To reach a political solution, one needs to deal effectively with the issues *driving* the insurgency.

The emphasis on the nonmilitary factors of counterinsurgency in a sound strategy means that the military is often a supporting force and not the main effort. This goes against U.S. military culture and that of most Western nations. It also means that airpower is a *supporting* force and not the main thrust. This is not to say that the military effort and the employment of airpower are not important, but it does mean that we have to consider the role of military force and more specifically airpower within a broad and complex political context. An effective strategy might focus on the economic, social, or political issues—and most likely a combination of the three. In combating the insurgency in El Salvador from 1981 to 1992, 80 percent of the U.S. funding and effort went into economic aid to that country while 20 percent went into training and equipping the Salvadoran armed forces. It was a successful strategy.

In the previous article in this issue, General Charles Dunlap argues that we need to make technology the center of our counterinsurgency strategy. While our technological advantage is a good thing, this route is a false path. An insurgency is a profoundly personal and political endeavor. Counterinsurgency is not about targeting equipment or infrastructure or other things that make airpower so important in conventional war. Counterinsurgency is about human interaction and winning the support of the population. A population cannot be secured; its political, social, and economic concerns cannot be addressed; its forces or its personnel cannot be developed, advised, or trained, from 30,000 feet. The size and type of forces, aid, and personnel deployed to a counterinsurgency campaign should depend upon a careful analysis of the requirements and circumstances of the campaign. We should not place artificial restrictions on force levels at the start of the conflict based on unproven theories and optimistic projections. Wars of whatever type and intensity always end up costing more in personnel and resources than a nation expects at the beginning. If we make a rigid rule that a war must be fought with minimum manpower and at minimum cost, we are bound to get in trouble.

one lesson is emphasized throughout the new Army and Marine Corps counterinsurgency doctrine: the solution may not be a military one

The critique that Army and Marine doctrine is focused on land power is not relevant to the reality of insurgency. I was present at every author's conference and discussion of the Army/Marine counterinsurgency doctrine, and no one ever said, "How can we view counterinsurgency as a ground-centric kind of conflict?" Counterinsurgency is inherently land-centric because it is about populations, and populations live on the land. As for the comments on jointness, none of the doctrine authors ever argued, "How can we put the U.S. Army or Marines at the center of the counterinsurgency effort?" In fact, Army/Marine doctrine consistently recommends that the best practice is not to have the military be the lead agency for essential counterinsurgency tasks such as building the economy, training police forces, and developing a governmental infrastructure. These tasks are best handled by nonmilitary agencies with special expertise. One of the consistent lessons of good counterinsurgency is that a lot of specialist expertise is needed to succeed. For example, chapter 6 of FM 3–24 specifically recommends that the ideal for training police forces is to have civilian and international agencies lead the effort, with the U.S. Army Military Police acting in a supporting role.[2]

Arguments for airmindedness, or advocacy of a high-tech approach, seem to be a Pentagon style of thinking that tries to fit insurgency into a type of warfighting that leaders feel most comfortable with. But insurgency has to be approached on its own terms. There are a lot of roles for high-tech weaponry in counterinsurgency, and there are many ways that airpower might be profitably used. In fact, Wray Johnson and I wrote a 500-page book on the latter subject.[3] But I have yet to see any instance in which a nation could make airpower or high-tech weaponry central to an effective counterinsurgency strategy (that is, one that meets the needs of a population).

The Army and Marine Corps had only one consideration in writing the counterinsurgency doctrine: what works. If we are to craft sound counterinsurgency strategies, we need to get away from the Service advocacy culture and be ready to take a broad, even *unmilitary*, view of things. If a careful analysis of a specific insurgency concludes that the most effective means to defeat insurgents would be to deploy a corps of psychiatric social workers, then I would advocate that we do whatever is necessary to stand up the best corps of deployable psychiatric social workers in the world. And when we deploy them, the Army will be a supporting force providing security, and the Air Force will provide the airlift.

Airmen eye target during anti-insurgent action, Operation *Ivy Cyclone*, Iraq

U.S. Air Force (Jeffrey A. Wolfe)

Troops on the Ground

General Dunlap questions the importance of boots on the ground in counterinsurgency. He argues that the manpower-intensive approach to counterinsurgency is due to Army tradition and that the suggested ratio of troops to civilians is based on "questionable assumptions." In fact, the doctrinal requirement to put plenty of troops on the ground at the start of a stability operation, or in conditions of high violence, is based on recent experience in Somalia (1992–1994), Bosnia (1995), and Kosovo (1999). A primary requirement of counterinsurgency is establishing order and controlling the population, and we need to be on the ground to do that. If a basic level of security is not established, then humanitarian assistance, reconstruction programs, and the establishment of a civil society are impossible. In Bosnia and Kosovo, the large number of troops put on the ground relative to the total population quickly established order and ensured that the civilian administrators could begin reconstruction. In Somalia, the large force sent in at the onset quieted the southern half of the country. Only when most of the U.S. forces were withdrawn, and the United Nations (UN) force was left with little combat power, did Mohammed Aideed initiate his war against the American and UN forces that culminated in the battle for Mogadishu in October 1993.

If there is any lesson that ought to come from the Iraq war, it is the importance of establishing a basic level of security for the population. A lot of manpower is needed to do that. In 2003, we tried to establish order in a country of 25 million with only 130,000 troops, an absurdly low number to do the job. As a result, the postwar looting, crime, and disorder continued. A minimum level of security was never established for a large part of the population that suffered through the wave of murder, kidnappings, and other illegal behavior. Some argue that the presence of U.S. troops is a negative, and a heavy American or foreign presence provokes the population to resistance. If this were true, then the violence in Bosnia and Kosovo would have escalated with the intervention of a large outside force. In fact, the opposite happened in those countries. It is true that U.S. and coalition forces provoked the resentment of many Iraqis, but it was because there were too few coalition troops to establish a secure environment and stop the ongoing disorder. Our initial failure to establish order in Iraq crippled the reconstruction efforts and allowed the insurgency to flourish.

As General Dunlap points out, and as Wray Johnson and I have argued, airpower is a great force enhancer in counterinsurgency warfare; it enables coalition and government forces to use their resources much more effectively—but it still cannot replace strong and visible forces on the ground to control and protect the population.

Intelligence and Counterinsurgency

The role of intelligence in counterinsurgency is fundamentally different from its role in conventional war. Conventional military intelligence is about looking for things we can see and count. Thanks to modern technology, with its signals intelligence and the ability to monitor the battlefield by space and aerial surveillance, the primary mission of intelligence in conventional war—locating the enemy's main conventional forces—is relatively easy. High-tech intelligence assets are featured in conventional war operations: space, reconnaissance, and signal assets. In counterinsurgency, the first mission of the intelligence agencies is to understand the *context* of the conflict, which means collecting information about the whole society, understanding local conditions, monitoring public opinion, and analyzing social and political relationships and networks. And that is just the start. The next step is to find the insurgent and try to understand his organization.

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This is difficult because the insurgent is likely to wear civilian clothes and hide in the population. He will have a local and perhaps national organization—and it is all underground. If we are lucky, the insurgent will stand and fight and give the counterinsurgent the chance to use military force and airpower against him. But even if we decimate insurgent combatant forces, they will quickly revive if we do not break the underground support network.

The kind of intelligence we need to understand the insurgent social context and the insurgent organization is human intelligence (HUMINT). Of course, high-tech assets have a role. Space surveillance and other reconnaissance tools can give us great data. High-tech surveillance can tell us that the people are all leaving a particular village. But it does not tell us *why* they are leaving. We need highly effective intelligence analysts to do that. Airpower, or military power, is of little use in counterinsurgency without the kind of specialist analysis we can only get from HUMINT.

The kind of intelligence analyst needed in counterinsurgency is essentially a foreign area officer, someone who speaks the language fluently, has studied the country and the region in depth, and understands the societal context of official and unofficial networks. In fighting insurgents, a competent specialist intelligence officer is far more useful than a B–2 bomber. The good news is that a human intelligence specialist is a lot cheaper than a B–2 bomber. The bad news is that it takes about as long to develop a competent country and regional expert as it does the B–2 bomber.

One of the primary problems that our forces in Iraq and Afghanistan face is the lack of fully qualified HUMINT specialists. Unlike

Iraqis protest coalition presence, Baghdad

1st Marine Division Combat Camera (Jennifer A. Krusen)

logistics, which requires general management skills that are widely available, military intelligence agencies cannot easily contract out for foreign area specialists whenever needed. If we are going to have adequate HUMINT support in a conflict, we need to build up our human intelligence capabilities long in advance. Unfortunately, at the end of the Cold War, the United States went too far in cutting human intelligence capability, and we are paying a steep price today.

The Media and Airpower

One of the most common critiques made by officers involved in counterinsurgency operations around the world is that counterinsurgent forces are doing poorly in employing the media to get the government message out, while insurgent, terrorist, and radical groups are using the media quite effectively. For one thing, insurgents, radical groups, and the states that support them are not hindered by any requirement to stick to the truth. Disinformation campaigns and deliberate falsifications are standard methods of attacking the legitimacy of counterinsurgency operations and in whipping up local and world opinion against the United States and coalition allies.

Insurgents and nonstate forces confronting regular military forces, especially of Western states, will commonly focus their efforts against the technological advantage of the counterinsurgent forces. U.S. and Western nations are portrayed as using their asymmetric technological advantage to bully and repress the civilian population. In China during the 1920s, the gunboat was the symbol of Western technology and oppression. Today, airpower is singled out as that symbol. It is easy to make fantastic charges against air forces and to accuse them of deliberately bombing civilians, because the insurgent still controls the ground at the end of the day. This means the insurgent also controls the story—and accusations of brutality through airpower make sensational news. Insurgents and nonstate forces are also assisted by the news media, often the Western media, because they will print the insurgent and radical casualty claims without disclaimer or comment, often repeating ludicrously high figures of civilian casualties and damage to civilian homes. Indeed, insurgents and nonstate groups get so much propaganda value from civilian casualties that they readily use the civilian population as human shields. The tactic of placing heavy weapons in highly populated areas in the hope that air forces will attack them and inflict collateral damage has become a common insurgent strategy.

During Israel's 1982 invasion of Lebanon, the Palestine Liberation Organization (PLO) placed artillery pieces and antiaircraft guns in civilian neighborhoods, on the roofs of apartment houses, and even on hospital grounds.[4] They hoped to provoke the Israelis to attack targets with the assurance of heavy civilian casualties. If the Israelis refrained from attacking, the PLO preserved its forces and equipment. If Israel attacked, the resulting dead civilians could be displayed to the world as victims of Israeli aggression. For the PLO, it was a win/win situation. What the PLO did in 1982, and similar actions by Hizballah in the 2006 conflict with Israel, are clearly war crimes under the Geneva Conventions. Although using civilians as human shields is a gross violation of international law, many in elite circles in the West are willing to give warring nonstate groups a pass on following the basic rules of warfare.

if we are going to have adequate human intelligence support in a conflict, we need to build up our human intelligence capabilities long in advance

The case of Israel is not unique. Insurgents have also used this win/win media strategy in Iraq. In Fallujah in 2004, insurgents placed munitions and weapons in 20 mosques and also used mosques as fighting positions. Of course, targeting a mosque used as a military installation is a perfectly acceptable act under the laws of war. Still, this common practice works well for the insurgents. Although the United States employs precision weapons and tries to keep damage to mosques to a minimum, there was just enough damage to ensure that insurgents could portray the conflict as Americans attacking Islam—a theme that resonates throughout the Arab nations and further radicalizes Islamic opinion.

Because aerial attack is often viewed in the Third World as cruel and heavy-handed, it creates a paradox for policymakers. While airpower is usually the most effective means to strike at insurgents and terrorists, its use will provoke outcry in many quarters of Western society and throughout the Third World. In short, there is a heavy political price to pay when airpower in the form of airstrikes is used.

We in the United States and in Western nations must do much better in presenting our side of the conflict to the world media. We have to be ready to counter a large-scale disinformation campaign mounted by insurgent and radical groups against our military operations. One step would be to aggressively prosecute leaders of radical and insurgent groups as war criminals for their practice of using civilians as human shields. The precedent of the Nuremberg Trials is clear: leaders can be held responsible for the systematic policy of war crimes committed by their subordinates.

Doctrinal Gaps

Currently, there are two large gaps in our strategy for employing airpower in counterinsurgency: training allied air forces facing insurgencies and ensuring that they are provided with adequate equipment. As a first principle of counterinsurgency, we must remember that we cannot win another nation's internal war for them. We can provide aid, equipment, training, and advice. We can buy them time to build up their own forces and infrastructure. But in the end, to defeat insurgents, the threatened nation has to field its own forces, develop its own strategy, and find its own political solution.

Therefore, standing up capable indigenous forces ought to be the central focus of any American counterinsurgency effort. Yet the cultural preference of the U.S. military is to view its own operations as the main effort and the training and equipping of foreign forces as a secondary mission. In Iraq, the U.S. Army and Marines did not make building the Iraqi army a priority until 2005. Little was done to build an Iraqi air force until 2006. The U.S. military mentality has put us years behind. The issue of time is especially important for air forces because it takes much longer to build an air force than it does an army due to the requirement for many highly trained specialists.

Training foreign air forces is a skill that the U.S. military has largely forgotten. But in the past, we had a strong record of building allied air forces. In the 1940s, the United States and Great Britain stood up a Greek air force that helped defeat the insurgency in that country. In the 1950s, Washington built a Philippine air force that helped defeat the Huk insurgency. In the 1960s, a small group of American advisors trained and equipped the Laotian air force, which by 1966–1967 was more successful than the U.S. Air Force

at destroying North Vietnamese vehicles and installations on the Ho Chi Minh trail.[5]

Moreover, we tend to forget that the U.S. program to train and advise the South Vietnamese Air Force (VNAF) was one of the success stories of the Vietnam War.[6] Flying older U.S. aircraft, VNAF units provided effective air support for the U.S. Army in the Mekong Delta in the 1960s.[7] The VNAF's combat performance was good throughout the war, and as the United States turned control over to the South Vietnamese, the VNAF took up the burden. In the spring of 1972, it flew thousands of sorties in the successful air effort to defeat the grand North Vietnamese offensive. However, the initiative to build that force also highlights some of the complexities in supporting an allied air force. The VNAF's biggest problems were shortages of trained personnel, mechanics, and parts. While the air force had plenty of aircraft, operational rates were low due to a weak infrastructure.[8]

Coming out of Vietnam, the United States carried out a successful effort to build an effective air force in El Salvador during that nation's insurgency from 1981 to 1992. The Salvadoran air force was primarily a helicopter force, and its growth through U.S. aid and advisors gave the Salvadoran army the ability to respond quickly to rebel attacks. The provision of medevac helicopters raised the morale and fighting effectiveness of the army, and air force gunships provided helpful close air support to ground troops.[9] The El Salvador experience is a model of doing it right.

Despite this experience, the U.S. Air Force's new counterinsurgency doctrine, Air Force Doctrine Document 2–3, *Irregular Warfare* (August 2007), uses 94 pages to highlight how the Service can fight insurgents but hardly mentions the vital mission of training the host nation air forces. When the mission is mentioned on a few pages, it is in the most general terms. In contrast, Army and Marine Corps counterinsurgency doctrine has a more detailed discussion concerning the requirements for building indigenous air forces. Although all the counterinsurgency *theories* emphasize building the host nation capabilities as a key to success, our own *strategy* tends to ignore this. Currently, the Air Force has fewer than 300 personnel to cover the worldwide mission to train allied nation air forces. We need to revamp all our Service doctrine—and our strategy—to put considerably more effort into the training and advisory mission. Few U.S. efforts have paid off more handsomely, at relatively little expense in manpower and equipment.

Appropriate Equipment for Allies

Another area in which the Army/Marine counterinsurgency doctrine is far superior to the new Air Force doctrine is in its discussion of equipping host nation air forces. FM 3–4 recommends the use of inexpensive and relatively simple aircraft and technology for Third World allies facing insurgency.[10] In the Air Force counterinsurgency doctrine, the issue of providing appropriate equipment to Third World allies is not even addressed. Simply put, the Army/Marine doctrine recognizes that effective counterinsurgency is not only about using U.S. forces, but also about helping allied nations win their own wars. Allied nations threatened with insurgency need their own air forces, but U.S. aircraft and systems are too expensive and sophisticated for Third World nations to operate and maintain.

What kind of aircraft and systems do small allied nations need? Ideally, they should be easy to maintain, survivable, able to operate from rough airfields, and capable of assuming strike or surveillance roles. In the years after World War II and Vietnam, the United States had plenty of surplus aircraft that fit the bill, but they are no longer in the inventory. One solution is to design a new counterinsurgency aircraft suitable for small allied nations.

Luckily, American initiative is not dead. In late 2003, for instance, a group of designers and manufacturers formed the U.S. Aircraft Corporation and began to build a simple and inexpensive counterinsurgency aircraft. The result is the A–67 Dragon, a light two-seater turboprop specifically designed for survivability (armored cockpit), light strike, and long endurance. Its simplicity ensures that a Third World air force can operate and maintain it. The low cost will make it possible for the United States to provide it in adequate numbers to allied nations. The A–67 has incorporated several features that are essential for counterinsurgency. It has an exceptionally long endurance, over 10 hours, which means it can keep a large area under surveillance for a long time. Use of aircraft in the surveillance role has historically been one of the most effective means of observing insurgent activity and inhibiting insurgent movement. The trained observer in the back seat with high-power lenses is still a quite dependable way to monitor ground activity. It might not be as good as some of our high-tech systems, but it is something a Third World nation can easily do. Because gunships have also been a successful means for small air forces to provide close air support in counterinsurgency, the U.S. Aircraft Corporation is experimenting with modifying the CASA 212 twin-engine transport as a gunship.

It is remarkable that the initiative to field simple, effective aircraft for counterinsurgency did not come from the U.S. Air Force but rather from the civilian sector. It also illustrates how far we have gone in making the high-tech war part of our military culture and doctrine. However, one sign of progress is that the U.S. Air Force Special Operations Command now has great interest in these initiatives. As FM 3–24 noted, while there is an important role for high-tech airpower, there is also a vital role for low-tech means in conducting counterinsurgency. **JFQ**

NOTES

[1] Field Manual 3–24/Marine Corps Warfighting Publication 3–33.5, *Counterinsurgency* (Washington, DC: Headquarters, Department of the Army/Headquarters, Marine Corps Combat Development Command, December 2006).

[2] Ibid., paragraph 6–98.

[3] James S. Corum and Wray Johnson, *Airpower in Small Wars* (Lawrence: University Press of Kansas, 2003).

[4] Chair Seán MacBride, *Israel in Lebanon: Report of the International Commissions to Enquire into Reported Violations of International Law by Israel during Its Invasion of Lebanon* (London: The International Commission, 1983), 147.

[5] On the campaign of the Royal Laotian Air Force against the Ho Chi Minh trail, see Jacob van Staaveren, *Interdiction in Southern Laos* (Washington, DC: Center for Air Force History, 1993), 209, 214.

[6] A good overview of the early years of the U.S. advisory mission to the VNAF is Robert Futrell, *The United States Air Force in Southeast Asia: The Advisory Years to 1965* (Washington, DC: Office of Air Force History, 1981).

[7] The author's brother, 1LT Michael Corum, served in Vietnam in the Delta region from 1967 to 1968. He called for close air support several times and received support from VNAF units flying A–1 Skyraiders.

[8] James Willbanks, *Abandoning Vietnam* (Lawrence: University Press of Kansas, 2004).

[9] For an overview of this campaign and the role of airpower, see James S. Corum, "The Air War in El Salvador," *Airpower Journal* (Summer 1998).

[10] FM 3–24, annex E, paragraphs E17–E18, E–31.

National Security and Global Climate Change

By SEAN C. MAYBEE

The uncertainty, confusion, and speculation about the causes, effects, and implications of global climate change (GCC) often paralyze serious discussion by polarizing decisionmakers and the public into camps of "believers" and "skeptics." The intention of this article is not to present a case for or against scientific indications of global climate change, but to consider how it would pose challenges to national security, explore options for facing those challenges, and finally consider roles for the United States in general and the U.S. military in particular in the many low-likelihood/high-consequence events that this threat could present.

In April 2007, the Center for Naval Analyses (CNA), in coordination with 11 retired three- and four-star generals and admirals, released a report concluding that projected climate change poses a serious threat to America's national security.[1] This article develops many of the ideas in that report by offering another way to consider the actual threats from GCC and expanding on what could be done to combat them. Specifically, it adds substance to the CNA report's third recommendation: "The U.S. should commit to global partnerships that help developed nations build the capacity and resiliency to better manage climate impacts."

For the purpose of this essay, *national security* is defined as the need to maintain the safety, prosperity, and survival of the nation-state through the use of the instruments of national power: diplomatic, informational, military, and economic. Of the sources of national power, economic and informational power will be the drivers of GCC responses as they provide the needed resources, ideas, and technology. It will be through invoking military and diplomatic power that resources are used and new ideas are implemented to overcome any GCC challenges. In addition to fighting and winning the Nation's wars, the U.S. military has a long history of humanitarian assistance and disaster relief, but the potential impacts of GCC should lead national security policymakers to consider how environmental security[2] will play a role in the future.

An important aspect of GCC is the fact that some of its predicted effects will, on a human time scale, be permanent. The persistence of GCC effects magnifies impact as people will be forced to adapt dramatically or to relocate permanently. For this assessment, some GCC effects identified by the Intergovernmental Panel on Climate Change (IPCC), Fourth Assessment Report, are considered.[3] The IPCC represents a consensus on current climate change science, with the last report having over 2,500 reviewers and 1,300 lead and contributing authors. According to the IPCC, climate change is going to affect ecosystems that people depend on for their existence. That will mean different things in different parts of the world—perhaps drought in some places and declining fish stocks in others. When people no longer have access to what they need for survival, they will take some action to secure their needs or they will die. The CNA report called climate change a "threat multiplier" for instability that will likely compound threats for stable regions as well. Along with ecosystems, other potential casualties from GCC are the political, social, and economic systems that underpin every society and ultimately guarantee the fundamental needs of life. The overall result is that climate instability may lead to many local political, social, and economic instabilities and therefore *global* insecurity.

The Threats

Certainly, each GCC effect could be considered a threat to U.S. national security, especially if severe. If the United States were certain that a specific effect would be felt at a certain time and place, the Nation could adapt to or mitigate that threat directly. But in fact, the threat to national security is the combined assault on societies, economies, and governments by the different GCC effects.

The following figure outlines how GCC effects may mount over time, eventually directly impacting humans and leading to economic disruption, social disorder, and possibly failed states. It is critical to note that

Multi-National Corps–Iraq (Curt Cashour)

Sun sets over airfield at Al Asad Air Base

there is a tipping point when climate change effects on ecosystems and the physical environment begin to affect humans and human systems (such as transportation, economics, food, and energy production). Where, when, and how those intersections occur will be different for each region, but as direct effects accumulate, so do indirect (and unanticipated) ones that would likely increase global instability. The most important aspect of the figure is its depiction of how broad climatic changes may affect everyone locally and how those local impacts may cascade into greater overall problems.

It is debatable whether competition for basic resources—water, land, food—will lead to state-on-state conflict. Some studies suggest that universal or shared threats serve to bring groups together by providing a common ground for cooperation. For example, some fear wars over water as a threat, though one recent study indicates that water scarcity has actually led to conflict resolution, *not* confrontation.[4] It remains to be seen if GCC unifies countries or whether its deprivations will force states to attempt to seize resources from neighbors before economic and social discord become too severe.

Economic Disruption. It should be relatively easy to envision how a megafire enabled by prolonged drought or how massive hurricane damage could lead to some form of local economic disruption and then social disorder. Hurricane Katrina is the overused but highly evocative example. What cannot be overemphasized is how disruptions of cheap and efficient transportation, just-in-time supply chains, and other aspects of modern economies can lead to unanticipated and far-reaching consequences from localized events. Different GCC effects may be manifest in different regions, and regional capabilities to adapt to and overcome them will also differ greatly.

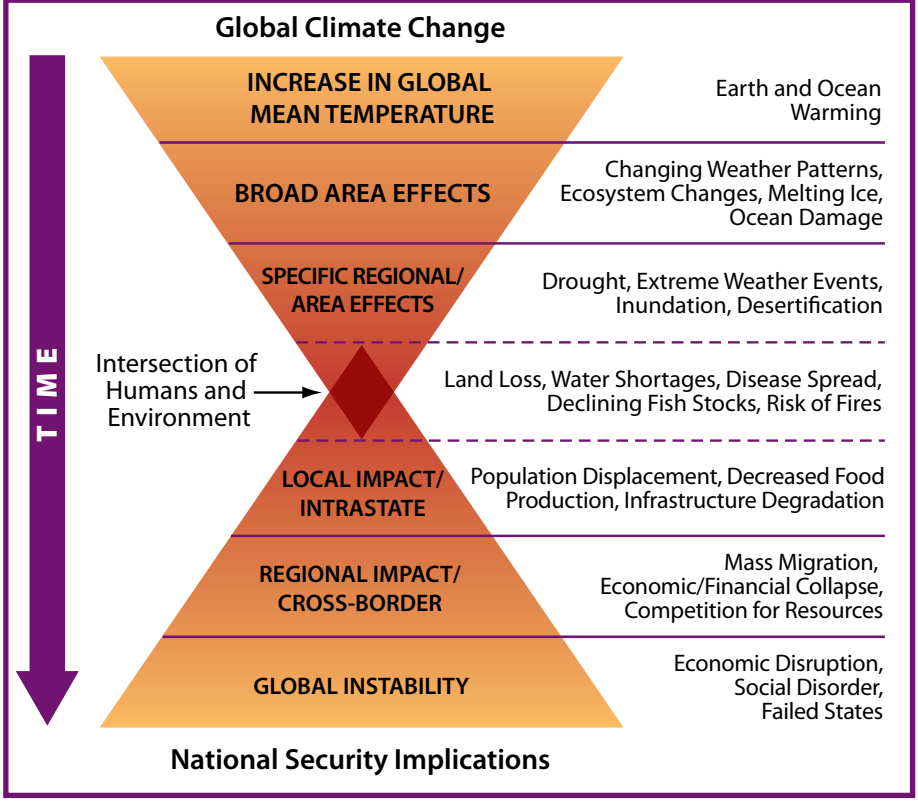
Social Disorder. People are going to take action when impacted by GCC. It is difficult to predict exactly what different groups will do, but surely they will seek food, water, dry land, jobs, and/or security when some or all of those things are taken away or are in jeopardy. The degree and nature of social disorder will be affected by the success or failure of governments to deal with GCC. Some governments will do well and others will not, but all social and political organizations will be challenged. It is the failure of those combined efforts that may lead to the collapse of central governments, failure of essential systems (for example, food distribution or energy production), or general insecurity with associated chaos.

Failed States. When states can no longer provide legitimate governance, economic opportunity, basic needs, and security, they should be considered failing.[5] A variety of factors contributes to the failure of states,[6] but surely the potential economic impacts and social disorder stemming from GCC could overwhelm some states. The vast majority of failing states today are in the developing world, which implies that wealthier, more established states may be better able to cope with GCC. There is a risk that failed states could export their troubles to neighbors in the form of refugees or insurgents, especially when ethnic, cultural, religious, or linguistic similarities create sympathies across (sometimes arbitrary) international boundaries. Sometimes populations in failed states react by embracing radical or authoritarian ideologies that promise to bring order from the chaos (consider Islamicist courts in Somalia and the rise of fascism in post–World War I Europe).

Mass Migrations/Displacement. For many, the greatest national security threat from climate change is the mass migration of populations fleeing from drought, inundation, failed states, or other GCC calamities. Under normal circumstances, cross-border migrations tend to cause instability and conflicts as demographic changes shift political, ethnic, or religious balances.[7] In some cases, migrations lead to few or only minor security implications, and certainly many nations have experienced migrations from the countryside into cities with little immediate disorder or violence. Rather, large internal rural-urban migrations create longer term challenges for governments to provide the services and jobs needed by large urban populations.

Climate change does not respect political borders. People may be forced to move across those boundaries to access more secure food and water supplies. Predicting precisely

National Security Threats from Global Climate Change Continuum



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how populations may respond to changes in the ecosystems that support them is difficult because of multiple outside factors, but when people no longer have access to the water, food, or physical security needed for survival, they move. Consider Iraq, Sudan, Democratic Republic of Congo, Zimbabwe, Chad, and Bangladesh—all on *Foreign Policy*'s list of failed or failing states. What is the current capacity of their neighbors to accommodate large influxes of people for any period of time? Toss in systemic pressures resulting from GCC, and the national security threats from migration-generated instability and conflict become real.

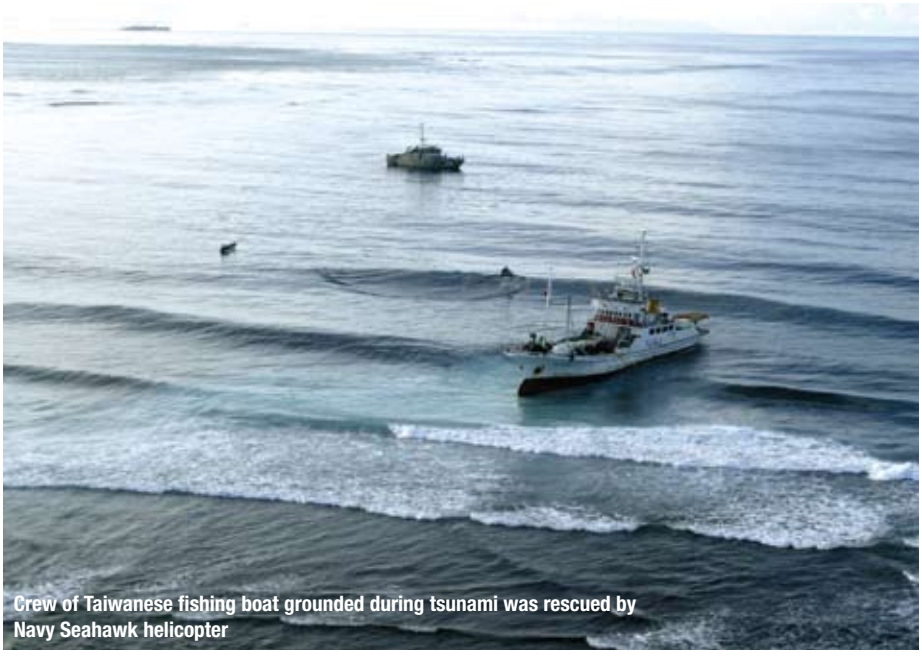
What to Do?

Clearly, both global climate change and its effects are fraught with uncertainty in almost every aspect, but lurking in this fog of speculation is the reality of a whole spectrum of low-probability/high-consequence events that requires consideration. The level of uncertainty is so great that deliberate action to combat any specific consequence is premature, and no mandate exists for immediate commitment of resources (for example, it is too soon to start relocating major facilities out of low-lying areas for fear of rising sea levels). This does not mean that the United States should not be considering how to respond to GCC's presumed consequences. Developing capacity to respond and establishing resiliency to GCC could have far-reaching benefits—combating instability, for example—even if GCC proves less dramatic than feared.

Current U.S. experiences in Iraq, Afghanistan, and the Horn of Africa highlight the tremendous effort it takes to rebuild and stabilize countries or regions and the need to partner with the international community. The traditional shooting war in Afghanistan and the invasion of Iraq lasted only weeks, but the rebuilding efforts have lasted years with no end in sight. The possible expansion of this type of mission has implications for the type of military forces the United States needs to build for the future. The forces that will most likely respond to humanitarian crises—manmade or resulting from climate change effects—must also be capable of handling the political, social, and economic impacts. Much of the work for establishing effective governance, restoring civil services and other infrastructure, or running food distribution systems is not a military responsibility. Indeed, there are U.S. Government agencies and many nongovernmental organizations better suited to carry out these functions while the military assists with security and logistics. That being said, U.S. experience in winning the peace in Iraq has shown that conditions may exist whereby a military force may have to do it all.

U.S. Army

Village elders help Afghan National Police and coalition forces hand out humanitarian aid



U.S. Navy (Andrew Meyers)

Crew of Taiwanese fishing boat grounded during tsunami was rescued by Navy Seahawk helicopter

when people no longer have access to the water, food, or physical security needed for survival, they move

By far, it would be better to prevent global climate change than respond to its effects or rely on the resiliency of existing systems as those effects manifest themselves. There are many mitigation strategies running the gamut from planting more trees and carbon sequestration to increasing energy efficiency and expanding the use of alternative energy sources. All of the ideas have merit, but the challenge is to build a global consensus on which strategies are the best and to create avenues to develop, test, and implement them. The United States should lead this effort diplomatically, and the military can set the example by aggressively pursuing energy efficiency and developing/adopting alternative energy solutions.

Emerging Threats and GCC Crises

In the absence of clear and specific threats, having the capacity to respond to GCC successfully will take strong political and social institutions. Today, few governments have the ability to combat current environmental problems or humanitarian disasters, prevent or moderate the indirect effects from these problems, or mount humanitarian relief operations. The U.S. military has a long history of providing humanitarian assistance and continues to commit personnel and resources to humanitarian relief.[8] It is already positioning itself for and has some experience in addressing unstable states (for example, Joint Task Force–Horn of Africa). As part of the war on terror, the military has recognized the potential for unstable and/or failed states to foster or harbor terrorism and is developing a capability to enhance the ability of fragile countries to govern effectively, thereby spoiling otherwise fertile ground for extremism to grow.

Interest in Africa, where the United States has traditionally had only passing military concerns, is growing. A dedicated U.S. Africa Command (USAFRICOM), a first step to gaining knowledge and experience on the continent, has been established. Initial indications are that USAFRICOM will not be a traditional combatant command but rather will embrace nongovernmental organizations and promote development and sustainability as a means to combat terrorism and instability. Clearly, environmental security concerns may be a set of unifying issues that USAFRICOM can adopt to gain trust and have a lasting positive impact on the continent.

the potentialities of global climate change may require a fresh look at the resiliency of the U.S. military

Strengthening the Systems

Resiliency is a measure of how quickly societies, governments, and systems can recover from a GCC effect. Resiliency and its counterpart, *redundancy*, are key elements to ensuring essential resources and services are always available. Part of creating resiliency is preparing for existing systems, which have worked well for a long time, to fail. It is speculating on *how* they will fail or will be threatened and then spending money—sometimes extraordinary amounts—to ensure their continued operation. Clearly, investing in resiliency is important even without GCC considerations, and the benefits can be profound.

Resiliency has always been a national security concern and is embedded in military planning and operations due to the uncertainty of warfare and conflict. That being said, the potentialities of GCC may require a fresh look at the resiliency of the U.S. military. One obvious concern is the vulnerability of military installations to sea level rise or increased storm activity. More subtly, how will equipment and personnel be affected by changed environmental conditions? Even more intangibly, how will unintended economic and social ripple effects impact the ability to build, maintain, and deploy the military?

As the national debate unfolds, the resiliency of national systems (energy, food, economic, military) should be considered. The interdependency of world systems and ripple effects point toward a greater concern regarding the resiliency of other regions of the world. The instability that may result could become a threat to national security. The resilience of a government and its capacity to respond will depend on the challenges it faces, but some governments will no doubt be more successful

U.S. Navy (Benjamin D. Glass)

Tsunami victims board C–130 from Banda Aceh to Jakarta for medical treatment by staff from USS *Abraham Lincoln*

2d Marine Expeditionary Unit (Peter R. Miller)

Survivors of Cyclone Sidr gather to receive medical aid in Bangladesh

than others. The other fundamental question is what happens in nations where the government fails to meet the challenges of climate change. No one knows, but when government X fails, there will be some form of internal strife as competing groups vie for control. The ensuing conflict may further decrease any subsequent government's ability to deal with GCC impacts while amplifying the effects, a cycle that is difficult to break.

The Way Ahead

The world that will face upcoming challenges from GCC will be different from the world that fought the Cold War and muddled through its aftermath. There is greater potential for world prosperity and peace, but there are many significant problems that need attention: demographic imbalances (income, population, age, gender), religious conflicts, drug and human trafficking, nuclear proliferation, and pandemics, to name just a few. Unfolding GCC may greatly exacerbate these problems and if allowed to continue unmitigated may lead to greater problems that transcend these issues.

By recognizing that GCC will affect humans in many direct and indirect ways, the United States can begin to consider how best to prepare for the economic disruption, social disorder, and failed states that may result. Most agree that some climate change impact is already being seen. Regardless, mitigation is clearly preferable to adaptation, but the economic and political realities of today may delay effective efforts in that regard. The result is a need to build resiliency in systems to withstand GCC impacts and develop a capacity to respond when required. The developed world in general and the United States in particular must play a leadership role by developing effective methods for dealing with GCC effects, fostering and distributing technological solutions, and assisting those less able. The CNA report sums it up well: "The U.S. government should use its many instruments of national influence, including its regional commanders, to assist nations at risk build capacity and resiliency to better cope with the effects of climate change."

The national security implications of GCC pose unique challenges for the United States in part because it is best suited to lead counter-GCC efforts. The Nation has the economic and informational power to develop and resource effective methods and the international status to foster global cooperation and implementation. The U.S. military already has a robust capacity to respond and could continue to develop and use it to help other nations to build that capacity. In addition, by addressing environmental security, the United States may foster trust and cooperation while beginning to anticipate some GCC effects.

Mitigating and instilling resiliency while building a capacity to respond will do far more than make the world safer from climate change. Effective mitigation could help clean the environment and eliminate oil dependency. Building resiliency and capacity to respond by promoting good governance, especially in less developed regions, could help alleviate any number of endemic problems. The way ahead for identifying global climate change as a national security threat therefore has the benefit of directly addressing and helping solve other serious national security concerns. **JFQ**

NOTES

[1] Center for Naval Analyses, *National Security and the Threat of Climate Change* (Alexandria, VA: The CNA Corporation, 2007), available at <securityandclimate.cna.org/report/>.

[2] *Environmental security* is defined as the relationship between security concerns and the natural environment.

[3] Available at <www.ipcc.ch/ipccreports/ar4-syr.htm>.

[4] Marc A. Levy, "Freshwater Availability Anomalies and Outbreak of Internal War: Results from a Global Spatial Time Series Analysis," International Workshop on Human Security and Climate Change, June 2005.

[5] Comments by Susan Rice, "Too Poor for Peace?" Global Poverty, Conflict, and Security in the 21st Century Symposium, The Brookings Institution, June 5, 2007.

[6] Foreign Policy and the Fund for Peace, "The Failed States Index," May-June 2007, available at <www.foreignpolicy.com/story/cms.php?story_id=3420>.

[7] National Intelligence Estimate (NIE), *Growing Global Migration and Its Implications for the United States* (NIE 2001–02D), March 2001, available at <www.fas.org/irp/nic/migration.pdf>.

[8] The U.S. response to the 2005 tsunami, the deployment of the hospital ship USS *Comfort*, and the humanitarian deployment of the USS *Peleliu* transporting medical staff and nongovernmental organizations are good examples.

Military Culture and Transformation

By MICHAEL B. SIEGL

Innovation is a complex process that is neither linear nor always apparent. The interactions among intellectual, institutional, and political-economic forces are intricate and obscure. The historical and strategic context within which militaries transform compounds this complexity. Nevertheless, factors such as military culture, technological modernization, doctrinal development, and organizational and tactical innovation have influenced the ability to transform. Indeed, the inextricable confluence of these factors determines the success of transformation.

The period between 1914 and 1945 shows the dynamic nature of military innovation and the difficulty military organizations face in adapting to the changing global strategic environment and evolving threats. This article highlights three case studies from this period and considers both successful and unsuccessful transformational efforts. These studies can clarify current problems and provide possible solutions for the U.S. military's own transformation.

Primacy of Culture

Military culture is the linchpin that helps determine the ability to transform because it influences how innovation and change are dealt with. Its implications for U.S. military transformation are thus profound. The ability to harness and integrate technological advances with complementary developments in doctrine, organization, and tactics is dependent on the propensity of military culture to accept and experiment with new ideas. Therefore, focusing on developing and shaping a military culture amiable to innovation and continuous change will help create the conditions for current transformation efforts to be effective and successful.

Military culture comprises the attitudes, values, goals, beliefs, and behaviors characteristic of the institution that are rooted in traditions, customs, and practices and influenced by leadership.[1] Every organization has a culture. It is "a persistent, patterned way of thinking about the central tasks of and human relationships within an organization. Culture is to an organization what personality is to an individual."[2] Culture will dictate how an organization responds to different situational challenges. It also consistently shapes how the military views the environment and adapts to meet current and future challenges.

Some may view organizational behavior as the sum of all individuals' behaviors within the organization. However, organizational culture will also dictate the behavior of those individuals. As Robert Keohane states, "Institutions do not merely reflect the preferences and power of the units constituting them; the institutions themselves shape those preferences and that power."[3] In this way, organizations and individuals affect each other's behaviors. The differences in the military Services—in both the behaviors of the organizations as a whole and the behaviors of the individuals within those organizations—are readily apparent. Each Service develops solutions to problems defined through the lens of its historical and cultural experiences. Moreover, as James Wilson notes, an organization "will be poorly adapted to perform tasks that are not defined as part of that culture."[4] Therefore, for the military to be fully competent in the tasks of joint (let alone interagency) operations, leaders need to ensure that all the tasks are embraced as part of the organizational culture.

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U.S. Air Force

MB–2 from Billy Mitchell's provisional air brigade bombed and sank obsolete USS *Alabama* in Tangier Bay, September 27, 1921

Underwood and Underwood (War Department)

French cannon fires at German lines, 1918

The military is based on core missions that standard operating procedures and routine tasks reinforce, providing stability and reducing uncertainty. The military strives for these conditions, so it is natural for it to resist change or adopt technologies that enhance existing missions rather than create new ones, especially if it perceives change as detrimental to core missions. Transformation in the military will take time if only because of the time it takes to change cultures.

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Post–World War I France

The French military after World War I provides a case study of the failure to transform because of culture. Williamson Murray portrays the French military as fragmented by the leadership's design and thus incapable of dealing with important issues.[5] More significantly, French military culture placed a premium on silent consent. With the high command as the only authority for doctrine, there was little incentive for a large portion of the officers to examine the lessons of World War I.[6] A culture that discouraged open discussion and examination led the military to rely on doctrine that espoused the "methodical battle." With artillery and the firepower it provided being integral to the military's core tasks, the French developed and used the tank within the parameters of their doctrine. Seeing only a weapon that reinforced the methodical battle, they were unable to adapt and incorporate the tank into a new set of tasks and missions emphasizing mobility and maneuverability.[7] Moreover, their military culture prevented them from developing a doctrine that incorporated the benefits of armored warfare to match the German blitzkrieg in 1940.

Murray and Allan Millet portray an interwar period where militaries across Europe, Japan, and the United States faced budgetary constraints, rapid technological advances, and unknown and ambiguous requirements. The ability of some militaries to transform while others were less successful was due to different cultures. Those that were receptive to honest self-assessment and intellectual rigor within open debate were able to overcome the inertia so ubiquitous in organizations that relied on conformity and continuity.[8]

Interwar Germany

The Germans, from 1914 to 1942, provide an insightful case of the ability of culture to create the conditions for adaptation and innovation. Persevering attempts to learn the lessons of the past at all levels, willingness of leaders to listen to lower ranking officers, and the ability to face the brutal facts can often lead to a coherent doctrine and adoption of innovative technology. The German military leadership after World War I conducted a comprehensive examination of the lessons of the war. Over 400 officers formed at least 57 committees with the guidance to look honestly at what occurred during the war and determine what new problems had arisen.[9] The leadership incorporated the committees' assessments into Army Regulation 487, "Leadership and Battle with Combined Arms."[10]

This type of culture provided the impetus to develop new doctrine and to adopt weapons systems such as the tank. Integral to this, the German army tested its doctrine and new technologies throughout the interwar period to ensure continued realistic assessments. After the invasion of Poland in 1939, the army continued its critical self-assessments, which later helped in its invasion of France. As S.J. Lewis observes, "The senior and mid-level officers who so critically observed the army's performance were the product of a particular military culture."[11] This occurred even when Adolf

U.S. Navy (Brandon Myrick)

Navy Landing Craft Air Cushion train off coast of Okinawa

F–22A trains with Navy F/A–18

U.S. Air Force

Hitler had forced many senior generals out of the army.[12] Paramount was a military culture that actively incorporated the products of open discussion and honest self-reflection into new tactics and organizations, including the reorganization of motorized divisions.

Interwar U.S. Marine Corps

The U.S. Marine Corps during the interwar period provides another example of military culture creating the conditions for change. The Corps was able to change its mission fundamentally from that of a naval infantry organization to the leading Service in amphibious assault operations, which required a more coordinated combined arms approach. While the Japanese and British dealt with similar amphibious warfare issues, the United States had a single Service that was willing to adopt the requirement as its mission. A vision of the Marine Corps' future, which senior leadership communicated throughout the Corps and which its members adopted and shared, provided the direction and purpose to focus creative efforts.

Thus, the Marine Corps' culture, initially driven by the leadership of Generals John Lejeune and John Russell, accepted a new mission. This change helped distinguish the Marine Corps from the Army and save it from possible institutional extinction during the Great Depression.[13] Fear of demise was a powerful motivator in driving the Corps to develop new doctrine (*Tentative Manual for Landing Operations*) and an organizational structure that facilitated amphibious assaults (the Fleet Marine Force).[14]

More fundamental, however, was a culture that allowed junior officers to help develop doctrine that became the foundation of the Service's mission. This culture facilitated open debate on lessons learned through study and experimentation of amphibious assault operations and allowed the Corps to develop a relevant doctrine and organizational structure. The free flow of information and ideas, and the seriousness in examining and applying them at all levels, allowed the organization to adopt relevant technologies suited to their needs, such as amphibious warfare ships. While the British and Japanese faced similar obstacles and developed their own amphibious warfare doctrine and tactics, they were not as successful as the U.S. Marine Corps. As Millett states, "There must be a foundation in institutional commitment, and a major organizational embrace of a new mission."[15] The right type of military culture allowed the Marines to embrace their new mission.

Lessons Learned

These case studies highlight enduring themes. First, transformation and innovation are the results of a continuous, deliberate process of learning and adapting. While the use of the tank in blitzkrieg seemed a dramatic departure from past doctrine to many outside Germany, the Germans had been refining their doctrine and experimenting in armored warfare for many years prior to 1940. Thus, it was an evolutionary change. However, once the Germans started to forgo continuous reassessment and rely primarily on technologies such as newer tanks without adapting tactics and doctrine to emerging challenges, they were defeated.

the right type of military culture allowed the Marines to embrace their new mission

An implication for current transformation is that we should not view it as something that will occur suddenly, leaving no time for preparation. The naval and amphibious assaults in the Atlantic and Pacific during World War II illustrate an iterative and cyclic process of change in developing improvements and counterimprovements by all sides. It requires a constant effort that reassesses doctrine, tactics, and organizational structure to meet changes in the operational environment.

Another theme of successful change is that innovations in tactics, doctrine, organizations, and training must develop along with technological modernization for change to be enduring. Technology can drive change. However, there will have to be corresponding changes in other factors to make it truly transformational. The French use of the tank altered some of their methods, but did not fundamentally refashion other factors such as doctrine. As a result, enduring change was elusive.

Doctrine should serve as a framework to provide insights into the circumstances forces may face. It will mitigate uncertainty but not eliminate it. Doctrine cannot anticipate the evolving chaotic and asymmetric operational environment militaries will engage in; therefore, it should not be prescriptive. However, it can help create the conditions for success. The ability to develop plans that can match

Above: French crew inspects artillery piece and caisson, 1937

Left: Marines conduct amphibious assault on Bougainville, November 1943

the context of a specific environment will rely on a flexible doctrine that can adapt. Therefore, doctrine must evolve with the changing requirements of the operational environment to ensure an organization remains relevant and viable.

Organizational redesign is critical to matching changing requirements, but many leaders will be tempted to move only the organizational chart boxes. Reorganization without an overarching strategy will likely produce little effect. Instead of rearranging boxes, realigning the design and management of processes and the way organizational members interact, process, and share information to produce outcomes will create adaptability.[16] Realignment must take a *systems* approach. Leaders must understand the complexity of all the factors that create the organizational context within which change will take place. Any change to the structure must address the organization's core deliverables and the capabilities to deliver them. Therefore, any innovation or change that does not account for core deliverables is unnecessary. In developing its amphibious doctrine and reorganizing its force structure, the Marine Corps showed how doctrine and organizational change could succeed in maintaining a relevant organization in an evolving strategic environment.

Toward Real Transformation

The case studies highlight the vital primacy of military culture in shaping change. While efforts at developing new technologies and doctrine are important, concentrating on those efforts at the expense of developing a military culture comfortable with change can hinder current efforts. The issue becomes how a culture that is receptive to change can be developed and maintained in the first place. Leadership is a key factor in establishing the right culture. In all the case studies, leadership played a critical role in determining whether the culture allowed honest critiques of lessons learned, of assumptions, and of where the future resided for their military organizations. The leadership's ability to listen and incorporate many of the ideas of this flow of information allowed their militaries to develop and change. As Jim Collins points out, leaders who can create "a climate where the truth is heard and the brutal facts confronted" provide a mechanism for personal and organizational improvement.[17]

A *shared* vision provides members direction and purpose. Moreover, a *clear* vision provides the mechanism for maximized unity of effort. Leaders can foster a disciplined culture that encourages change and innovation by "creating a consistent system with clear constraints, but also [giving] people freedom and responsibility within the framework of that system."[18] Empowering individuals capitalizes on their resourcefulness. It entails underwriting the inevitable mistakes subordinates will make in developing innovative solutions and concepts. Leaders must communicate their desire to learn and adapt to subordinates, and they must encourage them to learn from mistakes without retribution and to continue developing creative ideas. Such efforts will build confidence in subordinates and increase their stake in the organization's future. Without such loyalty, an organization will not adapt to changes in its environment.

The ability to generate discussion, serious examination of self and the organization, and experimentation and application of new ideas and technologies requires officers to have intellectual rigor and critical thinking. One develops these capacities through an educational system that teaches *how* to think and not *what* to think. Diversity in opinions must be encouraged and not simply tolerated.

Unfortunately, the contemporary educational system, especially at the junior levels, has placed "a premium on solving problems at hand rather than constructing a viable philosophy of life."[19] Education also requires students to take upon themselves the responsibility to learn. Roger Nye discusses the need for military professionals to develop their own "inspiration[s] to reach for excellence."[20] This provides the motivation to inquire about the nature of things, to create new and innovative solutions, to adapt to change, and to make the study and practice of critical thinking an integral part of their lives.[21] This way of thinking allows an officer corps to anticipate challenges in an operating environment that is likely to change faster than transformational endeavors. The implication is a need to concentrate on the education of officers as much as on technological, organizational, and doctrinal innovations.

The symbiotic relationship among factors such as military culture, technological modernization, doctrinal development, and organizational and tactical innovation has influenced the ability to transform. Military culture is the cornerstone around which all other factors build to generate enduring change. It determines whether the organization is able to learn and adapt through critical assessment and experimentation with and application of new ideas and technologies. It provides the flexibility to develop and link innovations in technology to doctrinal, organizational, and tactical improvements. Developing and maintaining an adaptable military culture requires leadership that fosters creative and innovative thought. It requires leaders who encourage individuality and critical thinking within broad parameters bound by discipline. Finally, it requires individuals to adopt the motivation for self-study and self-awareness and to strive for the professional visions they have created for themselves. Thus, it is essential that our current transformation efforts focus on developing the right military culture as much as they do on the other factors. **JFQ**

NOTES

[1] Field Manual 22–100, *Army Leadership: Be, Know, Do* (Washington, DC: Headquarters, Department of the Army, August 1999), 3–14.

[2] James Q. Wilson, *Bureaucracy: What Government Agencies Do and Why They Do It* (New York: Basic Books, 2000), 91.

[3] Graham Allison and Philip Zelikow, *Essence of Decision: Explaining the Cuban Missile Crisis*, 2d ed. (New York: Addison-Wesley Educational Publishers, 1999), 157.

[4] Wilson, 95.

[5] Williamson Murray, "Armored Warfare: The British, French, and German Experiences," in *Military Innovation in the Interwar Period*, ed. Williamson Murray and Allan R. Millett (New York: Cambridge University Press, 2006), 31.

[6] Ibid., 31, 34.

[7] Ibid., 32.

[8] Ibid., 47.

[9] Ibid., 37.

[10] Ibid.

[11] S.J. Lewis, "Reflections on German Military Reform," *Military Review* (August 1988), 60–69.

[12] Ibid.

[13] Allan R. Millett, "Assault from the Sea—The Development of Amphibious Warfare between the Wars: The American, British, and Japanese Experiences," in Murray and Millett, 75.

[14] Ibid., 75.

[15] Ibid., 94.

[16] Allison and Zelikow, 265.

[17] Jim Collins, *Good to Great: Why Some Companies Make the Leap . . . and Others Don't* (New York: Harper Collins, 2001), 74.

[18] Ibid., 125.

[19] Roger H. Nye, *The Challenge of Command: Reading for Military Excellence* (Wayne, NJ: Avery Publishing Group, 1986), 4.

[20] Ibid., 3–4.

[21] Ibid., 5–8.

Sourcing Perception Warriors

In this battlefield, popular perceptions and rumor are more influential than facts and more powerful than a hundred tanks.

—David Kilcullen[1]

By C. GLENN AYERS *and* JAMES R. ORBOCK

In a counterinsurgency fight, shaping the perception of host nation populations is essential to stripping an insurgency of its core means of support. There are numerous avenues available to shape perceptions, but each involves actions to reinforce communications. The premier units capable of shaping perceptions are civil affairs (CA) and psychological operations (PSYOP) forces. Since the attacks of September 11, 2001, the Department of Defense (DOD) has extensively deployed CA and PSYOP forces. Additionally, within DOD, organizational changes have intensified the stress on these Reserve Component forces. Because of these operational requirements and organizational changes, the Department of Defense must readdress how it is to source these perception warriors in order to finish the long fight.

Keeping Order

In November 2005, the Deputy Secretary of Defense signed DOD Directive 3000.05, "Military Support for Stability, Security, Transition, and Reconstruction (SSTR) Operations,"[2] which states that "Stability Operations are a core U.S. military mission." In other words, the Services are to "be prepared to perform all tasks necessary to establish or maintain order when civilians cannot do so." Central to this fight is the directive to the commander of U.S. Joint Forces Command (USJFCOM) to "develop organizational and operational concepts for the military-civilian teams . . . including their composition, manning, and sourcing," as well as to "support Combatant Commander stability operations training and ensure forces assigned to USJFCOM are trained for stability operations."

Iraqi children chat with Soldiers in Taji

30th Space Wing (William Greer)

The resident stability operations unit within USJFCOM under U.S. Army Forces Command, the Army conventional unit force provider, is the U.S. Army Civil Affairs and Psychological Operations Command (USACAPOC). It is composed of four CA commands and two PSYOP groups. Major General Herbert Altshuler, former commander of USACAPOC, described its dual mission as:

the bridge between the military commander on the ground and the civilian population in his area of operations. This includes the population, its leadership, elected, appointed or assumed, and the institutions of government and culture of that population. Psychological Operations is an information-based capability. The job is to give the commander on the ground a means by which to communicate with selected foreign audiences in his area of operations to specifically influence their attitudes and behavior.[3]

These two unit types are critical in establishing the conditions for democratic rule of law, creating and shaping popular perception, countering rumors and misinformation, and acting as the frontline ambassadors of good will.

USACAPOC is a unique stability operations unit created from the Reserve force. To support conventional contingency operations, Soldiers must mobilize, train, and then deploy. Under current conditions, mobilization requires 30 days or more. Additionally, with limited

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numbers of Soldiers assigned to units, personnel are cross-leveled or brought from the Individual Ready Reserve to fill unit vacancies.[4] This cobbling together of units during the mobilization process sends minimally experienced units into a combat zone where complex and innovative solutions are required for success. Although these troops are great citizen-Soldiers, the minimal training and cohesion-building provided by the current deployment process produce less than optimal results.[5]

Additionally, to respond to short-notice crisis situations such as the tsunami disaster of 2004 or after the invasion of Panama during Operation *Just Cause* in 1990, the conventional force units must rely on the CA and PSYOP units assigned to U.S. Special Operations Command (USSOCOM). The only Active Component forces are in the 95th Civil Affairs Brigade and the 4th Psychological Operations Group. Both of these units are tasked to support special operations forces and do not possess excess capacity to support conventional force requirements.

An Operational Reserve

A near-term solution to the USJFCOM need for a resident CA and PSYOP capability is to revise current mobilization policies. By activating one Reserve CA brigade and one Reserve PSYOP battalion for 2-year mobilization periods, the units can be based at military installations in the United States for the first year while they increase proficiency through training, become available for short-notice contingency requirements, and then, in the second year, deploy to support ongoing worldwide commitments. The change in mobilization strategy would allow this Reserve unit to become an *operational* reserve instead of continuing the same *strategic* reserve policies created after World War II.

There is opposition to this plan. Some argue that Reservist income decreases with activation, there is undue hardship on families, there is insufficient time between mobilizations, there are not enough Soldiers to fill the ranks, and finally, the burden on employers is too great. Although these concerns are valid, all of these issues would be diminished with a 2-year mobilization rotation instead of the current policy outlined by David Chu, Under Secretary of Defense for Personnel and Readiness, which requires Soldiers to mobilize for a total of 1 year at a time.[6] In order to activate Reserve Soldiers for a 2-year period, DOD needs to modify current mobilization policies to maximize authorizations under existing congressional legislation.

cobbling together units during the mobilization process sends minimally experienced units into a combat zone

Regarding the first issue, RAND published a study concerning the activation and income of Reservists mobilized in 2001 and 2002.[7] The study concluded that the data show that "72 percent of the more than 100,000 troops surveyed saw their earnings jump 25 percent when called to active duty. Their average pay hike amounted to about $10,000 a year."[8] Additionally, "reservists who served for 270 or more days in a year saw their earnings jump by an average of 44 percent over normal pay."[9] It is often the transition from a civilian income source to an Active pay status that causes the most turmoil as household budgets must be reworked.

Second, by mobilizing Soldiers for a 2-year period, they can choose to move to permanent duty stations with their families. The benefit is that families can then create support groups that provide a social network while the Soldiers are deployed during their second year of mobilization. The additional benefit to the military is reduced financial costs by dependents using already established service centers such as medical facilities in lieu of more remote medical treatment providers.

Third, the 2-year mobilization increases the dwell time for CA and PSYOP units. Although there is a 2-year mobilization, only 1 year is an extended deployment cycle apart from family members; the other year is at a U.S.-based military installation. Once complete, it is 5 years and 4 months before the Soldier is mobilized again under the current force structure. By establishing an additional Reserve CA command and PSYOP group, the dwell time increases. Moreover, since there are standing forces to meet the conventional force requirements, Reservists in nonmobilized units can focus on professional development and maintain a scheduled 2-week annual training period. The result is a decrease in the operational pace of the average Reserve unit.

The first month of mobilization includes the administrative requirements involved in transitioning Solders to an Active status. The next 9 months allow for Soldiers to train at U.S. military bases, be ready for immediate deployment to support contingency operations, establish unit reporting procedures, and enhance their professional skill sets. This period also allows for rotations to combat training centers, such as the Joint Readiness Training Center in Louisiana and the National Training Center in California. The next 30 days are vacation time in preparation for the next 12 months of deployment. Once complete, the last 30 days include demobilization and vacation time.

The additional advantage of a 2-year mobilization is that Reserve units not filled to complete manning can have Soldiers from other units cross-leveled to fill shortages. These addi-

MG Herbert L. Altshuler, former commander of U.S. Army Civil Affairs and Psychological Operations Command (Airborne)

1st Combat Camera Squadron (Richard Rose)

tional fills can then get the needed specialized training to ensure effectiveness while deployed. Types of training can include language training, cultural awareness courses, and regional studies.

Finally, employers can adjust to a 2-year mobilization better than to multiple short-term mobilizations. When hiring Reservists, employers have little idea when these employees are to be mobilized. Second, to backfill the employee-Soldier position, the recruiting effort is for a temporary hire of 1 year. From a civilian recruiting perspective, 2-year fills are easier to find and offer continuity in the workplace.

Sourcing the Requirement

Although the 2-year mobilization is a needed immediate fix, the mid- to long-term solution is to have a resident CA and PSYOP capability with the standing Army divisions. The sourcing of these Soldiers could be a mix of Active and mobilized Reserve force Soldiers, so one battalion of CA and one company of PSYOP Soldiers are at each division. These resident Soldiers would provide the day-to-day perception warfare capability to the Army's primary combat element, the Brigade Combat Team.

To source this requirement, the Army could designate part of the congressionally authorized 65,000-troop increase for CA and PSYOP growth. The number of Soldiers per division would be just under 250. Across 10 divisions, 2,500 Soldiers would provide the basic capability to meet the conventional force needs. Creating such a force would further eliminate the constraints currently encountered at USJFCOM and enhance the day-to-day operational capability of the combatant commanders.

Although these are proposals within reach to fix the shift in the policy created in DOD Directive 3000.05, the real need is to create a new supporting command dedicated to winning the posthostility fight. The same forces at work to create USSOCOM after the failed Iran hostage rescue attempt are now at work to create a command that supports those involved in support, stability, reconstruction, and transition. The creation of a U.S. Stability Command would institutionalize DOD in the interagency and nongovernmental organization coordination process,[10] the support for military assistance teams for foreign internal defense,[11] and the preparation of DOD to fight small wars. It should be composed of units designed for post-hostility stability and reconstruction, disaster response, interagency coordination, and, most importantly, perception-shaping.

But as with every journey, a first step must be taken—and providing ample civil affairs and psychological operations Soldiers for continuing operations is such a step. **JFQ**

Soldiers distribute newspapers in Baghdad, 2007

Navy Expeditionary Combat Command (David Quillen)

Soldier broadcasts messages during patrol in Ghazni, Afghanistan

55th Combat Camera Company (Christopher Barnhart)

NOTES

[1] David Kilcullen, "Twenty-Eight Articles: Fundamentals of Company-level Counterinsurgency," *Small Wars Journal* (Online), March 2006, available at <www.smallwarsjournal.com/documents/28articles.pdf>.

[2] Department of Defense Directive 3000.05, "Military Support for Stability, Security, Transition, and Reconstruction (SSTR) Operations," November 28, 2005, available at <www.dtic.mil/whs/directives/corres/pdf/300005p.pdf>.

[3] Interview with Major General Herbert L. Altshuler, USA, *Special Operations Technology* 2, no. 2, available at <www.special-operations-technology.com/print_article.cfm?DocID=442>.

[4] William R. Florig, "Theater Civil Affairs Soldiers: A Force at Risk," *Joint Force Quarterly* 43 (4th Quarter, 2006), available at <www.ndu.edu/inss/Press/jfq_pages/editions/i43/17%20JFQ43%20Florig.pdf>.

[5] Sudarsan Raghavan, "Troops Confront Waste in Iraq Reconstruction, Inexperience and Lack of Training Hobble Oversight, Accountability," *The Washington Post*, August 25, 2007, A1.

[6] David S.C. Chu, "New Mobilization Reality," *National Guard* (February 2007), available at <http://findarticles.com/p/articles/mi_qa3731/is_200702/ai_n18706056>.

[7] David S. Loughran, Jacob Alex Klerman, and Craig Martin, *Activation and the Earnings of Reservists* (Santa Monica, CA: RAND, 2006), accessed at <www.rand.org/pubs/monographs/MG474/>.

[8] Donna Miles, "Most Reserve, Guard Members Earn More, Not Less, in Uniform," *American Forces Press Service*, January 26, 2006, available at <www.militaryconnections.com/news_story.cfm?textnewsid=1844>.

[9] Ibid.

[10] Vicki J. Rast, *Interagency Fratricide: Policy Failures in the Persian Gulf and Bosnia* (Maxwell Air Force Base, AL: Air University Press, June 2004).

[11] Robert B. Killebrew, "The Army and Changing American Strategy," *Army* (August 2007); and John A. Nagl, *Institutionalizing Adaptation: It's Time for a Permanent Army Advisory Corps* (Washington, DC: Center for a New American Security, June 2007), available at <www.newamericansecurity.org/publications/Nagl_AdvisoryCorp_June07.pdf>.

U.S. Air Force (Nic Raven)

GEN William Ward tours Botswana Defense Force camp

The Challenge That Is USAFRICOM

By ISAAC KFIR

Terrorist attack in December 2007 destroyed UN offices in Algiers

United Nations (Evan Schneider)

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On February 6, 2007, President George W. Bush announced the creation of a new unified military command for the African continent with its own headquarters and staff. The U.S. Africa Command (USAFRICOM) emphasizes Africa's growing importance in U.S. geostrategic thinking. Washington has come to realize that Africa—with its vast natural resources, rising population, and unexplored markets, coupled with internal instability, rampant disease, and terrorism—demands special attention.[1] North Atlantic Treaty Organization (NATO) Supreme Allied Commander, General Bantz Craddock, USA, expressed this view:

While Africa is rich in both human potential and mineral resources, it has historically struggled with relatively unstable governments, internal political strife, and economic problems. Many states remain fragile due to a variety of factors, including corruption, endemic and pandemic health problems, historical ethnic animosities, and endemic poverty.[2]

Ultimately, USAFRICOM emphasizes that U.S. policymakers have ceased to see the continent through the prism of the Cold War (bipolar competition).

This article explores the reasons behind the creation of the new command, points out some of USAFRICOM's main challenges in purpose and structure, and concludes with some critical observations and recommendations that could help to ensure its success.

Purpose and Structure

USAFRICOM appears to be part of Secretary of State Condoleezza Rice's new "transformational diplomacy," which focuses on the United States seeking to work with its partners and allies "to build and sustain democratic, well-governed states that will respond to the needs of their people and conduct themselves responsibly in the international system."[3] The distinctiveness of USAFRICOM arises from its purpose, which is not to fight wars but to develop and build partnerships specifically in the area of security cooperation. This means that the command will depart from the traditional J-code organizational structure. Rear

Admiral Robert T. Moeller, USN, the executive director of the USAFRICOM Transition Team, has stated that the command's primary mission will be preventing "problems from becoming crises, and crises from becoming conflicts."[4] Thus, USAFRICOM will focus on providing humanitarian assistance, encouraging civic action, improving the professionalism of African militaries, assisting in border and maritime security, and dealing with natural disasters.[5]

To establish USAFRICOM's agenda, DOD worked closely with the State Department, particularly the Bureau of African Affairs and the Bureau of Political-Military Affairs. It also cooperated with other agencies, especially the U.S. Agency for International Development (USAID). Michael E. Hess of the USAID Bureau for Democracy, Diplomacy, Conflict, and Humanitarian Assistance declared in testimony before the U.S. Senate Committee on Foreign Relations that USAID views USAFRICOM in a favorable light. Hess stated that USAID hoped the new command would advance the "Three D" (defense, diplomacy, and development) agenda. He maintained:

DOD can support national security objectives in ways that USAID cannot. DOD can help professionalize African militaries; strengthen the African regional security architecture, including African Standby Force; mitigate HIV/AIDS and other public health threats in the security sector; and provide disaster response capacity if others cannot. USAID participation in such efforts seeks to maximize effectiveness in ways that broadly support development and humanitarian objectives.[6]

The decision to create USAFRICOM arose out of realization that the current state of affairs in sub-Saharan Africa poses a serious threat to American national interests. Policymakers acknowledge that poverty, social injustice, malfeasance, disease, poor governance, and economic inequality play a role in fomenting terrorism and insecurity. Since the mid-1990s, Africa has increasingly attracted radical Islamists.[7] For example, in the magazine *Sada al-Jihad* (*Echo of Jihad*), Abu Azzam al-Ansari of the Global Islamic Media Front emphasized Africa's importance to al Qaeda:

There is no doubt that al-Qaeda and the holy warriors appreciate the significance of the African regions for the military campaigns against the Crusaders. Many people sense that this continent has not yet found its proper and expected role and the next stages of the conflict will see Africa as the battlefield. . . . In general, this continent has an immense significance. Whoever looks at Africa can see that it does not enjoy the interest, efforts, and activity it deserves in the war against the Crusaders. This is a continent with many potential advantages and exploiting this potential will greatly advance the jihad. It will promote achieving the expected targets of jihad. Africa is a fertile soil for the advance of jihad and the jihadi cause.[8]

Put simply, since the 1998 East Africa bombings of U.S. Embassies, American involvement in parts of the continent—especially the Horn of Africa, a volatile and dangerous area—centers around two initiatives: supporting socioeconomic and confidence-building programs and assisting in counterterrorism measures and training. These initiatives are clearly discernible in the Combined Joint Task Force–Horn of Africa (CJTF–HOA), which spends an enormous amount of time assisting in nonmilitary actions, such as building wells, mending infrastructure, and supporting development initiatives. At the same time, CJTF–HOA helps the region's security forces in counterterrorism.[9] It would seem that the CJTF–HOA model has helped shape the agenda of USAFRICOM.

A second principal reason behind the creation of USAFRICOM was the realization that the United States could no longer allow three separate U.S. commands, situated thousands of miles from Africa, to monitor events on the world's second largest continent. U.S. European Command (USEUCOM), located in Stuttgart, had responsibility for northern Africa and much of sub-Saharan Africa; U.S. Pacific Command (USPACOM), located in Honolulu, covered the islands off East Africa; and U.S. Central Command (USCENTCOM), headquartered in Tampa, had responsibility for the Horn of Africa. Dividing the continent that way meant two commands might deal with a single crisis. For instance, in the period prior to the establishment of USAFRICOM, Sudan was under USCENTCOM's area of responsibility, while Chad was under USEUCOM. Consequently, once the Darfur crisis reached international attention and action was demanded,

to establish USAFRICOM's agenda, DOD worked closely with the State Department, particularly the Bureau of African Affairs and the Bureau of Political-Military Affairs

U.S. Navy (Michael Larson)

Special Forces Soldiers train Nigerian soldiers during multinational exercise

leading to NATO involvement, the split command caused problems as the American contribution to the NATO operation came from USEUCOM, even though Darfur is in Sudan and therefore within the USCENTCOM area of responsibility.[10] It is hoped that USAFRICOM will end this type of division and confusion.

Major Criticisms

Criticism leveled at U.S. Africa Command stems from the distrust that Africans in general have toward the West and increasingly toward the United States in particular.[11] The continent's bitter colonial legacy has continued to shape African thinking, especially in the way its leaders interact with the global community.[12] Thus, the idea of placing a large American base in Africa evokes notions of neoimperialism. South African Defense Minister Mosiuoa Lekota declared in a meeting of the Southern African Development Community (SADC), "Africa has to avoid the presence of foreign forces on its soil, particularly if any influx of soldiers might affect relations between sister African countries." This view was shared by Zambian President Levy Mwanawasa, who claimed that none of the 14 states that make up SADC is interested in having a U.S. base on its soil.[13] Minister Lekota also warned countries that may consider hosting USAFRICOM that such a move would undermine African solidarity.[14] The warnings came after Liberian President Ellen Johnson Sirleaf expressed support for the command.[15]

In other words, even if some leaders decide to support the initiative, they will need to contend with opposition, and African leaders know that it is never wise to upset one's neighbors on a continent with porous borders and a history of cross-border interventionism and meddling. After all, today's friend could be tomorrow's enemy.[16]

Second, Africans remember the Somalia debacle as well as former Secretary of State Madeleine Albright's clever semantics during the Rwanda genocide. These events have ensured that Africans remain highly skeptical about America's real commitment to the continent. They fear that at the first sign of trouble, pressure from the American public will compel Washington to end its involvement.[17] Moreover, some Africans argue that American engagement revolves around the U.S.-led war on terror, and they refer to the recent covert action against the Islamic Court Union by U.S. forces along the Somalia-Kenya border. For such skeptics, the United States is in the process of *militarizing* sub-Saharan Africa—and the last thing Africa needs is more guns and soldiers.[18]

A third criticism leveled at the formation of USAFRICOM is the failure of DOD to announce where the force will be stationed and headquartered, even though that failure is largely due to African opposition to hosting foreign troops. The issue of location is central because USAFRICOM's area of responsibility is Africa itself, and placing the command anywhere else would ensure logistic problems as well as embarrassment, as no country in Africa appears to want the force on its soil.

African opposition arises out of concern that USAFRICOM will facilitate interference in African countries' domestic affairs, even though the command's mandate is specific: conflict prevention. USAFRICOM is seen as a part of President Bush's militaristic approach to resolving foreign policy problems.[19] The problem vis-à-vis location for USAFRICOM is exacerbated by those advocating a "lily pad" approach, whereby the command will have small bases across Africa with key bases in West Africa and the Horn. This approach provides ammunition to those claiming that America is only focusing on areas of geostrategic importance to itself (West Africa is important for its oil, while the Horn sits on an important waterway and is susceptible to Islamic terrorism).

Africans remember the Somalia debacle as well as Madeleine Albright's clever semantics during the Rwanda genocide

A fourth criticism is that U.S. interest stems from a dual desire to impede Chinese investment in Africa and to secure access to oil. Chinese presence in Africa has increased over the last few years,[20] and America is arguably concerned by this "invasion" because of Africa's growing importance to the United States.[21] For over a decade, Chinese presence and investment have increased, as African leaders appear to prefer Chinese investment over American, Western, or international organizations' investment. China's focus seemingly is on economic development (making profit), and Beijing does not meddle in socioeconomic or civil-political affairs. Cao Zhongming, deputy director of the Department of African Affairs in the Chinese Foreign Ministry, has declared in regard to his country's investment in Chad, "China won't interfere with Chad's internal affairs. As a policy, that doesn't change. If the [China National Petroleum Company], World Bank, and Chad reach an agreement, it's between them. . . . The Chinese government . . . won't enforce something that Chad thinks interferes with their internal affairs."[22]

A fifth issue that has emerged is a possible interdepartmental clash between DOD and the State Department. Despite the close cooperation between them in developing USAFRICOM, the key U.S. Government official responsible for American policy vis-à-vis the continent will remain the Assistant Secretary of State for African Affairs, who will be supported by various Embassies.[23] However, with USAFRICOM focusing on nonmilitary issues, one of which is strengthening the capacities of Africa's regional and subregional organizations, there is a possibility of interdepartmental tensions. DOD officials seem to suggest that by appointing a high-ranking State Department official to the new command, these tensions will not occur, but experience has shown that such frictions emerge as departments seek to protect their own spheres.[24]

Policy Recommendations

It is imperative that USAFRICOM find a home in Africa, whether in the shape of a single base or a host of small bases. Placing the new command anywhere else will ensure logistic difficulties as well as highlight that the command designed to *help* Africa is *unwelcome*. After all, how can a command designed for Africa operate from Europe or North America? Thus, American policymakers must redouble their efforts in encouraging an African country to invite the new command onto its soil.

A central selling point of USAFRICOM is that it will operate as a staff headquarters force rather than a troop headquarters, as its agenda is partnership building and cooperation. By stressing this point, Washington may alleviate concerns that the United States is engaged in a militarized foreign policy. USAFRICOM emphasizes America's desire to improve and build on its relations with Africa, which over the past decade have been extensive, as Washington has adopted such initiatives as the Millennium Challenge Account, the African Growth and Opportunity Act, and the President's Emergency Program for AIDS Relief.[25] Thus, Washington must assure African leaders that

USAFRICOM will not usurp their leadership in the realm of security but rather that it will complement and encourage African initiatives. Ultimately, it appears that the creation of USAFRICOM will not impinge on African programs or hinder bilateral or multilateral programs that DOD runs, such as the Trans-Saharan Counter-Terrorism Initiative.

Second, Washington must stress that by having an Africa command, it can better gauge crises and prevent them from turning into disasters. Some commentators have suggested that logistic support was a key issue that prevented American intervention in Rwanda in 1994; Washington simply lacked the forces and, more significantly, credible information as to what was occurring.[26] One could therefore argue that an African staff command could assist in overcoming such a crisis by enabling effective assessment.

A third issue that demands attention is the previously mentioned interdepartmental rivalry. USAFRICOM is a DOD initiative and thus a DOD responsibility. It is fundamentally a military entity, headed by a four-star general. However, USAFRICOM's agenda also covers diplomacy and development, which come more under the remit of the State Department and USAID. Simply put, it is unclear who will set the agenda of the new command—DOD, whose focus is on security and defense, or the State Department and USAID, whose focus is diplomacy and development.

The emergence of a new Africa command is a positive development. It emphasizes that after decades of neglect, American policymakers finally appreciate the continent's importance to the United States and the international community. Assisting African nations in combating the many ills that plague them will only enhance international peace and security and alleviate abject poverty, political oppression, and misery for millions. U.S. Africa Command can provide substantial assistance as long as Washington works out the unresolved issues surrounding its establishment, and provided that Africans accept that the command represents a new American commitment toward the continent. Ultimately, having a U.S. command that combines defense, diplomacy, and development could be the answer to many of Africa's problems. **JFQ**

The author thanks Shani Ross for her assistance in writing this article.

NOTES

[1] See, for example, Brennan M. Kraxberger, "The United States and Africa: Shifting Geopolitics in an 'Age of Terror,'" *Africa Today* 52, no. 1 (Fall 2005), 47–68; Padraig Carmody, "Transforming Globalization and Security: Africa and America Post-9/11," *Africa Today* 52, no. 1 (Fall 2005), 97–120.

[2] Craddock also pointed to the demographic issue, noting the threat posed by the "youth bulge." See statement of General Bantz J. Craddock, USA, commander, United States European Command, before the House Armed Services Committee, March 15, 2007, available at <www.dod.mil/dodgc/olc/docs/TestCraddock070315.pdf>.

[3] Condoleezza Rice, "Transformational Diplomacy," remarks at Georgetown University, Washington DC, January 18, 2006.

[4] Quotation taken from Stephanie Hanson, "The Pentagon's New Africa Command," Council on Foreign Relations, May 3, 2007, available at <www.cfr.org/publication/13255/>.

[5] Ryan Henry, "U.S. Africa Command (AFRICOM) Update," Foreign Press Center Briefing, Washington DC, June 22, 2007.

[6] Testimony of Michael E. Hess before the U.S. Senate Committee on Foreign Relations, August 1, 2007.

[7] Osama bin Laden chose to move from Saudi Arabia to Sudan following his expulsion from the Kingdom. More recently, Ayman al-Zawahri declared Somalia an area of jihad.

[8] Quotation taken from testimony of J. Peter Pham, "AFRICA COMMAND: A Historic Opportunity for Enhanced Engagement—If Done Right," before the U.S. House of Representatives, Committee on Foreign Affairs, Subcommittee on Africa and Global Health, August 2, 2007, available at <http://foreignaffairs.house.gov/110/pha080207.htm>.

[9] Lauren Ploch, *Africa Command: U.S. Strategic Interest and the Role of the U.S. Military in Africa* (Washington, DC: Congressional Research Service, updated July 6, 2007), 18.

[10] Ibid.

[11] Jeffrey Gettleman, "Anti-American sentiment is sweeping across Africa," *International Herald Tribune*, December 24, 2006.

[12] This is seen most clearly with the way African leaders have supported Robert Mugabe, with a number of leaders choosing to remember Mugabe's role in the liberation process rather than his authoritarian and destructive regime.

[13] Frida Berrigan, "The New Military Frontier: Africa," *Foreign Policy in Focus*, September 18, 2007.

[14] Wyndham Hartley, "Southern Africa: More U.S. Soldiers Not Welcome in Africa, Says Lekota," *Business Day*, August 30, 2007.

[15] Ellen Johnson Sirleaf, "Africa: Africom Can Help Governments Willing to Help Themselves," June 25, 2007, available at <http://allafrica.com/stories/200706251196.html>.

[16] This was made clear during the Congo war between 1998 and 2001, when several African countries became entangled in the affairs of the Congo, and former allies turned into bitter enemies.

[17] Pascal Fletcher, "U.S. Africa command: aid crusader or meddling giant?" Reuters, September 30, 2007, available at <http://africa.reuters.com/top/news/usnBAN043646.html>.

[18] Michele Ruiters, "Africa: Why U.S.'s Africom Will Hurt Africa," *Business Day*, February 14, 2007; Ezekiel Pajibo and Emira Woods, "AFRICOM: Wrong for Liberia, Disastrous for Africa," *Foreign Policy in Focus*, September 6, 2007, available at <www.fpif.org/fpiftxt/4427>.

[19] See Pajibo and Woods.

[20] In the 1990s, Sino-African trade and economic activity grew by 700 percent. In the first 10 months of 2005, Sino-African trade was valued at $32.17 billion (in 2002–2003, it stood at $18.6 billion). See Esther Pan, "China, Africa and Oil," Council on Foreign Relations, January 26, 2007, available at <www.cfr.org/publication/9557/>.

[21] On the threat that China poses, see, for example, Gordon S. Magenheim, "Chinese Influence on U.S. Operational Access to African Seaports," *Joint Force Quarterly* 45 (2d Quarter 2007), 22–27.

[22] Howard W. French and Lydia Polgreen, "China, Filling a Void, Drills for Riches in Chad," *The New York Times*, August 13, 2007.

[23] Jendayi Frazer, "Exploring the U.S. Africa Command and a New Strategic Relationship with Africa," testimony before the U.S. Senate Committee on Foreign Relations, Subcommittee on Africa, Washington DC, August 1, 2007.

[24] On the failure to explore the possible tensions between the departments, see, for example, Theresa Whelan, "Africa Command: Opportunity for Enhanced Engagement or the Militarization of U.S.-Africa Relations?" testimony before the House Committee on Foreign Affairs, Subcommittee on Africa and Global Health, August 2, 2007, available at <http://foreignaffairs.house.gov/110/whe080207.htm>.

[25] U.S. health and development programs for Africa currently total nearly $9 billion, while U.S. security assistance programs stand at approximately $250 million, or 1/36th of the nonsecurity related programs in any given year. See Theresa Whelan, "Why AFRICOM? An American Perspective," Situation Report, Institute for Security Studies. August 17, 2007.

[26] Alan Kuperman, "Rwanda in Retrospect," *Foreign Affairs* 79, no. 1 (January-February 2000), 94–118.

The following article describes the history and evolution of a much needed but arguably aged concept, the national security professional (NSP). This year, the National Defense University's (NDU's) National War College (NWC), Industrial College of the Armed Forces (ICAF), and Joint Forces Staff College (JFSC) are administering and assessing the NSP pilot program. This is the initial program to educate 15 students from NWC, 15 from ICAF, and 8 from JFSC in interagency policies and issues.

There are many challenges to the NSP program, but four areas require particular attention:

- funding
- agency and department cultures and doctrines
- legislation and enforcement
- NSP designation recognition within the interagency domain.

Funding. The major challenge to starting and continuing the NSP education system is identifying the funding streams and owners. As highlighted in the following article, history has shown that funding was the main reason that Lieutenant General Leonard Gerow's recommendation to General Dwight Eisenhower for a National Security University did not fulfill its original intent. One of the five colleges from the Gerow Board's recommendations, ICAF, was already in place, and, as time went on, three of the remaining four colleges came into existence in one form or another: NWC, the Joint Intelligence College (National Intelligence University), and the Department of State College (Foreign Service Institute).

Although funding is still a key challenge today, it does not have to be the major challenge. Much of the infrastructure and many of the courses are already in place within the U.S. Government at facilities such as NDU, the Service war colleges, the Foreign Service Institute, and the National Intelligence University, to name just a few. It is up to the NSP leaders within the Services, agencies, and departments to step back and make a smart and coordinated effort to answer these questions:

- What core abilities should the national security professional possess?
- What is required to educate the NSP cadre using resources in and out of the Government?
- What does the U.S. Government already have in place that will fulfill some or all of the requirement?
- What is the connectivity between the overall NSP strategy and budgets?
- Does the Service, agency, or department that funds the lion's share of the program then become its "owner" and have the right to pick its director?

Agency Cultures and Doctrines. This may be the hardest issue to resolve. Not only do the agencies and departments have their own embedded training, education philosophies, and cultures, but the NSP program will also ask them to agree on the concept, to compromise on divisions of labor among agencies and departments for key mission areas, and to reassign some of their inherent capabilities. This will obviously take an open-minded and nonparochial approach. But it is easier said than done. For example, even though the Goldwater-Nichols Department of Defense Reorganization Act of 1986 has been legislatively mandated, consider how long it has taken the different Services to embrace and implement its intent and direction fully. They have come a long way, but there are still some who believe it is a work in progress—and after 20-plus years, pockets of nonjointness are alive and well.

Legislation and Enforcement. A Goldwater-Nichols II legislative action has been advocated since before the concept of the NSP was initially discussed. Officers from all Services who have witnessed Goldwater-Nichols' birth, growth spurts, and various levels of acceptance by their respective Services have vast insights as to the pain involved with making jointness work. The Services have cut to the heart of the debate and learned that without legislative action, we would be decades behind in Service coordination. Let us then use the lessons learned from the Goldwater-Nichols maturation process, not repeat them, and immediately put the proposal for legislative action on the table. To rely on "gentlemen's agreements" among interagency participants to coordinate, fund, and provide the high-caliber personnel to make the NSP program work is to ensure the concept's slow failure.

NSP Designation Recognition. The NSP pilot program will graduate its 38 students in June 2008. Will the human resource systems of the various Services, agencies, and departments be ready to identify the newly minted national security professionals and place them in positions using their new skills? Will the various human resources systems have a career track ready for them to ride as they move into the later stages of their careers? Will the various Services, agencies, and departments be ready to provide feedback to the educators as to successes and shortfalls in their respective capabilities? Will they be robust enough to identify and then let their future leaders go away for up to a year to attain their NSP designation? There are many other questions, but the current bet is that the answer to all of them is no.

The silver lining is that the 38 NSP pilot program individuals were selected by their respective Services, agencies, or departments, which implies that these individuals are at least known to be in the program within their parent organizations and that their organizations will be ready to place them in jobs that take advantage of their new knowledge and skills. Another positive sign is that there already is a groundswell of support for the NSP concept within this year's NDU student body, and additional students beyond the initial 38 are attempting to matriculate into the approved NSP electives.

Granted, the NSP concept and pilot program at NDU are an experiment that will take assessment, maturation, and constant feedback from all of its participants. The questions and thoughts in these remarks are only part of the total thought and actions required to move the concept along. The following article paints the picture of where the NSP program stands today, but it should answer many more questions and stir debate. Too much has been said about the problems within the interagency community and how they are not being adequately addressed. The NSP concept is a formative and reasonable start for fixing some of these problems, and it should be given the chance to grow and the resources to succeed.

—RADM Gerard M. Mauer, Jr., USN (Ret.)

Rear Admiral Gerard M. Mauer, Jr., USN (Ret.), was the 37th Commandant of the Industrial College of the Armed Forces.

Developing National Security Professionals

By JOHN W. YAEGER

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DOD (Matthew T. Chubski)

During academic year 2007–2008, the National Defense University (NDU) initiated a new education program for national security professionals (NSPs). This program will educate an interagency cadre of professionals capable of integrating the contributions of individual Government agencies on behalf of larger national security interests. As part of the program, the definition of *national security* includes both traditional national security and homeland security. The pilot program consists of 38 participants selected through their military Service, U.S. Government agency, or department. These students will be the first to receive an array of education and training opportunities as the program expands to developing the careers of NSPs.

With adequate support, NSP education will be recognized as fundamental to senior military and government decisionmakers. However, the success of the pilot program will not be the only criterion used to predict the future of the program. The history of our professional military education system has shown that the future of NSP education will depend predominantly on available resources. To better understand the dynamics of building this education program, it is valuable to look at the historical context, driving influences, and initial competencies and requirements of NSP education.

Historical Background

In the aftermath of wars, Americans have reformed their system of professional military education with almost ritualistic consistency. Such reforms have usually followed a pattern of change and growth. Conflicts inevitably revealed shortcomings in the performance of the Armed Forces and strengths in the performance of the Nation overall, such as integrated political, military, and economic strategies. These lessons were preserved and improved in an academic environment. Modifications made to professional military education have maintained, refined, and inculcated the lessons learned from each conflict for America's military posterity. Examples of educational institutions created after wars or crises include the U.S. Army Command and General Staff College after the Civil War, the U.S. Army War College following the Spanish-American War, the Industrial College of the Armed Forces after World War I, and the National Defense University following the Vietnam conflict.

The most extensive changes to professional military education occurred following World War II. Serious consideration was given to including more interagency education and synchronizing it with professional military education. The War Department commissioned a major study of officer education.[1] The Commandant of the Army's Command and General Staff School, Lieutenant General Leonard T. Gerow, was put in charge of the study board, which became known as the Gerow Board. The Joint Chiefs of Staff, emphasizing the need for joint education, influenced the report. Gerow updated the Joint Chiefs frequently and they, in turn, provided him with feedback.[2]

The board met in Washington, DC, between January 3 and 12, 1946, and interviewed individuals knowledgeable about joint professional military education. In February 1946, Gerow submitted his board's recommendations to General Dwight Eisenhower, the Army Chief of Staff. The Gerow Board proposed five joint colleges that would collectively form a National Security University located in Washington and fall under the direction of the Joint Chiefs of Staff.[3] The Industrial College of the Armed Forces already existed, and the board proposed adding the National War College, a joint administrative college, a joint intelligence college, and a Department of State college.[4] Specifically, the board's report went on to state:

Close and definite coordination is required on the highest military educational level. This should be accomplished by the establishment of a National Security University *under the jurisdiction and control of the Joint Chiefs of Staff and the Under Secretary of War (because of his legal responsibility for industrial mobilization). The National Security University will be interested in all problems concerning the military, social and economic resources and foreign policies of the nation that are related to national security.*[5]

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U.S. Army

LTG Gerow (seated at right) with (seated) Generals Simpson, Patton, Spaatz, Eisenhower, Bradley, Hodges, (standing) Stearley, Vandenberg, Smith, Weyland, and Nugent, about 1945

Gerow's vision was that graduates of the National Security University would be able to integrate the contributions of their individual agencies on behalf of larger national security interests.

The Gerow report recommended that the Army War College, which suspended operations during World War II, remain closed; that the new National War College occupy the facilities; and that Army War College funding be used for the new college. The proposals for a National Security University and the other colleges were ultimately rejected as a result of limited resources.[6]

the Gerow Board proposed five joint colleges that would collectively form a National Security University

The Armed Forces recognize the value of education and place special emphasis on the importance of professional military education. An officer's responsibilities and challenges change with each promotion. The education system developed by the military reflects this increasing scope of responsibilities. The Services initially demand competencies from the ensigns and lieutenants in Service-specific weapons. This knowledge broadens to requirements for strategic-level thinking from the generals and admirals. The lines between the military education and training systems that have evolved over the years have blurred somewhat. Generally, the training programs are highly utilitarian while the educational system, particularly at the senior level, is similar to that of a traditional liberal arts education. There needs to be a similar education system established beyond the Department of Defense to develop national security professionals.

Joint professional military education (JPME) emerged from professional military education. Each professional military education institution had a mission that responded to the need that created it. A side benefit emerged as students from one Service began attending the schools of other Services. That served dual purposes: the Services could work toward solving the Nation's military and defense problems and, in doing so, could gain a better understanding of each other. There is now a necessity to expand the joint topics, student population, and faculties to appropriately educate NSPs.

The Need for NSP

Reasons for creating professional military education institutions parallel today's need for more interagency education. Since the Cold War, the national security environment has become more complex. Events such as the attacks of September 11 highlighted a volatile and uncertain atmosphere with new challenges to the United States. Over time, independent think tanks, the Department of Defense, Congress, and the Bush administration all came to the same conclusion: the United States needs to strengthen interagency operations through training and education.

The Center for Strategic and International Studies (CSIS), a nonpartisan Washington think tank, extensively studied U.S. performance in Iraq. One conclusion from the work was that "the mechanisms to integrate efforts across the government were just lacking."[7] The number of interagency operations has been increasing, but unfortunately, each crisis has been managed on a case-by-case basis with the wheel being reinvented each time. A year-long CSIS study, *Beyond Goldwater-Nichols*, undertook the challenge of identifying ways to better integrate the disparate parts of the U.S. national security structure so they worked together in planning for and managing crises. One way of achieving better interagency efficiency was through a revised education program.[8] The late Vice Admiral Arthur K. Cebrowski, USN (Ret.), proposed converting National Defense University into a National Security University (NSU):

Moving NDU from a DOD [Department of Defense]*-focused institution to one addressing the practice and theory of national security for the entire United States government should make it the premier institution focused on "capital J Jointness" or "Super-Jointness." The new NSU will then be a unique complement to earlier military schooling focused on Service doctrine and "small j" interservice joint operations.*[9]

Two months after CSIS published *Beyond Goldwater-Nichols*, the requirement for improving interagency efforts was further highlighted when Hurricane Katrina hit the U.S. gulf coast.

Poor interagency management following Katrina was well documented by the media and thus visible to all of America. For example, a week after Katrina's landfall, the *Wall Street Journal* drew attention to the poor coordination among Federal departments.[10] The Congressional Research Service prepared a report examining DOD disaster response. Their analysis suggested that the National Response Plan and DOD's joint homeland security doctrine may have been too "procedure-bound," with too many decision points and approvals required.[11] Conceivably, the crisis could have

been managed much better had there been more interagency training and education.

Congress recognized the need to be proactive. Slightly over 2 weeks following Katrina's landfall, the House of Representatives approved House Resolution 437, creating the Select Bipartisan Committee to Investigate the Preparation for and Response to Hurricane Katrina. The final report of the committee repeatedly cited lack of knowledge of the required roles and responsibilities by senior officials as a major impediment.[12] Although the final report did not call for an improved education system to better prepare the interagency community, it is not hard to imagine how training and education could have averted some of the major post-Katrina problems.

the National Response Plan and DOD's joint homeland security doctrine may have been too "procedure bound," with too many decision points and approvals required

On the same day the House of Representatives approved the resolution, President George W. Bush ordered a comprehensive review of the Federal response to Hurricane Katrina.[13] Lessons learned emphasized the need for interagency education:

Beyond current plans and doctrine, we require a more systematic and institutional program for homeland security professional development and education. While such a program will center on the Department of Homeland Security [DHS], *it should extend to personnel throughout all levels of government having responsibility for preventing, preparing for, responding to, and recovering from natural and man-made disasters. For example, DHS should establish a National Homeland Security University (NHSU)—analogous to the National Defense University—for senior homeland security personnel as the capstone for homeland security training and education opportunities. The NHSU, in turn, should integrate homeland security personnel from State and local jurisdictions as well as other Federal departments and agencies.*[14]

DOD had its own vision of creating something similar to a NHSU. Its plan for interagency education appeared in the 2006 Quadrennial Defense Review (QDR):

The Department will also transform the National Defense University, the Department's premier educational institution, into a true National Security University. Acknowledging the complexity of the 21st century security environment, this new institution will be tailored to support the educational needs of the broader U.S. national security profession. Participation from interagency partners will be increased and the curriculum will be reshaped in ways that are consistent with a unified U.S. Government approach to national security missions, and greater interagency participation will be encouraged.[15]

One key Member of Congress was not convinced that transforming NDU into NSU was in the best interest of national security. Congressman Ike Skelton (D–MO) expressed his concern in a letter to the Secretary of Defense. Referring to the QDR, Skelton wrote, "It, therefore, concerns me that this transition to the National Security University might degrade NDU's ability to meet its primary mission—delivering high quality joint professional military education."[16] The Chairman of the Joint Chiefs of Staff, General Peter Pace, USMC, agreed with Congressman Skelton and declared that NDU will remain NDU. The key was that General Pace clarified that this new education prospectus will not have a negative impact on JPME. National Defense University would not transform into a National Security University but would continue to address the requirement for a new interagency education program.

Director of National Intelligence (DNI) Mike McConnell addressed the need for change in an August 2007 article in *Foreign Affairs*. Although he was discussing the need to improve coordination among intelligence agencies, his observations are applicable to all government agencies that have a stake in national security.

The DNI . . . needs to transform the culture of the intelligence community, which is presently characterized by a professional but narrow focus on individual agency missions. Each of the 16 organizations within the intelligence community has unique mandates and competencies. They also have their own cultures and mythologies, but no one agency can be effective on its own. To capture the benefits of collaboration, a new culture must be created for the entire intelligence community without destroying unique perspectives and capabilities.[17]

A key way to change mindsets is through education. One goal of the proposed NSP education would be to understand the cultures and capabilities of other agencies. To improve U.S. national security, strategic leaders need to understand, as McConnell stated, that "no one agency can be effective on its own." The DNI and heads of other agencies recognize the need for a program to support interagency education.

Consortium and Initial Program

A consortium of voluntary members consisting of qualified academic, military, and civilian government centers worked together to create an education program to support the development of NSPs. Consortium participants came from the Department of Homeland Security, Foreign Service Institute (Department of State), Office of the Director of National Intelligence, U.S. Institute for Peace, National Defense University, and the Joint Staff (J7). These voluntary consortium members recognized the need for interagency education and were eager to create an interagency academic program. Their preliminary planning defined the basic program structure.

One of the initial challenges in developing an educational curriculum is to identify the attributes of a graduate. The desired qualities have to be further distilled into what characteristics are expected of the students entering the program. With graduate competencies and entrance criteria known, specific learning outcomes of the education can be developed. Subsequent to developing learning outcomes, a delivery method (correspondence, in-residence, online, and so forth) may be identified as well as program length. Accurately established competencies are crucial. If they are wrong, the education will be squandered.

Each government agency has its own set of unique competencies. Identification of common competencies of an NSP is required to establish a foundation for an educational program. A collaborative effort is vital. Fortunately, consortium participants recognized the value of exchanging information to develop the core competencies. An important piece of shared information was the criteria used for selecting senior leaders in different agencies. It turned out that competencies demanded of an admiral are similar to those required of an Ambassador. To achieve core competencies, an

NSP should be a manager of change, culturally aware, a creative thinker, operationally skilled, and technically astute.

From these core competencies, five curricula learning areas were developed:

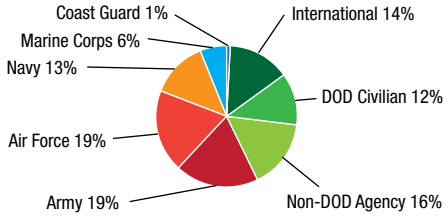
- national security strategy
- agencies' supporting strategies
- joint, interagency, and multinational capabilities
- national planning systems and processes
- strategic leader development.

The curricula learning areas identified what would be taught, so the next challenge was to decide on how the education would be delivered (for example, in-residence, distributed learning). The consortium decided on a phased approach for implementing the education. Some agencies do not have the latitude within their personnel management systems to send members to various schools. The manpower vacancies while people are in training and education programs need to be carefully planned. Each phase would depend on resources available and measured feedback from the program's outcomes.

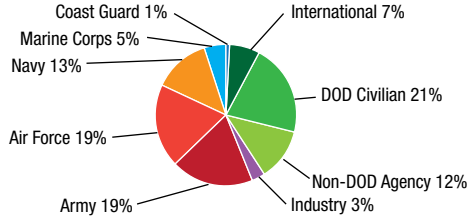
One option to address the agreed curricula areas was to explore existing educational programs to see what needs could be met. The first phase for the NSP, or pilot program, was to address the above learning areas and prepare students to analyze at the strategic level the capabilities, organizational cultures, procedures, and roles of U.S. departments and agencies in the planning and conducting of complex operations in peace, crisis, war, and postconflict in overseas and homeland contingencies.

Curricula content is just a third of the challenge. To have a successful education program, students have to arrive with a certain skill set, and the faculty must be capable of effectively teaching content to those students. The senior level joint professional education colleges at NDU were readily positioned to administer the pilot program. Since the student bodies of the National War College (NWC), Industrial College of the Armed Forces (ICAF), and the Joint Forces Staff College Joint Advanced Warfighting School (JFSC JAWS) already have agency representation, participants for the pilot program were selected from this population. There are 15 students participating in the pilot program at NWC, 15 at ICAF, and 8 at JFSC JAWS.

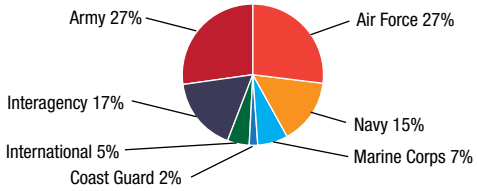
NWC Class of 2008



ICAF Class of 2008

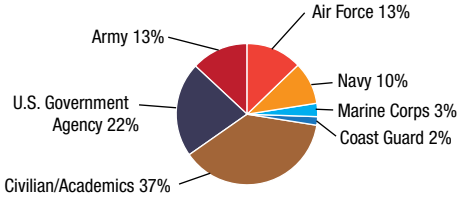


JFSC JAWS Class of 2008



The NWC and ICAF faculties have interagency representation, and JFSC JAWS is developing a faculty with interagency members.

NWC Faculty AY07/08



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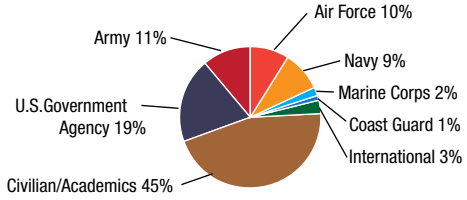

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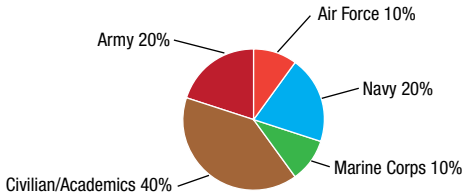


The 38 students designated by their Services and departments/agencies for the pilot program in academic year 2008–2009 will attend all NWC, ICAF, or JFSC JAWS core courses. To supplement the college core programs, these students will complete a focused electives program, concentrating on planning and implementation of operations within the interagency arena. To measure success, an assessment plan will be designed to ensure that sufficient data are collected to determine whether the NDU NSP graduates meet specific learning outcomes. Each college will survey NSP participants and their supervisors 1 year following graduation in 2009 and again 3 years following graduation to determine how useful the NDU educational experiences were in preparing graduates for the interagency environment. Survey results will be used for broader curriculum revision as well as for input to additional phases of the NSP program. At the same time, the assessment plan will provide the feedback needed to inform NSP education decisions in the future.

The Way Ahead

The NSP pilot program at NDU is a drop in the bucket compared to what is needed for education and training in the interagency environment. President George W. Bush signed a National Security Professional Development Executive Order 13434 on May 17, 2007, which states:

In order to enhance the national security of the United States, including preventing, protecting against, responding to, and recovering from natural and manmade disasters, it is the policy of the United States to promote the education, training, and experience of current and future professionals in national security positions (security professionals) in executive departments and agencies.[18]

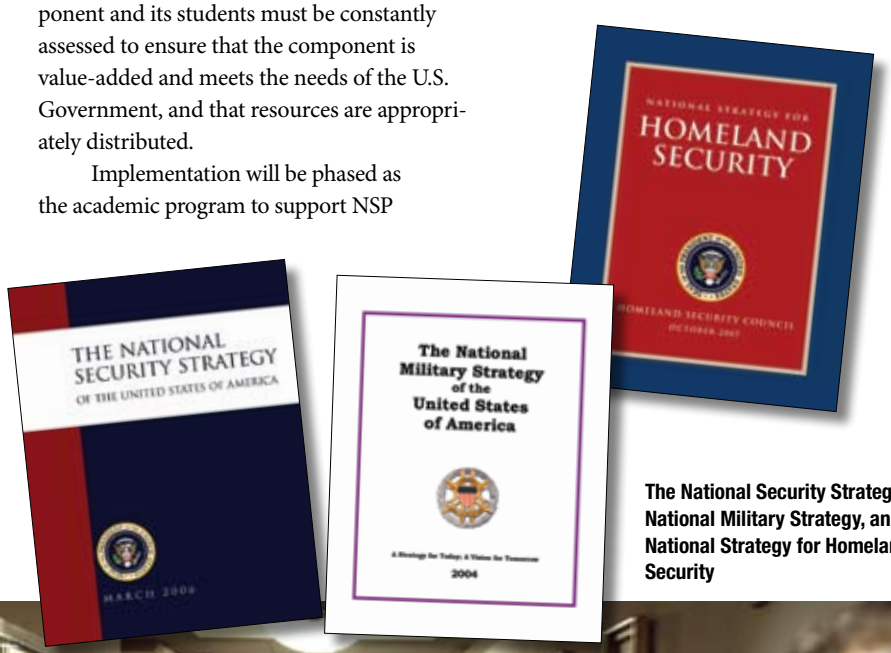
A strategy was developed in response to this executive order. The National Strategy for the Development of Security Professionals addresses the substantial challenge of develop-

ing an NSP education system. A national security education board of directors comprised of senior officials of selected Federal departments and agencies will oversee the development. The board will identify existing educational programs that could match the needs of the interagency community.

Although it was not articulated in the strategy, it seems likely that program expansion would include NSP specialty tracks based on the established learning areas. The education component of these specialty tracks could include part-time options, distance learning, interconsortium school transfers, additional professional military education schools, and civilian education institutions. Each component and its students must be constantly assessed to ensure that the component is value-added and meets the needs of the U.S. Government, and that resources are appropriately distributed.

Implementation will be phased as the academic program to support NSP development is created over many years. As illustrated earlier, professional military education was phased in over time. Professional military education in the United States began with the decision to establish the Military Academy at West Point in 1802 and is still under development. Hopefully, a war will not be needed to highlight requirements to expand NSP education.

Personnel assignments of graduates of these new educational opportunities will be a key indicator of agency and department support for the NSP program. Do they go to school, graduate, and return to their same jobs? With the JPME system, graduate assignments had to be legislated: "At least 50 percent of all other officers graduating from each joint professional military education school must fill a joint duty assignment as their next duty assignment."[19] The idea behind this directive was to populate the joint jobs with individuals who received a joint education. A concern in Congress was to ensure that officers assigned to joint duty, such as the Joint Staff, had career potential. Prior to this legislation, joint duty had a reputation as a "kiss of death" for one's career. Goldwater-Nichols put pressure on the Services to ensure this did not happen. Will school assignments for agency personnel be seen as a kiss of death or a career enhancement?



The National Security Strategy, National Military Strategy, and National Strategy for Homeland Security

DOD (D. Myles Cullen)

Rep. Ike Skelton and Gen Peter Pace talk after NDU change of command ceremony for LtGen Frances Wilson

Major Challenges

Support is crucial for success. Consortium participation has been voluntary, but Executive Order 13434 identifies many more agencies to participate. The level of backing will become clear when resources need to be identified to execute the program. Manpower, funding, and infrastructure will be important factors in determining the future of the NSP program. Available resources, especially department and agency personnel systems, will probably be the predominant constraint behind implementation. However, the potential exists to leverage the educational resources and talents of each agency to become more efficient and effective. A synergy could be created that currently does not exist. The Armed Forces required congressional direction to become more joint. Legislation may be required for the NSP program to succeed.

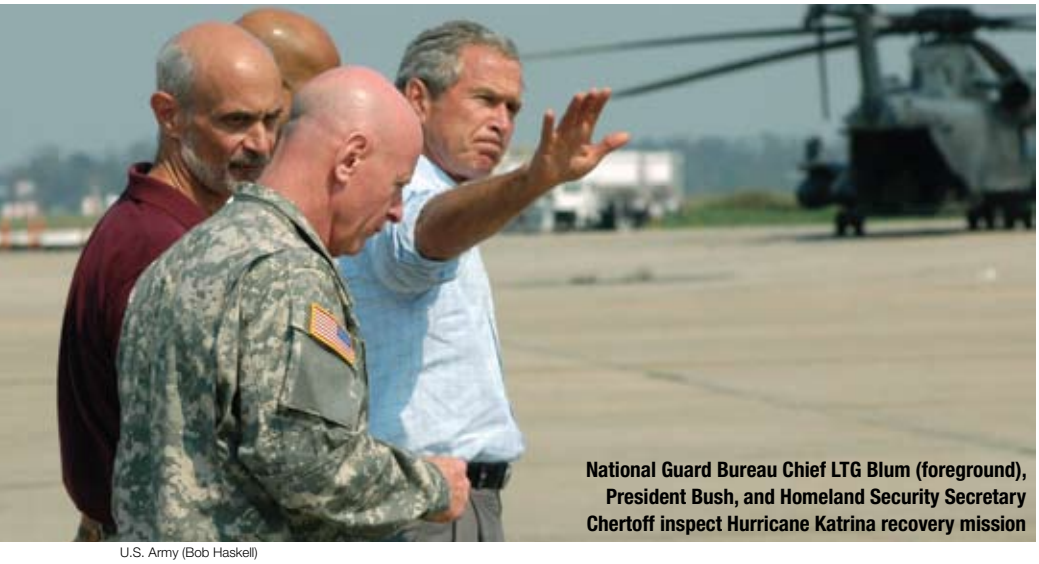
As the educational system expands beyond NDU, accreditation will become a more predominant issue. Schools that have accredited programs need to maintain those, while the new program establishes standards. Accreditation is a means of self-regulation and peer review adopted by the civilian educational community. The accrediting process is intended to strengthen and sustain the quality and integrity of higher education. Ultimately, an accredited institution has the confidence of its peer institutions. The intent for accreditation is to obtain the same benefits that civilian higher education institutes have through their accreditation process. Criteria must be developed to ensure credits are transferable and to determine if courses will count toward certificate or degree programs. An accreditation process will validate the adequacy and currency of curricula.

Accreditation exposes the third major issue, governance. Who has the final authority over whether a school or program is accredited? How is that person selected? What are the lines of authority? Does the agency or department providing the major source of funding drive consortium governance? If governance is not carefully designed, a collaborative effort could turn toxic. A balance has to be established so the director of the consortium is senior enough yet not *too* senior. A danger exists if someone too high in an organization's structure fails to make time for NSP administration. Since decisions concerning education are not of such a nature that they need immediate attention, the director of the NSP program would inevitably have more pressing business. This lack of priority of issues concerning NSP education could lead to inattention. Will the governing authority be beholden to its parent agency or will it truly be devoted to the mission of NSP development? Governance has the potential to generate considerable friction. The process of determining how this consortium of educational institutions is governed is critical to the success of the program.

Strengthening interagency relationships is vital to improving national security. The potential exists to enhance U.S. national security by creating a program for the development of national security professionals. A robust development program that includes education, training, and professional opportunities promises to increase collaboration among agencies. Educating agency personnel and placing them in jobs where they will use that interagency education will produce a new type of U.S. Government leadership. Leaders who can analyze at the strategic level; who know the capabilities, organizational cultures, procedures, and roles of U.S. departments and agencies; and who are able to plan and conduct complex operations in peace, crisis, war, and postconflict in overseas and homeland contingencies will be invaluable assets to the Federal Government. To fulfill this potential requires an investment now.

The NSP program calls for a system of education and training opportunities that cover entire careers. The individual military education institutions were not a military education system until Congress became involved. Education did not have the priority to compete for resources before congressional intervention. As agencies struggle with their own internal funding requirements, interagency education will compete with near-term financial and personnel readiness issues. Personnel who receive NSP education and training must be assigned to positions that will make use of their education. The temptation to assign "rising stars" to work on internal agency or department problems must be overcome. The rising stars should not return to their old positions. Promotions need to reflect recognition of interagency experience. As with joint military education, it may take legislation to ensure NSP support from the agencies.

Anticipated program expansion will challenge consortium members and students alike. Expected changes in the NSP program will include modifying the curriculum to reflect current events, changing and adding delivery methods, intensifying professional development requirements, and expanding resources. The way ahead will be filled with emerging challenges. Yet for very little risk there is much to gain. **JFQ**



National Guard Bureau Chief LTG Blum (foreground), President Bush, and Homeland Security Secretary Chertoff inspect Hurricane Katrina recovery mission

U.S. Army (Bob Haskell)

NOTES

[1] Joint Chiefs of Staff, "Joint Chiefs of Staff General Plan for Postwar Education of the Armed Forces," paper presented at the Joint Chiefs of Staff meeting 962/2.

[2] John W. Masland and Laurence I. Radway, *Soldiers and Scholars: Military Education and National Policy* (Princeton: Princeton University Press, 1957).

[3] Leonard T. Gerow, "Report of War Department Military Education Board on Education System for Officers of the Army," February 1946, 10, Special Collections, National Defense University Library, Washington, DC.

[4] Ibid., 6.

[5] Ibid., 27.

[6] Masland and Radway.

[7] Greg Jaffe, "Katrina, Iraq aid efforts hit same hurdles; military officials say crises highlight poor coordination among federal departments," *The Wall Street Journal*, September 7, 2005, A4.

[8] Clark A. Murdock et al., *Beyond Goldwater-Nichols: U.S. Government and Defense Reform for a New Strategic Era* (Washington, DC: Center for Strategic and International Studies, 2005).

[9] Ibid., 121.

[10] Jaffe.

[11] Steve Bowman, Lawrence Kapp, and Amy Belasco, *Hurricane Katrina: DOD Disaster Response*, Congressional Research Service report RL33095 (Washington, DC: Library of Congress, September 19, 2005), 14.

[12] Select Bipartisan Committee to Investigate the Preparation for and Response to Hurricane Katrina, House of Representatives, "A Failure of Initiative," Final Report of the Select Bipartisan Committee to Investigate the Preparation for and Response to Hurricane Katrina, Washington, DC, 2006, 1–140.

[13] Frances F. Townsend, *The Federal Response to Hurricane Katrina: Lessons Learned* (Washington, DC: The White House, 2006).

[14] Ibid., 73.

[15] Department of Defense, *2006 Quadrennial Defense Review Report* (Washington, DC: Department of Defense, February 6, 2006), 79.

[16] Ike Skelton, Letter to the Honorable Donald L. Rumsfeld, April 4, 2006, Special Collections, National Defense University Library, Washington, DC.

[17] Mike McConnell, "Overhauling Intelligence," *Foreign Affairs* 86, no. 44 (July/August 2007), 49.

[18] George W. Bush, Executive Order 13434, "National Security Professional Development," May 17, 2007.

[19] The Goldwater-Nichols Department of Defense Reorganization Act of 1986, P. L. 99–433, chapter 38, section 661.

Iran's Islamic Revolutionary Guard Corps
An Open Source Analysis

By MATTHEW M. FRICK

In *The National Security Strategy of the United States of America*, President George W. Bush singled out the Islamic Republic of Iran as perhaps the greatest challenge facing the United States today.[1] Iran is specifically identified as a direct obstacle to accomplishing a majority of the Nation's strategic objectives. Among these are preventing the proliferation of weapons of mass destruction (WMD), promoting freedom by ending the rule of tyrannical regimes, denying terrorists state-sponsored support and sanctuary, and defusing regional conflicts.[2] Despite, and in many instances because of, the ongoing wars in Iraq and Afghanistan, perpetual conflicts on every continent, and the battle with terrorist organizations in every corner of the globe, the Iranian government has positioned itself to become the focus of the world's collective attention.

Translating the strategic objectives outlined by the President into effective operational plans requires carefully studying the enemy and determining his centers of gravity (COG). The availability of accurate, relevant intelligence is a key element to correctly identifying a *COG*, which is a "source of moral or physical strength, power, or resistance."[3] Knowledge of the enemy's culture, history, sociopolitical and economic infrastructures, and leadership is as important in COG determination as knowing his military capabilities and force disposition.

Unfortunately, after the storming of the U.S. Embassy in Tehran on November 4, 1979, and the subsequent hostage crisis that lasted 444 days, access to information on the current political, military, and social structures within Iran has been severely limited, complicating the task of identifying centers of gravity. Much of the available information is found in official statements, press releases, government-sponsored Web sites (several in English), and interviews on one side, and a litany of Internet-published documents, as well as official and unofficial testimony from exiled dissident groups and defectors, on the other. The result is a virtual maze of material that must be navigated with care, keeping in mind the perspective and underlying motive of each source. Knowing the limitations on available information, it is nevertheless possible to surmise an accurate, albeit imperfect, COG identification.

By analyzing only this open source material, it is evident that the key center of gravity in Iran is the Islamic Revolutionary Guard Corps (IRGC), or *Sepah-e Pasdaran*

Lieutenant Commander Matthew M. Frick, USN, is a Staff Officer at the Allied Maritime Component Command (North Atlantic Treaty Organization) in Naples, Italy.

Islamic Revolutionary Guard commanders show support for Iranian president

AP/Wide World Photo (Rouhollah Vahdati)

(Pasdaran). The IRGC's conventional military strength, uncompromising execution of its conceptual and constitutional mandates, political and economic influence, and direct as well as indirect control of the country's WMD programs combine to make the Pasdaran the source of the clerical regime's power both domestically and internationally.

Conventional Military Strength

The Pasdaran emerged from the war with Iraq (1980–1988) as the premier military institution in Iran. With numbers that now equal as much as half of Iran's regular military, the IRGC alone boasts a force as large as or larger than any in the Middle East, including Saudi Arabia and Israel.[4]

Iran test-fires Fajr-3 missile

AP/Wide World Photo (Islamic Republic News Agency)

Iran's total active duty military strength numbered 538,000 in 2005, with 145,000 of those in the IRGC.[5] The Revolutionary Guard maintains a small air contingent and a more robust and increasingly capable naval force. The naval and air components were officially established in 1985 by Ayatollah Ruhollah Khomeini, although the Revolutionary Guard had operated a small force of marines as early as 1982.[6] The Pasdaran was also given control of Iran's ballistic missile program in both missile employment and development.[7] Originally established to add more domestic ideological and political weight to the IRGC as a whole by becoming, at least in appearance, a more conventional force, the Revolutionary Guard services essentially removed the sole ownership of air and sea warfare enjoyed by the regular military forces.[8]

While the IRGC air force maintains minimal air assets, it has increasingly received the bulk of Iran's latest technology and aircraft procurements as an attempt to bolster this force's capabilities and to put it on par with the regular air forces, the Islamic Republic of Iran Air Force. However, the IRGC air force remains an insignificant threat.[9]

The IRGC navy is not only more visible than the IRGC air force (for example, its capture of 15 British sailors and marines on March 23, 2007), but it is also more effective in conducting conventional military operations.[10] With approximately 20,000 members, including 5,000 marines, the IRGC navy numbers more than the Islamic Republic of Iran Navy (IRIN). The numbers alone, however, are not an accurate measure of its combat potential. While the IRIN operates the three frigates and two corvettes in the Iranian naval inventory—as well as the country's fleet of three *Kilo*-class, three midget-type, and as many as three domestically produced coastal submarines—the IRGC navy maintains a robust, highly capable force that poses a potentially more dangerous threat, particularly to blue-water oriented navies such as the U.S. Navy.[11]

With 10 Hudong patrol boats equipped with C–802 antiship missiles, 40 Boghammer patrol boats, 14 Chinese-made MIG–G–1800 and MIG–G–1900 armed patrol craft, and countless other small patrol vessels, the IRGC navy poses a threat to naval forces throughout the Persian Gulf.[12] It has upgraded many of its vessels with three new indigenous antiair and antiship missile systems of varying but reportedly improved capabilities: Noor, Kowsar, and Nasr.[13] The IRGC navy is trained in utilizing swarm tactics in and around the Strait of Hormuz to hit an enemy when it is at its most vulnerable position.[14] To demonstrate this point, Revolutionary Guard navy Rear Admiral Ali Fadavi announced the test of an underwater missile during war games in the Persian Gulf in April 2006. He claimed that the missile was undetectable by sonar and traveled up to 328 feet per second, making it too fast for a target vessel to evade.[15] If Fadavi's claims are true, this weapon seriously increases the threat to forces entering and exiting the Persian Gulf.

the Revolutionary Guard essentially removed the sole ownership of air and sea warfare enjoyed by the regular military forces

The IRGC navy is also responsible for Iran's coastal defense systems. These systems include over 300 HY–2 Seersucker or Silkworm antiship missiles at five to seven launch sites on the coast, including the Strait of Hormuz. The HY–2 units were reportedly augmented by as many as eight SS–N–22 Sunburn supersonic antiship missiles from Ukraine in the early 1990s. The IRGC navy also operates land-based artillery units along the shore.[16]

To further increase its importance in the international arena and within the Iranian military organization, the Pasdaran was placed in control of the Islamic Republic's missile program, including the development and procurement of ballistic missile systems. Under the Revolutionary Guard's leadership, Iran has evolved the capability to manufacture domestically produced missiles.[17] Iran's missile inventory includes approximately 10 Fateh A–110 solid fuel short-range missiles and 200 Shahab-1, 150 Shahab-2, and 20 Shahab-3 medium-range missiles. The Shahab-1 and Shahab-2 are variants of the Scud B and Scud C, while the Shahab-3 is based on the North Korean No-dong 2 ballistic missile.[18] The successful testing in 2006 of the Fajr-3 solid fuel rocket, which

can evade radar, according to IRGC air force commander General Hossein Salami, is an example of the technology available to the Revolutionary Guard.[19] It is also an example of the difficulty of gathering accurate intelligence on foreign military capabilities.

With successful tests and upgrades that include the ability to fire multiple warheads carrying up to 1,400 cluster munitions,[20] the Shahab-3, reportedly designed for use against naval installations and aircraft carrier battlegroups, poses a potent threat to Iran's regional adversaries.[21] The IRGC's al-Hadid Missile Brigade is specifically responsible for the Shahab program and formed 5 ballistic missile units with an armament of 15 Shahab-3 missiles. The Shahab-3 has an estimated range of 1,240 miles, enabling it to strike targets in Israel as well as any U.S. military facility in the Persian Gulf region. With the success of this missile, the IRGC has pushed for the development of both the Shahab-4, currently on hold, and the 2,480- to 3,100-mile-range Shahab-5.[22] The Revolutionary Guard's ballistic missile program alone makes it a key component of the country's nuclear weapons development program.

Ideological/Constitutional-based Activity

In 1992, the Islamic Republic formed a joint armed forces general staff in an attempt to integrate the regular armed forces and the Pasdaran, at least at the higher command levels. Each side, however, retained its unique mandates. The regular military assumed the more conventional role of defending the territory of the Islamic Republic, while the IRGC was to maintain internal security and continue to export the revolution.[23] It is precisely this separation of purpose, which existed from the adoption of Iran's constitution, that makes the Revolutionary Guard not only unique as a government and military institution but also such an all-pervasive entity in the daily domestic and international policy enforcement of the clerical regime.

Since its inception, the Pasdaran has developed into a powerful organization whose activities served as partial evidence to justify President Bush's naming Iran as one of three countries in the world's "axis of evil."[24] Several elements of the Revolutionary Guard enable it to carry out its assigned missions and maintain the ideological fervor that sparked its creation and organization during the Islamic Revolution. The first is an elite branch of the IRGC uncompromisingly dedicated to the principles that define the Islamic Republic—the Quds (Jerusalem) Force (al-Quds). Headed by Brigadier General Qassem Suleimani since 1998, the Quds Force is primarily responsible for "exporting the Revolution."[25] There are an estimated 5,000 members of the Pasdaran assigned to the Quds Force, whose budget is controlled directly by the Supreme Leader, Ayatollah Ali Khamenei. The nature of their mission dictates that they work almost completely *outside* of Iran.[26]

the Quds Force is primarily responsible for "exporting the revolution"

Al-Quds

The Quds Force maintains closed sections in many Iranian embassies throughout the world. It is not known to what extent the ambassadors of these embassies are aware of the activities of al-Quds stationed in their respective countries, but it is believed that at least some of the Quds Force operations are conducted in concert with elements of the Ministry of Intelligence and Security (*Vezarat-e Ettela'at va Amniat-e Keshvar*).[27] Separate corps elements operate in many countries, generally in support of Islamist groups whom they hope to influence politically and ideologically to become more in step with Iran's Islamic revolution.

The Pasdaran's exporters of the revolution continue to give direct support, through training, money, and weapons, to Palestinian groups such as Hamas, Palestinian Islamic Jihad, the al-Aqsa Martyrs' Brigades, and the Popular Front for the Liberation of Palestine–General Command, as well as Muqtada al-Sadr's Mehdi Army and the Badr Organization of the Supreme Council of the Islamic Revolution in Iraq and Hizballah in Lebanon.[28] It was also reported that Abu Musab al-Zarqawi was granted refuge in Iran in 2004, and he visited training camps run by al-Quds while securing monetary and logistical support for his own operations in Iraq.[29] In a meeting with reporters on April 17, 2007, the Chairman of the Joint Chiefs of Staff, General Peter Pace, commented that not only were Iranian-made weapons and explosives being delivered by Quds Force members to Shi'a insurgents in Iraq, but also that shipments were being intercepted in Afghanistan bound for the Taliban.[30] The supplying of weapons

Islamic Revolutionary Guard vessels maneuver in Sea of Oman, April 2006

AP/Wide World Photo

Suspected Iranian small craft menaces USS *Hopper* and USS *Port Royal* near Strait of Hormuz, January 2008

U.S. Army Central Public Affairs

from the world bastion of Shi'a Islam to the ultraconservative Sunni Taliban fighters indicates Iran's willingness to turn a blind eye, at least momentarily, to sectarian differences in order to cause chaos and bloodshed throughout the region and to open the door for uncontested regional hegemony upon the departure of Western troops.

The Quds Force also runs a wide array of training camps for unconventional warfare and terrorist operations in various countries. These facilities cater to both foreign and indigenous recruits. The major training facilities in the Islamic Republic are located at Imam Ali University at the Sa'dabad Palace in Tehran (primarily ideological indoctrination); Manzariyah Training Center in Qom (foreign students recruited from religious seminaries); Tabriz (Iraqi Shi'a, Iraqi, and Kurdish Turks); and Mashhad (Afghans and Tajiks). Most domestic students are trained for service in the IRGC, while foreign students often receive specialized training in a number of areas. They are instructed in demolition and sabotage near the central Iranian city of Esfahan, airport infiltration in Mashhad and Shiraz, and underwater warfare in Bandar Abbas. There are also al-Quds–operated camps in Sudan and Lebanon. Other such camps are believed to exist in other countries.[31]

The Basij

If the Quds Force represents the elite, foreign-based, ideologically extreme arm of the IRGC, then the second enabling element of the Revolutionary Guard regarding the execution of its constitutional mandates, the *Basij Mustazafin* (Mobilization of the Oppressed), or Basij, is the opposite in all aspects except for ideological fervor. In some respects, the Basiji are infinitely more important to the regime's survival than are the soldiers of al-Quds.

Initially organized in response to the large number of casualties incurred during the Iran-Iraq war when the leaders of the Islamic Republic feared for the very existence of the fledgling revolution, the Basij continues to be comprised of volunteers from every part of Iranian society. Primarily young adults and children as young as 12 in the early years of the war, the Basij now includes both male and female teachers, doctors, students, school-aged children, engineers, businessmen, and lawyers. Most Basiji, however, are older men, often retired from military service.[32] Current estimates of the number of Iranians in the Basij forces are around 90,000 active uniformed personnel with a reserve strength of 300,000.[33] The total number of Pasdaran-trained citizens in the Basij available for mobilization is less certain, ranging from nearly 1,000,000 (according to Western analysts)[34] to as many as 11 million (as claimed by Basij commander General Mohammad Hejazi).[35]

Today, the Basij is primarily responsible for riot control and internal security, as well as policing the populace for infractions of the Islamic Republic's myriad morals laws, such as male-female fraternization and female dress codes; however, it is also organized to augment the IRGC,[36] and potentially the regular military.[37]

The Basij is trained, organized, and to some degree controlled by the Revolutionary Guard. The commander, General Hejazi, is an IRGC general. The Basij is broken into 740 regional battalions of about 300 to 350 personnel each.[38] There are at least 10 defined Revolutionary Guard administrative regions, further divided into more localized districts. Corresponding to the provincial makeup of the country, these units are able to operate and coordinate efforts with local Basij forces.[39] There are also units in nearly every government agency, factory, and university.[40]

Indoctrination of newly appointed Basiji takes place at the IRGC's Imam Ali's Companions Basij camp.[41] The Pasdaran also trains Basij members in basic military operations and warfighting techniques,[42] as well as riot control and internal security.[43] The extent and effectiveness of this training are not accurately measured, although joint training exercises have increasingly included Basij units. One exercise held simultaneously in cities and towns throughout the country in September 2005 included as many as 70 *Ashura* (designated for riot control) and *al-Zahra* (made up solely of women) units, alongside 500 Basij combat units. The exercise was centered on a scenario of widespread civil unrest.[44]

Three events occurred in 2005 that expanded and demonstrated the influence of the IRGC throughout Iran. The election of a former IRGC commander as president notwithstanding, the first significant event was

the Basij is responsible for riot control and internal security, as well as policing the populace for infractions of the Islamic Republic's myriad morals laws

AP/Wide World Photo (Sajjad Safari)

Su-25s from Islamic Revolutionary Guard Corps air force take part in maneuvers

the much-publicized and debated creation of suicide squads in the Islamic Republic. The first organized groups trained and willing to conduct suicide missions for the regime, first publicized in 2004, had no connection to the government. However, they were ready to carry out missions on orders from the Supreme Leader, in addition to their respective local clergies.[45] By 2005, the Islamic Republic officially recognized both the effectiveness of such operations, as witnessed throughout the world, and the propaganda value of having dedicated suicide bombers ready to sacrifice themselves for the good of Iran. In July 2005, IRGC General Mohammed Reza Jaafari (recently appointed head of the Pasdaran) publicly announced the creation of the Lovers of Martyrdom Garrison (*Gharargahe Asheghane Shahadat*). Jaafari, the garrison's first commander, stated that recruiting was already under way and that there were to be as many as four martyrdom-seeking divisions in Tehran, with many more throughout the country.[46] The number of people who have actually committed to the Lovers of Martyrdom is unknown and so is the level of commitment.[47] In the meantime, just the potential for organized, strategically and operationally significant suicide attacks, whatever their numbers, adds risk to any military assessment of the Islamic Republic.

The second development of 2005 that added to the IRGC's influence occurred on the domestic front with the appointment of IRGC Brigadier General Ismail Ahmadi Moghaddam as chief of the nation's police force. This appointment, made at the behest of Ayatollah Khamenei, has effectively placed the entire law enforcement and security apparatus under Pasdaran control.[48]

The third event was the creation of the IRGC Center for Strategy. The Supreme Leader charged Brigadier General Jaafari, the same man who stood up the IRGC's suicide garrison, with creating an IRGC Center for Strategy, which is designed to bring together the top scientists and individuals in the IRGC to develop an updated military strategy and command structure for the Pasdaran. In carrying out their mission, members of the center could essentially give the IRGC access to all of the nation's resources and absolute control over the regular military in time of war.[49] It is clear that the primacy of the Pasdaran in all domestic security and law enforcement matters, as well as de facto ownership of the regular armed forces, makes it the key to the internal survival of the regime and the top enforcer of the despotic oppression inside Iran.

Political and Economic Influence

Particularly since the election of President Mahmoud Ahmadinejad in 2005, the Islamic Revolutionary Guard Corps has enjoyed an unparalleled boost in political influence in Iran. This influence is not derived from any real, direct participation in the political arena, aside from each member's right to vote. Rather, the source of the Pasdaran's political clout can be summed up in one word: *alumni*. The Ninth Government, as it is known in Iran, reads like a roster of former IRGC soldiers and commanders, the most important recent addition being Ahmadinejad himself, whose former service and extreme conservative views are well known and will not be addressed here. The importance of his election, however, is his ability to choose his cabinet members (subject to *Majlis* [parliament] confirmation) as well as to influence the choice of appointments to other non-elected positions in the government.

The most visible noncabinet appointee in the Islamic Republic is Ali Larijani, the head of the Supreme National Security Council (SNSC), Iran's chief nuclear negotiator, and a Pasdaran veteran.[50] With the progression and intent of Iran's nuclear power program occupying the center of the country's ongoing confrontation with the West, Larijani is in a position to influence the course of events in terms of negotiations and defending Iran's claimed right to develop nuclear power. His almost daily interaction with high-ranking officials from around the world to discuss the program inevitably leads many to see him as the face of Iran, one steeped in the ideology and zeal of a former commander of the Revolutionary Guard.

the Ninth Government, as it is known in Iran, reads like a roster of former Revolutionary Guard soldiers and commanders

As head of the SNSC, Larijani's views of how to protect and run the government are not taken lightly. Under Article 176 of the Iranian constitution, the SNSC—comprised of leaders from every branch in the government, senior officers of the regular armed forces and Pasdaran, key ministers, the chief of the Supreme Command Council of the Armed Forces, two members appointed by

General Mohammad Ali Jafari, head of Islamic Revolutionary Guard Corps, attends news conference

AP/Wide World Photo (Mehdi Ghasemi)

the Supreme Leader, and experts in various fields—is responsible for:

- determining defense and national security policies within the framework of general policies determined by the leader
- coordinating activities in areas relating to politics, intelligence, social, cultural, and economic fields in regard to general defense and security policies
- exploiting the country's material and intellectual resources for facing internal and external threats.[51]

In effect, the SNSC, with input from the *faqih* and the president, determines the nation's defense and security policies.

The Ministry of Defense and Armed Forces Logistics is headed by an IRGC veteran and one of the founders of Hizballah, Mostafa Mohammad Najjar. The majority of the other cabinet-level officials have worked with the Pasdaran either as soldiers or in the intelligence establishment.[52] One newly appointed minister, Ezzatollah Zarqami, is not only a former officer in the IRGC but also one of the students who stormed the American Embassy in 1979.[53] With the increasing pressure on the government with regard to its nuclear program, there began a housecleaning effort on the diplomatic front in mid-2006 to ensure Iran's ambassadors to other nations were in step with the policies of the Ninth Government. While the replacements for 60 to 70 ambassadors came from the foreign service ranks, Pasdaran spokesman Seyyid Ahmad Moheiddin Morshedi made it clear that the IRGC was ready to step in and fill those positions should the newly appointed personnel get out of line.[54] The Revolutionary Guard influence is alive and well in the Iranian government.

The IRGC also exerts an ever-increasing economic influence both domestically and internationally. Its biggest areas of involvement on the economic front are the transportation and oil industries. Khatam-ol-Anbia, an IRGC gas/oil infrastructure development company, won a contract for $1.3 billion to build a gas pipeline.[55] Khatam-ol-Anbia also received a $2.09-billion contract for the development of portions of the South Pars natural gas field. Not only do these projects serve as huge revenue sources for the IRGC, but they were also gained without competition in no-bid contracts.[56] The Pasdaran also bought out Oriental Kish, the country's largest private oil company, for $90 million.[57] Another company associated with the IRGC was awarded $1.2 billion for a construction project on Tehran's metro system.[58] The wealth generated by the Pasdaran is incredible even for a major private institution, much less a military branch. Militaries around the world are in the business of spending money, not making it. The economic activity of the IRGC is one more example of the uniqueness of this institution.

WMD and the Nuclear Program

It is widely presupposed that Iran has an extensive chemical and biological weapons program, although the types and numbers of these weapons are not known with any precision. The IRGC is also believed to control this program and its weapons stockpiles. The Pasdaran's *Shin-mim-re* (chemical, biological, and radiological) units routinely exercise, along with the regular military, defense against such weapons. Analysts have used this fact to support theories on the existence of Iran's offensive chemical and biological weapons. Speculation also surrounds Iran's nuclear program and whether the goal is the development of nuclear weapons.

While Iran claims that its nuclear program is focused on the development of an alternate energy source to oil, the West in general, and the United States in particular, believes the ultimate goal is the creation of nuclear weapons. There is significant evidence to support this assumption. What is not common belief, at least publicly, is that Iran is developing nuclear weapons under the auspices of a parallel nuclear program run by the Islamic Revolutionary Guard Corps. In February 2004, Pakistani scientist A.Q. Khan openly admitted to selling plans for nuclear technology to Iran, including weapons production plans.[59] Khan's contact in Iran was Commander Mohammad Eslami, head of the IRGC nuclear research center.[60]

In 1983, the IRGC established a "strategic research and nuclear technology" center in Tehran. As many as 400 nuclear experts and engineers currently work at this facility.[61] Accounts by defectors, including former Ministry of Defense consultant and nuclear physicist Alireza Assar, provide proof that a nuclear weapons program exists and that it has been run by the Pasdaran since 1988. Assar was approached on two occasions in 1987 and 1988 by the commander in chief of the Revolutionary Guard, Mohsen Rezai, and asked to help develop "neutron triggers" to facilitate a nuclear explosion. Assar also gave the locations of the meetings and the names of other nuclear scientists involved.[62] The benefit to the IRGC of having a secret nuclear program is that the Pasdaran receives all the latest research and developments from the official civilian Atomic Energy Organization of Iran without having to share any of its own research.[63] The combination of sole ownership of ballistic missile technology and a fast-tracked nuclear development program makes the IRGC perhaps the most dangerous organization in Iran, if not the region.

By examining the preceding analysis alongside the strategic objectives established by President Bush in the National Security Strategy, it is evident that the Islamic Revolutionary Guard Corps constitutes the key center of gravity in Iran. Indeed, using only open source material leaves ample room for mistakes when making this determination. The evidence presented above, while not necessarily as concrete as a commander would like, is an extensive sampling of the open source material available in English. There are even more sources in both print and on the Internet available in Farsi. The analysis of this material leaves little doubt as to the real power behind the clerical regime of the Islamic Republic of Iran. The center of gravity is without question the *Sepah-e Pasdaran*. **JFQ**

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NOTES

[1] George W. Bush, *The National Security Strategy of the United States of America* (Washington, DC: The White House, 2006), 20, available at <www.whitehouse.gov/nsc/nss/2006/nss2006.pdf>.

[2] Ibid.

[3] Chairman of the Joint Chiefs of Staff, Joint Publication (JP) 5–0, *Joint Operation Planning* (Washington, DC: The Pentagon, December 26, 2006), 4–8.

[4] David Hartwell et al., eds., "Iran," *Jane's Sentinel Security Assessment: The Gulf States*, no. 18 (United Kingdom: Jane's, 2006), 4, 108.

[5] Ibid., 108.

[6] Kenneth Katzman, *The Warriors of Islam: Iran's Revolutionary Guard* (Boulder, CO: Westview Press, 1993), 89.

[7] Anthony H. Cordesman, *Iran's Developing Military Capabilities* (Washington, DC: Center for Strategic and International Studies Press, 2005), 46–47.

[8] Katzman, 89.

[9] Hartwell et al., 126–127.

[10] Fars News Agency, "British Sailors Detained by Iran Back in Persian Gulf," May 2, 2007, accessed at <www.farsnews.com/English/>.

[11] Hartwell et al., 133–134.

[12] Ibid.

[13] Fars News Agency, "Iran Test Fires New Missiles," November 4, 2006, accessed at <www.farsnews.com/English/>.

[14] Fariborz Haghshenass, *Iran's Doctrine of Asymmetric Naval Warfare* (Washington, DC: The Washington Institute for Near East Policy, December 21, 2006), accessed at <www.washingtoninstitute.org/>.

[15] Alireza Ronaghi, "Iran Says Fires Sonar-evading, Underwater Missile," *Iran va Jahan*, April 2, 2006, accessed at <http://iranvajahan.net/>.

[16] Hartwell et al., 133.

[17] Fars News Agency, "Iran Enjoys High Missile Capability," April 19, 2007, accessed at <http://farsnews.com/English/>.

[18] Hartwell et al., 115.

[19] "Iran Test-Fires Radar-Evading Missile," Reuters, March 31, 2006, accessed at <www.rferl.com/>.

[20] Asharq Alawsat, "Iran Fires Missiles in War Games—TV," November 2, 2006, accessed at <www.asharq-e.com/>.

[21] Haghshenass.

[22] Jane's, *Jane's Sentinel*, 111.

[23] Michael Eisenstadt, "Déjà vu All Over Again? An Assessment of Iran's Military Buildup," in *Iran's Strategic Intentions and Capabilities*, McNair Paper 29, ed. Patrick Clawson (Washington, DC: National Defense University Press, 1994), 123, available at <www.ndu.edu/inss/McNair/mcnair29/mcnair29.pdf>.

[24] George W. Bush, State of the Union Address, 2002, accessed at <www.whitehouse.gov/>.

[25] Intelligence and Terrorism Information Center, "Using the Quds Force of the Revolutionary Guards as the Main Tool to Export the Revolution Beyond the Borders of Iran," April 2, 2007, available at <www.terrorism-info.org.il/malam_multimedia/English/eng_n/html/iran_e0307.htm>.

[26] Cordesman, *Iran's Developing Military Capabilities,* 48.

[27] Anthony H. Cordesman, *Iran's Military Forces in Transition: Conventional Threats and Weapons of Mass Destruction* (Westport, CT: Praeger, 1999), 131.

[28] Kenneth Katzman, *Iran: U.S. Concerns and Policy Responses*, CRS Report for Congress RL32048 (Washington, DC: Library of Congress, June 2, 2006), 22–23, available at <http://fpc.state.gov/documents/organization/67845.pdf>. This document is routinely updated. For a link to the latest version, visit <http://opencrs.com/document/RL32048/>.

[29] Ilan Berman, *Tehran Rising: Iran's Challenge to the United States* (New York: Rowman and Littlefield, 2005), 23.

[30] Bill Gertz, "Iran Sending Arms to Afghanistan, Iraq, Pace Says," *The Washington Times*, April 18, 2007.

[31] Cordesman, *Iran's Developing Military Capabilities*, 49.

[32] Wahied Wahdat-Hagh, *Basij—The Revolutionary People's Militia of Iran*, Inquiry and Analysis Series no. 262 (Washington, DC: The Middle East Media Research Institute, February 1, 2006.

[33] Cordesman, *Iran's Developing Military Capabilities*, 49.

[34] Cordesman, *Iran's Military Forces in Transition*, 135–136.

[35] Houchang Hassan-Yari, "Iran: Defending the Islamic Revolution—The Corps of the Matter," Radio Free Europe/Radio Liberty.

[36] Cordesman, *Iran's Military Forces in Transition*, 136.

[37] Wahdat-Hagh.

[38] Cordesman, *Iran's Developing Military Capabilities*, 49.

[39] Katzman, 82.

[40] Hassan-Yari.

[41] Wahdat-Hagh.

[42] Hassan-Yari.

[43] Cordesman, *Iran's Military Forces in Transition*, 136.

[44] Bill Samii, "Iran: Paramilitary Force Prepares for Urban Unrest," Radio Free Europe/Radio Liberty, September 30, 2005.

[45] Ali Alfoneh, "Iran's Suicide Brigades," *Middle East Quarterly* 14, no. 1 (Winter 2007), 37–38.

[46] Iran Focus, "Iran Opens Garrison to Recruit Suicide Bombers against West," July 22, 2005.

[47] Alfoneh, 41.

[48] Iran Focus, "Iran Puts Police under Revolutionary Guards Control," July 10, 2005.

[49] Iran Focus, "Iran Leader Makes Key Changes in Revolutionary Guards Command," August 20, 2005.

[50] Ed Blanche, "Pasdaran Power," *The Middle East*, no. 360 (October 2005), 22.

[51] United Nations High Commissioner for Refugees, Constitution of the Islamic Republic of Iran, official translation, accessed at <www.unhcr.org/>.

[52] Blanche, 22–23.

[53] Safa Haeri, "In Major Shake Up at the VVIR, Ali Larijani Bids Farewell, Replaced by Ezzatollah Zarqami," Iran Press Service, May 20, 2004.

[54] American Foreign Policy Council, Iran Democracy Monitor no. 15, ed. Ilan Berman, June 26, 2006, available at <www.afpc.org/idm/idm15.shtml/>.

[55] George H. Wittman, "Iran's Revolutionary S.S.," *The American Spectator*, April 10, 2007, available at <www.spectator.org/>.

[56] Matthew Levitt, "Target Iranian Forces," *The Washington Institute for Near East Policy*, February 16, 2007, available at <www.washingtoninstitute.org>.

[57] Jehan Lezrak, "The Pasdaran's Private Empires," *Iran Almanac*, December 2006, available at <www.iranalmanac.com/news/>.

[58] Wittman.

[59] Salman Shahid, "Musharraf Accepts Dr. A.Q. Khan Apology," *Pakistan Times*, May 2, 2004, available at <http://pakistantimes.net/2004/02/05/special.htm/>.

[60] Alireza Jafarzadeh, *The Iran Threat: President Ahmadinejad and the Coming Nuclear Crisis* (New York: Palgrave Macmillan, 2007), 134.

[61] Ibid., 126.

[62] Iran Focus, "'Iran Is Close to a Nuclear Bomb': Iranian Scientist—An Interview with a Defector from Iran's Secretive Nuclear Establishment," July 13, 2005, accessed at <www.iranfocus.com/modules/news/>.

[63] Jafarzadeh, 140.

AP Wide World Photo (Vahid Salemi)

Iranian volunteer militiamen gather for meeting

Hizballah Rising

Iran's Proxy Warriors

By SHANNON W. CAUDILL

While al Qaeda has claimed the world headlines in recent years, Hizballah has established itself in a class of its own—what some terrorism experts call "the best in the business."[1] In 2006, Hizballah infiltrated Israel, ambushed an Israeli patrol, took two soldiers hostage, fought the Israeli Defense Forces for 34 days, and launched nearly 4,000 rockets into Israel.[2] The organization is now flush with cash, receiving hundreds of millions of dollars from Iran annually.[3] Expanding its influence, the organization is now making inroads into Iraq and the Horn of Africa in a bid to counter American foreign policy interests and further those of its main sponsor, Iran.[4] In short, Hizballah's stock has never been higher.

Part political party, part humanitarian agency, part paramilitary terrorist organization, Hizballah has planted itself firmly on the radical Islamic landscape. Formed in 1982 during the Lebanese civil war, its genesis initially focused on ending Israel's occupation of Southern Lebanon while promoting an Iranian-based revolutionary Shi'ite-Islamic doctrine.[5] Its philosophy was laid out in a 1985 "open letter" to the world, a document that has been updated and amended over the years to reflect the organization's growing ambitions. In the letter, Hizballah commits itself to the destruction of Israel, the expulsion of Israelis and Western powers from Lebanon, and the removal of "American hegemony in our land."[6]

According to a 2007 Department of State report, "Hizballah remains the most technically capable terrorist group in the world."[7] Beyond its espoused focus on Lebanon, it is linked to terrorist operations in Argentina, Greece, Iraq, Israel, Kuwait, Saudi Arabia, Singapore, and Thailand and has established cells in Europe, Africa, South America, North America, and Asia.[8]

Its 25-year history includes some of the deadliest terrorist attacks in modern time, including the 1983 bombing of the U.S. Marine Corps barracks in Beirut, which precipitated the withdrawal of American forces from Lebanon in 1984, an event seen by jihadists as a model for anti-Western operations. "Hizballah may be the 'A-team' of terrorists and maybe al Qaeda is actually the B-team,"

Lieutenant Colonel Shannon W. Caudill, USAF, is an Action Officer, Antiterrorism Interagency Coordination, Directorate of Operations (J3), the Joint Staff.

argues former Deputy Secretary of State Richard Armitage. "They have a blood debt to us and we're not going to forget it."[9]

A Deadly History

Prior to September 11, 2001, Hizballah was credited with killing more Americans than any other terrorist group, including at least seven Central Intelligence Agency (CIA) officers.[10] As an organization, it continually improves its operational capability, demonstrates organizational and tactical skill, and has a high degree of proficiency with high-tech weaponry. Hizballah has teamed with state intelligence agencies, primarily those of Iran and Syria, and has aligned itself with other terrorist organizations in order to further its political and military goals. Hizballah is ruthless, versatile, and intelligent and constantly strives to improve military capabilities.

While al Qaeda has been the primary focus of American policymakers in recent years, Hizballah has proven itself to have global reach and staying power. It is credited as the first terrorist group to pioneer the use of suicide bombers as a weapon of mass destruction, delivering large vehicle bombs to specific targets.[11] It has recently shown technological prowess through the use of explosive-laden unmanned aircraft and missile technology, even managing to cripple an Israeli warship.[12] The success of the organization is partially rooted in its financial and logistical backing by Iran and Syria.

Hizballah is making inroads within the Iraqi Shi'ite population and has trained an estimated 2,000 Iraqi Shi'ite militia in Lebanon and Iran. On Iran's behalf, it is assisting radical Iraqi Shi'ites in organizing groups based on the Hizballah template, a move that directly contributes to the destabilization of Iraq and deaths of coalition forces.[13] It has established relationships in the Horn of Africa, primarily in Sudan and Somalia, and even managed to recruit an estimated 720 Somali Islamist fighters to augment its forces in the 2006 fight against Israel.[14] Indeed, Hizballah's reach and influence are at a new zenith.

Hearts and Minds—The Hizballah Way

Hizballah maintains a positive image in Lebanese Shi'ite communities by providing educational facilities and services, medical care and hospitals, housing for the poor, and a "news" service through radio and satellite television. Each part of the movement supports the others. Hizballah's access to money continues to grow; it now receives an annual budget estimated at $200 million from Iran.[15] In the aftermath of Hizballah's war with Israel in 2006, Iran provided the organization between $600 million and $700 million for the rebuilding of Shi'ite communities to maintain its public support, deliberately undercutting Western humanitarian inroads into those communities.[16] Hizballah is estimated to have paid out as much as $180 million in cash directly to community members who were made homeless from Israeli attacks in Shi'ite areas.[17]

Much like the Irish Republican Army (IRA), Hizballah maintains a political wing and a military component. In the 2005 Lebanese general election, Hizballah and its political party affiliates won 35 seats, representing 27 percent of the Lebanese parliament.[18] Its political involvement has been encouraged by the West in the hope that, like the IRA, it would move from violence to democratic principles.

To complement its civic contributions, Hizballah's propaganda machine pushes its agenda under the guise of news programming through its satellite television operation, Al-Manar, its radio station, Al-Nour, and the parent company, Lebanese Media Group. These broadcast outlets promote Hizballah's image, encourage anti-U.S. and anti-Israeli sentiments, and voice support for Iranian and Syrian foreign policy objectives. Israel and the United States are the primary targets of criticism and propaganda by Al-Manar broadcasts.

In remarks broadcast on Al-Manar, Hizballah's leader, Hassan Nasrallah, stated, "Our enmity to the Great Satan is complete and unlimited. . . . Our echoing slogan will remain: Death to America!"[19] One Al-Manar video portrays the United States through an altered image of the Statue of Liberty, transforming the statue into a frightening ghoul that carries a knife instead of a liberty torch and drips blood from its gown. The voiceover states that America "has pried into the affairs of most countries in the world" and that "America owes blood to all of humanity."[20] In the wake of the U.S. invasion of Iraq, Al-Manar aired another video calling the United States the "mother of terrorism" and urged attacks against the "invaders" with "rifles and suicide bombers."[21]

In 2004, France banned Al-Manar's broadcasts through the European satellite, Eutelsat, citing rampant anti-Semitism, including a broadcast in which a speaker accused Israel of deliberately disseminating AIDS throughout Arab nations.[22] Within days of France's ruling, the U.S. State Department followed by adding Al-Manar to its Terrorism Exclusion List, preventing American communications satellites from relaying Hizballah broadcasts.

Hizballah uses broadcast entities to earn advertising revenue, promote its charities, and request donations through its accompanying Web site. As a result, in 2006, the U.S. Treasury Department designated Hizballah's broadcasting arm as a terrorist entity, thus preventing financial support and monetary transactions between U.S. citizens and Hizballah media outlets.[23] In a subsequent statement, the Treasury Department added, "Any entity maintained by a terrorist group, whether masquerading as a charity, a business, or a media outlet, is as culpable as the terrorist group itself."[24] Al-Manar continues its broadcast operations in the Middle East, Africa, some parts of Europe, and via the Internet.

on Iran's behalf, Hizballah is assisting radical Iraqi Shi'ites in organizing groups based on the Hizballah template

The Hizballah–al Qaeda Nexus

Due to their long history of religious animosity and distrust, Sunni and Shi'ite terrorist groups do not normally get along. However, the Federal Bureau of Investigation (FBI) alleges that in the 1990s, al Qaeda, a Sunni-based group, "put aside its differences with the Shi'ite Muslim terrorist organizations, including the government of Iran and its affiliated terrorist group, Hizballah, to cooperate against the perceived common enemy, the United States and its allies."[25] Also in the 1990s, Osama bin Laden met with Hizballah's lead operator, Imad Mughniya, the mastermind behind many of its major operations against U.S. targets throughout the 1980s.[26] As a result of this meeting, Hizballah provided explosives and tactical training to al Qaeda operatives. Prior to the attacks on U.S. Embassies in Africa, al Qaeda operatives were sent to Hizballah training camps in Lebanon.[27] However, no direct link has been established between the actual Embassy bombings and Hizballah.

The relationship between Hizballah and al Qaeda became public knowledge during the 2000 U.S. court testimony by Ali Mohamed, a former U.S. Army Green Beret who pleaded guilty to conspiring with bin Laden to bomb the two U.S. Embassies in Africa. Mohamed testified that he provided security at a meeting

"between al Qaeda . . . and Iran and Hizballah . . . between Mughniyah, Hizballah's chief, and bin Laden." He also stated that Hizballah had provided explosives and tactical training to al Qaeda operatives, while Iran "used Hizballah to supply explosives."[28] Following U.S. investigations into the Embassy bombings, the U.S. Attorney's Office for the Southern District of New York indicted bin Laden, charging him with conspiracy to attack U.S. assets, and linked him to other terrorist organizations, including Hizballah.[29]

Prior to the U.S. invasion of Iraq, al Qaeda's Abu Musab al-Zarqawi and his associates made an alliance with Hizballah with the joint goal of planning a catastrophic terrorist attack against Israel.[30] In 2003, the U.S. Treasury named al-Zarqawi and his associates as a specially designated global terrorist entity, claiming he had received "more than $35,000," likely from Hizballah, in mid-2001 "for work in Palestine."[31] Hizballah's cooperation with al-Zarqawi reportedly included training in tactics, explosives, money laundering, weapons smuggling, and document forgery.[32] However, the Hizballah relationship to al Qaeda appears to have soured and may have ended altogether when al-Zarqawi began his attacks against Iraqi Shi'ite communities in a successful effort to foster sectarian violence.

Hizballah in Iraq

Hizballah is the model for radical Shi'ite elements inside Iraq. The growing links between radical Iraqi Shi'ite groups and Hizballah are visible and alarming. Posters can now be found in Iraqi Shi'ite communities showing Muqtada al-Sadr, a radical Shi'ite cleric and leader of the Mehdi Army, and Hizballah's leader, Hassan Nasrallah, walking side by side. Sadr is shown walking on an American flag, Nasrallah on an Israeli one.[33]

"The Iranian Quds Force is using Lebanese Hizballah essentially as a proxy, as a surrogate, in Iraq," said Brigadier General Kevin Bergner, USA, former deputy commander, Multi-National Force–Northwest.[34] The Quds Force, a special operations element of the Islamic Revolutionary Guard Corps, runs three training camps modeled on Hizballah operations in which groups of 20 to 60 radical Iraqi Shi'ites are trained in the use of improvised explosive devices, indirect fire (mortars and rockets), sniper operations, and insurgent tactics.[35]

U.S. intelligence officials identified the Quds Force as backing the creation of Iraqi Shi'ite "special groups" based on Hizballah organization and tactics.[36] General David Petraeus, USA, commander, Multi-National Forces–Iraq, testified to Congress that Hizballah created a special unit called Department 2800 to support "the training, arming, funding, and, in some cases, direction of the [Iraqi Shi'ite] militia extremists by the Iranian Republican Guard Corps' Quds Force."[37] Proof of direct Hizballah involvement in Iraq came in March 2007, through the capture of Ali Mussa Daqduq, considered an elite Hizballah special operations veteran and explosives expert. Daqduq was captured in a coalition raid against Iraqi Shi'ite insurgency leadership, many of whom came from the Mehdi Army.

Hizballah continues to provide Iran "plausible deniability" on the world stage for terrorist attacks that clearly further Iranian aims

Multi-National Force–Iraq spokesman addresses Iran's use of Hizballah to arm insurgents in Iraq

U.S. Army (Sky M. Laron)

Timeline: Operations Linked or Credited to Hizballah

1982–1990

Lebanon: From 1982 to 1986, Hizballah conducted an estimated 36 suicide attacks against American, French, and Israeli political and military targets, killing over 659.[1] Kidnappings of more than 30 American and European citizens, including William Buckley, a Central Intelligence Agency station chief; David Dodge, president of American University of Beirut; Terry Anderson, Associated Press reporter; Father Martin Jenco, a Roman Catholic priest; and Reverend Benjamin Weir, a Presbyterian missionary. Anderson was held the longest (2,454 days), and Buckley was tortured to death.[2]

1983

Lebanon: Bombing of U.S. Embassy in Beirut, killing 63.[3] Bombing of U.S. Marine and French forces in Beirut, killing 298, including 241 U.S. Marines and other Servicemembers.[4]

Kuwait: Bombing of the U.S. Embassy in Kuwait City, killing six. The attack is credited to Al Dawa, an Iranian-backed group, but there is a significant link to Hizballah. One of the bombers, Mustafa Youssef Badreddin, was the cousin and brother-in-law of one of Hizballah's senior officers, Imad Mughniyah.[5]

1984

Kuwait-Iran: Hijacking of Kuwait Airways Flight 221 bound for Pakistan, in which two U.S. Government officials were killed after landing at Tehran airport. Iran claimed its security forces stormed the plane without incident and intended to bring the hijackers to trial. The trial never materialized and Iranian authorities released them.[6]

Lebanon: Bombing of U.S. Embassy annex in Beirut, killing nine.[7]

1985

Greece-Lebanon: Hijacking of TWA Flight 847, resulting in the killing of a U.S. Sailor.[8] Today, four members of Hizballah—Imad Mughniyah, Hasan Izz-al-Din, Mohammed Hamadei, and Ali Atwa—remain on the Federal Bureau of Investigation's list of most wanted terrorists for this hijacking.[9]

Iran's Hidden Hand

John Negroponte, former Director of National Intelligence, stated, "At the center of Iran's terrorism strategy is Lebanese Hizballah, which relies on Tehran for a substantial portion of its annual budget, military equipment, and specialized training."[38] Prior to 2005, it is estimated that Iran had as many as 2,000 troops inside Lebanon providing direct assistance, training, and possibly high-tech weapons employment for Hizballah units.[39] Iranian personnel in Lebanon are now said to number between 15 and 800.[40] Iran, however, vigorously and consistently disputes any official or direct tie to Hizballah.

Mike Wallace, a reporter for *60 Minutes*, visited Iran to interview President Mahmoud Ahmadinejad in August of 2006. Wallace asked, "Who supports Hizballah? Who has given Hizballah hundreds of millions of dollars for years?" Ahmadinejad interrupted by asking Wallace, "Are you the representative of the Zionist [Israeli] regime?" and added, "Hizballah is a popular organization in Lebanon, and they are defending their land."[41] Iran's former President Mohammad Khatami stated a similar line of defense in a separate interview: "Hizballah is a Lebanese movement; it has declared itself as such, it defends the territorial integrity of Lebanon. . . . We have close intellectual ties with Hizballah."[42]

Iranian ties to Hizballah reach far beyond the borders of Lebanon and Iraq. The organization's success in recruiting over 700 Somali Islamists to fight against Israel was underwritten by Iran and Syria.[43] A 2006 United Nations report stated, "In exchange for the contribution of the Somali military force [to Hizballah operations in Lebanon], Hizballah arranged for additional support to be given . . . by the governments of the Islamic Republic of Iran and the Syrian Arab Republic, which was subsequently provided."[44] As a result of Hizballah arrangements, the Iranians reportedly provided "shoulder-fired anti-aircraft missiles, grenade launchers, machine guns, ammunition, medicine, uniforms and other supplies" to Somali Islamic extremists.[45]

Whether it is driving the United States out of Lebanon in the 1980s or out of Iraq in the new millennium, Hizballah continues to provide Iran "plausible deniability" on the world stage for terrorist attacks that clearly further Iranian aims. Hizballah's inroads into other regions, including the Western Hemisphere, provide Iran a global reach through the Hizballah network. Despite evidence of its linkage to the terrorist group, Iran has never received any meaningful retribution from the international community or the United States for its sponsorship of Hizballah.

Trouble in Our Own Backyard

Hizballah's attacks against Israeli targets in Argentina in the 1990s demonstrate the organization's capability to conduct operations in the Western Hemisphere. In 1999, a Hizballah operative, Sobhi Mahmoud Fayad, was arrested for surveillance of the U.S. Embassy in Asuncion, Paraguay.[46] Hizballah also has organized cells in South America's "tri-border" area, a remote jungle region bordering Paraguay, Brazil, and Argentina. It has focused its past South American recruiting efforts on the estimated 25,000 Arabs living in the tri-border area who fled Lebanon during the Arab-Israeli war in 1948 and the Lebanese civil war.[47]

The tri-border region is a lawless, unregulated area in which smuggling is the staple trade, and where Hizballah agents of Middle Eastern descent can move freely. Because they have Latin American passports and speak Spanish, they are able to travel easily through Central and South America. A U.S. Southern Command study estimated that between $300 million and $500 million was raised by groups affiliated with terrorist organizations in South America—with operations including drug trade, sham businesses, smuggling, and charities.[48] Louis Freeh, former Director of the FBI, called the tri-border area a "free zone for significant criminal activity, including people who are organized to commit acts of terrorism."[49]

Another area of U.S. concern comes from the growing ties between Venezuela and Iran, particularly because the former could provide a location from which Hizballah could train, supply, and launch attacks against targets in the Western Hemisphere, as it did in Argentina in the 1990s. Venezuela and Iran are the Organization of Petroleum Exporting Countries' (OPEC's) fifth and second largest members, respectively, and account for 20 percent of OPEC's oil production.[50] Using oil as a weapon by favoring policies that drive up the price is a key to this relationship, as higher oil prices fill state coffers and undermine the oil-dependent

1992

Argentina: Bombing of Israeli embassy in Buenos Aires, killing 29.[10]

1994

Argentina: Bombing of Argentine-Israeli Mutual Association in Buenos Aires, killing 100 and wounding 200.[11]

Thailand: On March 17, Hizballah attempted to bomb the Israeli embassy in Bangkok, but the attack failed when the terrorists got into a car accident, fled, and left the explosives in the car.[12]

1996

Saudi Arabia: Bombing of the Khobar Towers military housing complex in Dhahran, killing 19 U.S. military personnel and wounding 515.[13]

Lebanon-Israel: Israel and Hizballah battle for 16 days, killing at least 137, mostly Lebanese civilians.[14]

1997

Singapore: Singapore authorities thwarted plans to blow up U.S. Navy ships passing through the Singapore Straits or berthed in a Singapore harbor.[15]

2006

Lebanon-Israel: Hizballah conducted the Zar'it-Shtula cross-border attack on an Israeli military patrol, kidnapping two Israeli soldiers and sparking the 2006 Lebanon war. After 34 days of ground fighting, an estimated 1,000 Lebanese, mostly civilians, and 159 Israelis, mostly soldiers, were killed.[16] The war was trumpeted as a "victory" over Israel by Iran, Syria, and others.[17] Hizballah units launched an estimated 3,970 rockets into Israel, killing 43 civilians and wounding 1,489.[18]

2006 to present

Iraq: The United States estimates that between 1,000 and 2,000 radical Iraqi Shi'ite militia members were trained in Lebanon by Hizballah in 2006.[19]

U.S. economy. Oil provides an economic incentive for cooperation, but both countries view their alliance as a strategic stand against U.S. influence.

"Chavez sees himself and Ahmadinejad as brothers defining a strategic anti-U.S. alliance that is part of an ambitious and well-structured global project," commented Alberto Garrido, a Venezuelan political analyst.[51] Demonstrating solidarity, Iran awarded Chavez its highest state medal for its support against the United States and Western powers as Iran moves forward in developing nuclear technology.[52] The Venezuelan government produced posters showing Venezuelan President Hugo Chavez and Iran's President Ahmadinejad in an embrace with the slogan "Axis of Unity," a stab at President George W. Bush's "axis of evil." In a joint appearance by the presidents in Iran, Ahmadinejad commented:

We do not have any limitation in cooperation. Iran and Venezuela are next to each other and supporters of each other. Chavez is a source of a progressive and revolutionary current in South America and his stance in restricting imperialism is tangible.[53]

The United States is not immune to Hizballah operations within its own borders. Another growing concern among U.S. security agencies is the possibility of terrorists using the U.S.-Mexican border as a preferred transit point. The CIA has become increasingly alarmed by that prospect. One example of this vulnerability is the 2002 arrest of Salim Boughader Mucharrafille, a Lebanese restauranteur who smuggled an estimated 200 Lebanese nationals into the United States. Some of those entrants had connections to Hizballah, including one who had worked for the organization's television network.[54] As a result, the CIA's Counter Terrorism Center wrote a 2004 threat paper noting:

Many alien smuggling networks that facilitate the movement of non-Mexicans have established links to Muslim communities in Mexico. . . . Non-Mexicans often are more difficult to intercept because they typically pay high-end smugglers a large sum of money to efficiently assist them across the border, rather than haphazardly traverse it on their own.[55]

> *in 2006, U.S. law enforcement agencies and the FBI focused on Hizballah sleeper cells in Boston, Detroit, Los Angeles, and New York*

In 2006, U.S. law enforcement agencies and the FBI focused on Hizballah sleeper cells in major cities, including Boston, Detroit, Los Angeles, and New York. Concerns were also noted about Iranian mission representatives at the United Nations in New York City, where there have been three incidents since 2002 of Iranian diplomats and security guards being "expelled" by the United States for surveillance and photography of the subway system and other possible targets.[56] U.S. officials said of the Iranian expulsions, "We cannot think of any reason for this activity other than this was reconnaissance for some kind of potential targeting for terrorists."[57]

Additionally, a 2003 criminal investigation in Charlotte, North Carolina, resulted in charges against 25 people for a variety of criminal enterprises, including cigarette smuggling, money laundering, credit card fraud, marriage fraud, and immigration violations. Four were charged with providing "material support or resources to a foreign terrorist organization [Hizballah]," and it was noted that they provided "currency, financial services, training, false documentation and identification, communications equipment, explosives, and other physical assets to Hizballah, in order to facilitate its violent attacks."[58] Another five suspects remain as fugitives. One FBI agent knowledgeable of the Charlotte case stated:

Here's a terrorist support cell that sets itself up in America's heartland. They have the ability to move people across borders and give them whole new identities. They have access to a constant flow of untraced cash, military training, and a network of criminal contacts to get weapons. That's not good news.[59]

U.S. and Canadian court documents show that Hizballah members in both countries have tried to procure military equipment, including laser-range finders, aircraft software, global positioning gear, night-vision goggles, blasting equipment, and mine detection machinery.[60] Left unchecked, Hizballah could set up a network of fundraising, support, and operational terrorist cells in the United States that could activate for a strike at a later date. FBI officials testified to Congress in 2002 that "investigations to date continue to indicate that many Hizballah subjects based in the United States have the capability to attempt terrorist attacks here should this be a desired objective of the group."[61] Of the FBI's 24 Most Wanted Terrorists, 8 are affiliated with Hizballah.[62]

For its part, the FBI announced on September 30, 2007, that it will become more focused and specialized in its approach to terrorist groups, specifically mentioning Hizballah. The bureau has begun the largest, most comprehensive reorganization of its counterterrorism division since 2001. This change in structure is designed to help the

Explosives expert displays devices, including allegedly Iranian-made bombs, used by Iraqi militants

AP/Wide World Photo (Wathiq Khuzaie)

Federal Government improve its detection of global terrorist group collaboration efforts and identify new ways to target and disrupt the larger, networked terrorist activities.[63]

The Road Ahead

Hizballah's credibility has grown substantially as a result of its success in its 2006 war with Israel and its growing financial and military support from Iran. The reality is clear: the organization has the expertise, networks, and motivation to conduct attacks against U.S. targets at home and overseas. While al Qaeda may have moved to the top of the list for counterterrorism policymakers due to the 9/11 attacks, Hizballah remains the most capable terrorist organization in the world.

Moreover, the success of Hizballah in its 2006 war with Israel should justifiably alarm military and counterterrorism analysts. This 34-day operation displayed Hizballah as a highly competent military organization, skilled in the use of high-tech weaponry and knowledgeable of Western-style tactics. The Washington Institute for Near East Policy's analysis of Hizballah's paramilitary capabilities provides a cautionary note:

What should stand out for U.S. Military planners and policymakers as they study the July War [against Israel in 2006] *is the simple fact that an army fighting with largely U.S. equipment and American-style tactics struggled greatly—or was at the very least perceived to have struggled greatly—in its conflict with Hizballah. Thus, enemies of the United States are highly likely to seek to emulate Hizballah's preparations, tactics, and performance on the battlefield. For that reason, U.S. strategists should attempt to distill from the recent conflict as many military lessons as possible.*[64]

Because it furthers its foreign policy aims without any meaningful penalty from the international community, it is safe to assume that Iran will continue to provide significant financial and military support. Hizballah provides Iran a means of changing U.S. behavior, as it did in Lebanon by blowing up the Marine barracks in 1983, facilitating an American withdrawal.

The Islamic Revolutionary Guard Corps' Quds Force will continue to use Hizballah as a proxy in Iraq. If it has not already done so, Hizballah may expand operations into Afghanistan and other regions in support of Iranian foreign policy objectives. In 2006, a senior North Atlantic Treaty Organization official likened tactics of Taliban insurgents to those of Hizballah.[65] While no direct evidence currently exists that the organization is involved in Afghanistan, it would not be surprising to find it in some kind of training or advisory role to insurgent forces there, much as it is doing in Iraq.

Michael McConnell, Director of National Intelligence, provides this assessment: "Lebanese Hizballah, which has conducted anti-U.S. attacks outside the United States in the past, may be more likely to consider attacking the homeland over the next three years if it perceives the United States as posing a direct threat to the group or Iran."[66] U.S. policymakers must focus efforts on Hizballah inroads into the Western Hemisphere to prevent potential attacks in the United States by Hizballah operatives.

General Yahya Rahim Safavi, leader of the Islamic Revolutionary Guard Corps, claims, "America will receive a heavier punch from the guards in the future. . . . We will never remain silent in the face of U.S. pressure and we will use our leverage against them."[67] The "punch" and "leverage" Safavi speaks of might well be provided by Hizballah either overseas or in the American homeland. **JFQ**

NOTES

[1] Michael Gordon and Dexter Filkins, "Hizballah Said to Help Shiite Army in Iraq," *The New York Times*, November 28, 2006, available at <www.nytimes.com/2006/11/28/world/middleeast/28military.html?ex=1322370000&en=78d3cce73159f213&ei=5088&partner=rssnyt&emc=rss>.

[2] Amnesty International, *Israel/Lebanon Under Fire: Hizbullah's Attacks on Northern Israel*, September 14, 2006, available at <www.amnesty-eu.org/static/documents/2006/MDE_020252006_Hizbullah_finalversion_14092006.pdf>.

[3] Testimony of Matthew Levitt to the U.S. Congress, *Hizballah: Financing Terror through Criminal Enterprise*, The Washington Institute for Near East Policy, May 25, 2005, available at <http://hsgac.senate.gov/_files/LevittTestimony.pdf>.

[4] Gordon and Filkins.

[5] Center for Special Studies, Israel, *Hizbullah (Part I): Profile of the Lebanese Shiite Terrorist Organization of Global Reach Sponsored by Iran and Supported by Syria*, Special Information Bulletin, June 2003, accessed at <www.intelligence.org.il/eng/bu/hizbullah/Hizballah.htm>.

[6] "An Open Letter: The Hizbollah Program," *The Jerusalem Quarterly*, no. 48 (Fall 1988), available at <www.ict.org.il/apage/8013.php>.

[7] Department of State, Country Reports on Terrorism, April 30, 2007, available at <www.state.gov/s/ct/rls/crt/2006/82738.htm>.

[8] Ibid.

[9] Public Broadcasting Service, "Lebanon: Party of God," *Frontline*, June 2003, available at <www.pbs.org/frontlineworld/stories/lebanon/thestory.html>.

[10] Jeffrey Goldberg, "In the Party of God (Part I): Are Terrorists in Lebanon Preparing for a Larger War?" *The New Yorker*, October 14, 2002, available at <www.jeffreygoldberg.net/articles/tny/a_reporter_at_large_in_the_par.php>.

[11] Daniel Helmer, "Hizballah's Employment of Suicide Bombing during the 1980s: The Theological, Political, and Operational Development of a New Tactic," *Military Review* (July-August 2006), available at <www.army.mil/professionalwriting/volumes/volume4/november_2006/11_06_1.html>.

[12] "Four Israeli Troops Missing after Warship Hit," July 15, 2006, available at <www.cnn.com/2006/WORLD/meast/07/14/mideast/index.html>.

[13] Gordon and Filkins.

[14] C. Bryson Hull, "Exclusive–UN Report Links Somali Islamists, Foreign Militants," Reuters, November 13, 2006, available at <http://today.reuters.com/News/CrisesArticle.aspx?storyId=L13897046>.

[15] Levitt testimony.

[16] Cable News Network (CNN), "Hezbollah Gives Cash Handouts to Lebanese; U.N. Seeking Troops for Peacekeeping Mission; Some Iranian Moderates Not Die-Hard Supporters of Hezbollah," August 18, 2006, available at <http://transcripts.cnn.com/TRANSCRIPTS/0608/18/ywt.01.html>.

[17] Kambiz Foroohar, "Hizballah, with $100 Bills, Struggles to Repair Lebanon Damage," September 28, 2006, accessed at <http://quote.bloomberg.com/apps/news?pid=20601109&sid=a2e1j2ciKfj4>.

[18] Esther Pan, "Lebanon: Election Results," Council on Foreign Relations, June 20, 2005, available at <www.cfr.org/publication/8195/lebanon.html>.

[19] Avi Jorisch and Matthew Levitt, *Banning Hizballah TV in America*, Policy Watch #930 (Washington, DC: The Washington Institute for Near East Policy, 2004), available at <www.washingtoninstitute.org/templateC05.php?CID=2207>.

[20] Voice of America, "Hizballah's Al-Manar," November 2, 2004, available at <www.voanews.com/uspolicy/archive/2004-11/a-2004-11-02-2-1.cfm>.

[21] Ibid.

[22] British Broadcasting Channel, "France Pulls Plug on Arab Network," December 14, 2004, available at <http://news.bbc.co.uk/1/hi/world/europe/4093579.stm>.

[23] Elise Labott and Henry Schuster, "Lebanese Media Outlets' Assets Blocked; U.S. Brands Hizballah-Linked TV, Radio as Terrorist Entities," CNN, March 24, 2006, accessed at <www.cnn.com/2006/WORLD/meast/03/23/Hizballah.tv/index.html>.

[24] Ibid.

[25] Eben Kaplan, "The Al-Qaeda–Hizballah Relationship," Council on Foreign Relations, August 14, 2006, available at <www.cfr.org/publication/11275/>.

[26] Daniel Benjamin and Steven Simon, *The Age of Sacred Terror* (New York: Random House, 2002), 127.

[27] The National Commission on Terrorist Attacks Upon the United States, *9/11 Commission Report: Final Report of the National Commission on Terrorist Attacks Upon the United States* (New York: Norton, 2004), 68, available at <www.9-11commission.gov/report/index.htm>.

[28] Dana Priest and Douglas Farah, "Terror Alliance Has U.S. Worried," *The Washington Post,* June 30, 2002, available at <www.washingtonpost.com/ac2/wp-dyn/A2324-2002Jun29?language=printer>.

[29] The National Commission on Terrorist Attacks Upon the United States

[30] Voice of America.

[31] Department of Treasury, "Treasury Designates Six Al-Qaeda Terrorists," September 24, 2003, available at <www.treasury.gov/press/releases/js757.htm>.

[32] Priest and Farah.

[33] Michael Ware, "Officials: Captured Hizballah Agent Helped Plan Deadly Karbala Raid," CNN, July 1, 2007.

[34] CNN, "Iran Heaps Scorn on U.S. Claim of Hizballah in Iraq," July 4, 2007.

[35] Joshua Partlow, "Iran's Elite Force Is Said to Use Hizballah as 'Proxy' in Iraq," *The Washington Post*, July 3, 2007, available at <www.washingtonpost.com/wp-dyn/content/article/2007/07/02/AR2007070200174_pf.html>.

[36] Ware.

[37] Statement by General David H. Petraeus, USA, Commander, Multi-National Force–Iraq, "Report to Congress on the Situation in Iraq," September 10–11, 2007, available at <www.defenselink.mil/pubs/pdfs/Petraeus-Testimony20070910.pdf>.

[38] John D. Negroponte, "Annual Threat Assessment of the Director of National Intelligence," January 11, 2007, available at <http://intelligence.senate.gov/070111/negroponte.pdf>.

[39] Robin Wright, "Most of Iran's Troops in Lebanon Are Out, Western Officials Say," *The Washington Post,* April 13, 2005, available at <www.washingtonpost.com/ac2/wp-dyn/A47873-2005Apr12?language=printer>.

[40] Ibid.

[41] Mike Wallace, "Iranian Leader Opens Up: Ahmadinejad Speaks Candidly with Mike Wallace about Israel, Nukes, Bush," *60 Minutes*, August 13, 2006, available at <www.cbsnews.com/stories/2006/08/09/60minutes/main1879867.shtml>.

[42] CNN, "Khatami: Fight against Terror Has Sparked Extremism," September 6, 2006, available at <www.cnn.com/2006/WORLD/meast/09/05/verjee.khatami/index.html>.

[43] Hull.

[44] Ibid.

[45] Ibid.

[46] Department of State, "U.S. Cites Hizballah Member for Terrorist Financing," June 10, 2004, available at <http://usinfo.state.gov/xarchives/display.html?p=washfile-english&y=2004&m=June&x=20040610145904ASrelliM0.3693354>.

[47] Pablo Gato and Robert Windrem, "Hizballah Builds a Western Base," Telemundo/MSNBC, May 9, 2007, available at <www.msnbc.msn.com/id/17874369/>.

[48] Levitt testimony.

[49] Gato and Windrem.

[50] Jane's Intelligence Review, "Oiling the Axis: Iran and Venezuela Develop Closer Ties," July 10, 2007.

[51] Ibid.

[52] "Ahmadinejad Gives Venezuela's Chavez Iran's Highest National Medal," Associated Press, July 30, 2006, available at <www.foxnews.com/story/0,2933,206266,00.html>.

[53] "Venezuela's Chavez, Iran's Ahmadinejad Pledge Mutual Support," Associated Press, July 29, 2006, available at <www.foxnews.com/story/0,2933,206204,00.html>.

[54] "Terror-Linked Migrants Channeled into U.S.," Associated Press, July 3, 2005, available at <www.foxnews.com/story/0,2933,161473,00.html>.

[55] Gato and Windrem.

[56] "Report: NYC Seeks Hizbullah Fugitives," *The Jerusalem Post*, May 22, 2006, available at <www.jpost.com/servlet/Satellite?cid=1148287841961&pagename=JPost/JPArticle/ShowFull>.

[57] Matthew Levitt, *Iranian State Sponsorship of Terror: Threatening U.S. Security, Global Stability, and Regional Peace,* Policy Watch #964 (Washington, DC: The Washington Institute for Near East Policy, 2005), available at <www.washingtoninstitute.org/templateC05.php?CID=2263>.

[58] David E. Kaplan, "Homegrown Terrorists," *U.S. News and World Report*, March 2, 2003, available at <www.usnews.com/usnews/news/articles/030310/10hez.htm>.

[59] Ibid.

[60] Priest and Farah.

[61] Levitt testimony.

[62] Federal Bureau of Investigation, Most Wanted Terrorists, October 9, 2007, available at <www.fbi.gov/terrorinfo/counterrorism/waronterrorhome.htm>.

[63] John Solomon, "FBI Realigning Its Counterterrorism Division," *The Washington Post*, September 30, 2007, available at <www.boston.com/news/nation/articles/2007/09/30/fbi_realigning_its_counterterrorism_division/>.

[64] Andrew Exum, *Hizballah at War: A Military Assessment*, Policy Focus #63 (Washington, DC: The Washington Institute for Near East Policy, 2006), available at <www.washingtoninstitute.org/templateC04.php?CID=260>.

[65] Fisnik Abrashi, "NATO Official Likens Tactics of Taliban to Hizballah's," *The Boston Globe*, August 16, 2006.

[66] National Intelligence Estimate, *The Terrorist Threat to the U.S. Homeland*, July 2007, available at <www.dni.gov/press_releases/20070717_release.pdf>.

[67] "Revolutionary Guards Threaten to 'Punch' U.S.," Associated Press, August 18, 2007, available at <www.msnbc.msn.com/id/20331180/>.

Notes for Timeline

[1] Robert Pape, *Dying to Win: The Strategic Logic of Suicide Terrorism* (New York: Random House, 2005), 129.

[2] Oliver North, "Common Sense: Know Your Enemy," July 28, 2006, available at <www.foxnews.com/printer_friendly_story/0,3566,205979,00.html>.

[3] Department of State, Bureau of Near Eastern Affairs, "Background Note: Lebanon," February 2007, available at <www.state.gov/r/pa/ei/bgn/35833.htm>.

[4] CNN, "Timeline: Decades of Conflict in Lebanon, Israel," July 14, 2006, available at <www.cnn.com/2006/WORLD/meast/07/14/israel.lebanon.timeline/index.html>.

[5] Public Broadcasting Service, "Target America: Terrorist Attacks on Americans, 1979–1988," Frontline, available at <www.pbs.org/wgbh/pages/frontline/shows/target/etc/cron.html>.

[6] Ibid.

[7] Department of State.

[8] "The Hijacking of TWA Flight 847," *The Washington Post*, June 1, 1985.

[9] Department of State, Country Reports on Terrorism, April 30, 2007, available at <www.state.gov/s/ct/rls/crt/2006/82738.htm>.

[10] Daniel L. Byman and Jerrold D. Green, *Political Violence and Stability in the States of the Northern Persian Gulf* (Santa Monica, CA: RAND, 1999), available at <www.rand.org/pubs/monograph_reports/2007/MR1021.pdf>.

[11] Ibid.

[12] Matthew Levitt, "Smeared in Blood, Hizballah Fingerprints All Over Globe," *The Australian*, June 9, 2003, available at <www.thewashingtoninstitute.org/pdf.php?template=C06&CID=478>.

[13] Byman and Green.

[14] CNN.

[15] Levitt.

[16] British Broadcasting Company, "UN drive to build Lebanon Force," August 16, 2006, available at <http://news.bbc.co.uk/2/hi/middle_east/4797187.stm>.

[17] British Broadcasting Company, "Iran and Syria applaud 'Victory,'" August 15, 2006, available at <http://news.bbc.co.uk/1/hi/world/middle_east/4794363.stm>.

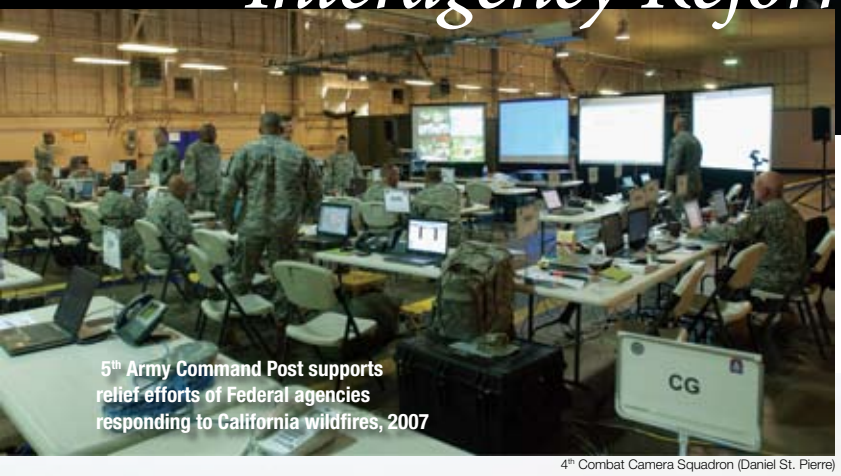
[18] Amnesty International, *Israel/Lebanon Under Fire: Hizbullah's Attacks on Northern Israel*, September 14, 2006, available at <www.amnesty-eu.org/static/documents/2006/MDE_020252006_Hizbullah_finalversion_14092006.pdf>.

[19] Michael Gordon and Dexter Filkins, "Hizballah Said to Help Shiite Army in Iraq," *The New York Times*, November 28, 2006, available at <www.nytimes.com/2006/11/28/world/middleeast/28military.html?ex=1322370000&en=78d3cce73159f213&ei=5088&partner=rssnyt&emc=rss>.

Managing Mayhem
The Future of Interagency Reform

Chairman visits Naval Air Station Key West and Joint Interagency Task Force–South

U.S. Navy (Chad McNeeley)



5th Army Command Post supports relief efforts of Federal agencies responding to California wildfires, 2007

4th Combat Camera Squadron (Daniel St. Pierre)

By JAMES JAY CARAFANO

The U.S. Government can draw on the talents of more than two million civilian employees. Five out of six work out of sight of the Capitol. These employees are joined by almost three million in uniform around the world and a Congress backed by a staff of over 20,000 on Capitol Hill. That gives Washington a bigger workforce than any corporation in the world. Yet it is amazing how often this workforce lets us down in the moment of crisis—simply because its components do not work well together.

The Departments of Defense, State, Homeland Security, and Treasury, as well as the Federal Bureau of Investigation, Central Intelligence Agency, and other Government agencies, have separate and unique capabilities, budgets, cultures, operational styles, and congressional oversight committees. They even operate under different laws. Getting them all organized on battlefields, after disasters, and during crises can be like herding cats. To meet the dangers of the 21st century, interagency operations will be more important than ever. Yet few Americans understand the pressing need for reform, even though restructuring "interagency" operations may be one of the hot-button issues tackled by the next administration, whether it is Democratic or Republican.

When folks finally turn their attention to the issue, there are some basics about fixing interagency operations they need to understand.

Don't Fix What Ain't Broke

There is nothing wrong with the underlying principles of American governance. Particularly essential for good governance are the constitutional checks and balances that divide Federal power among the executive, legislative, and judicial branches. This division entails not only sharing responsibility within and among the branches of government, but also ensuring accountability and transparency in the act of governing. Shortcutting, circumventing, centralizing, undermining, or obfuscating constitutional responsibilities are not effective means for making democratic government work better.

Respecting the principle of federalism is also essential. Embodied in the U.S. Constitution, the imperatives of limited government and federalism give citizens and local communities the greatest role in shaping their own lives. The 10th amendment states that "powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the people." In matters relating to their communities, local jurisdictions and individuals have the preponderance of authority and autonomy. This just makes sense. The people closest to the problem are the ones best equipped to find the best solution.

Repeating History

For its part, Washington can certainly do better—in large measure simply by improving interagency operations, for in the long history of these operations, the same problems spring up again and again.

Why? Government undervalues individuals. Human capital refers to the stock of skills, knowledge, and attributes resident in the workforce. Throughout its history, Washington has paid scant attention to recruiting, training, exercising, and educating people to conduct interagency operations. Thus, at crucial moments, success or failure

U.S. Navy (Johnny Bivera)

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Participants from 17 Federal Government and local agencies conduct emergency exercise in Minnesota

133d Airlift Wing (Erik Gudmundson)

often turns on happenstance: whether the right people with the right talents happen to be at the right job. Rather than investing in human capital before a crisis, Washington plays Russian roulette.

The government lacks the lifeline of a guiding idea. *Doctrine* is a body of knowledge for guiding collective action. Good doctrine does not tell people what to think, but it guides them in how to think, particularly in how to address complex, ambiguous, and unanticipated challenges when time and resources are both in short supply. Unfortunately, throughout our nation's history, government has seldom bothered to exercise anything worthy of being called interagency doctrine. The response to Hurricane Katrina offers a case in point. The U.S. Government had the equivalent of a doctrine in the form of the National Response Plan. Unfortunately, it had been signed only months before the disaster and was barely practiced and little understood when disaster struck.

Process cannot replace people. At the highest levels of government, no organizational design, institutional procedures, or legislative remedy has proven adequate to overcome poor leadership and combative personalities. Presidential leadership is particularly crucial to the conduct of interagency operations. Over the course of American history, Presidents have had significant flexibility in organizing the White House to suit personal styles. That is for the best. After all, the purpose of the Presidential staff is to help Presidents lead, not to tell them how to lead.

The Iran-Contra affair offers an apt example. When President Ronald Reagan spoke about the affair on March 4, 1987, he told the Nation that he accepted "full responsibility" for his own actions and those of his administration. He described his efforts to regain public trust in the Presidency and outlined a plan to restore the national security process, mainly by adopting the recommendations of the Tower Commission report.

Leadership from the Congress, especially from the committee chairs, is equally vital. There is no way to gerrymander the authorities of the committees to eliminate the necessity of competent bipartisan leadership that puts the needs of the Nation ahead of politics and personal interest.

Washington has paid scant attention to recruiting, training, exercising, and educating people to conduct interagency operations

And in the end, no government reform can replace the responsibility of the people to elect qualified officials who can build trust and confidence in government, run the government, and demonstrate courage, character, and competence in time of crisis.

Fixing these problems requires a scalpel, not a sledgehammer. It would be a mistake to think of interagency operations as a uniform, one-size-fits-all activity that requires uniform, one-size-fits-all reforms.

Solutions for Strategic Incompetence

At the highest level stands the process of making interagency policy and strategy. These tasks are largely accomplished inside the Beltway by officials from the White House and heads of Federal agencies in cooperation and consultation with the Congress. Over the course of modern history, policymaking has actually become the strongest component of the interagency process. When it does fail, its breakdown can often be traced more to people and personalities (inattentive Presidents or squabbling Cabinet officials) than to process.

Improving performance at the highest level of interagency activities should properly focus on the qualities and competencies of executive leadership, as well as getting leaders the highest quality information so that they can make the best informed decisions.

Overcoming Operational Inaction

Operational activities stand on the second rung of the interagency process. These activities comprise the overarching guidance, management, and allocation of resources needed to implement the decisions made in Washington. Arguably, it is at this level where government's record is most mixed. Outside the Pentagon's combatant command structure (which has staffs to oversee military operations in different parts of the world), the U.S. Government has few established mechanisms capable of monitoring complex contingencies over a wide geographical area. Processes and organizations are usually ad hoc. Some are successful; others are dismal failures.

Relying on skill instead of luck requires more permanent but flexible organizations that do not make national policy but that can coordinate large, complex missions. One potential solution is to build on the concept of the military's regional combatant commands, but with a new organizational structure that

better supports the Nation's security needs. That organization should probably facilitate interagency operations around the world, while still attending to effective joint combat action.

Of course, we would continue to need permanent military commands under the direction of the Pentagon, but the number of combatant commands should be reduced to three. In Europe and Northeast Asia, the United States has important and enduring military alliances. There is a continuing need to integrate our military commands with them. To this end, U.S. European Command and U.S. Pacific Command should be replaced by a U.S.–North Atlantic Treaty Organization command and a U.S. Northeast Asia headquarters. U.S. Northern Command should remain as the military command responsible for the defense of the United States.

In addition, three joint interagency groups (InterGroups) should be established. Joint interagency task forces already have been used effectively on a small scale to conduct counternarcotics operations in Latin America and the Caribbean and off the U.S. Pacific coast. They incorporate resources from multiple agencies under a single command structure for specific missions. There is no reason this model could not be expanded, in the form of InterGroups, to cover larger geographical areas and more diverse mission sets. InterGroups should be established to link areas of concern related to national security missions for Latin America, Africa, the Middle East, and South and Central Asia.

Each InterGroup would have a mission set specific to its area. The Latin America InterGroup, for example, should focus on counterterrorism, civil-military relations, trade liberalization, and drug, human, and arms trafficking.

Each InterGroup should include a military staff tasked with planning military engagements, warfighting, and postconflict operations. In the event that military operations are required, that staff could be detached from the InterGroup (along with any supporting staff from other agencies required) to become the nucleus of a standing joint task force (JTF). Using this model, operations in Iraq and Afghanistan would have been commanded by a JTF.

Preparing Responders to Respond

The third component of interagency activities is field activities. That is where the actual works gets done—rescuing people stranded on rooftops, handing out emergency supplies, administering vaccines, and supervising contractors. Here, success and failure usually turn on whether government has correctly scaled the solution to fit the problem. Most overseas interagency activities are conducted by Country Teams supervised by Ambassadors and their professional staffs. Likewise, inside the United States, state and local governments largely take care of their own affairs. When the problems are manageable, as in coordinating tsunami relief within individual countries, these approaches work well. When the challenges swell beyond the capacity of local leaders, as the case studies of pacification programs in Vietnam and the response to Hurricane Katrina illustrate, more robust support mechanisms are required. Arguably, what is most needed at the field level are better doctrine, more substantial investments in human capital (preparing people to do the job before the crisis), and appropriate decisionmaking—instituting the right doctrinal response when a crisis arises.

outside the Pentagon's combatant command structure, the Government has few established mechanisms to monitor complex contingencies over a wide geographical area

A generation ago, the U.S. military faced similar professional development challenges in building a cadre of joint leaders—officers competent in leading and executing multi-Service operations. The Goldwater-Nichols Department of Defense Reorganization Act of 1986 mandated a solution that required officers to have a mix of joint education, assignments, and board accreditation to become eligible for promotion to general officer rank. Goldwater-Nichols is widely credited with joint military successes from Operation *Desert Storm* to the war on terror. The recipe of education, assignment, and accreditation (EA&A) can be used to develop professionals for other critical interagency national security activities.

An EA&A program that cuts across all levels of government and the private sector must start with professional schools specifically designed to teach interagency skills. No suitable institutions exist in Washington, academia, or elsewhere. The government will have to establish them. While the resident and nonresident programs of many university and government schools and training centers can and should play a part in interagency education, Washington's institutions should form the taproot of a national effort with national standards.

Qualification will also require interagency assignments where individuals can practice and hone their skills. These assignments should be at the operational level, so leaders can learn how to make things happen, not just set policies. Identifying the right organizations and assignments and ensuring that they are filled by promising leaders should be a priority.

Accreditation and congressional involvement are crucial to ensuring that these programs succeed and continue. Before leaders are selected for critical (nonpolitically appointed) positions in national and homeland security, they should be accredited by a board of professionals in accordance with broad guidelines that Congress establishes. Congress should require creation of boards that set educational requirements and accredit institutions needed to teach national security and homeland security, screen and approve individuals to attend schools and fill interagency assignments, and certify individuals as interagency-qualified leaders. Congress should also establish committees in the House and Senate with narrow jurisdictions over key education, assignment, and accreditation interagency programs.

The Clock Is Ticking

Critical components of good governance, such as establishing long-term professional programs, are often shunted aside as important but not urgent—something to be done later. But later never comes. This is unacceptable. Crucial national security activities require building interagency competencies that are not broadly extant in government. The administration and Congress have time to address this issue and help to make Americans safer for generations to come. **JFQ**

U.S. Navy (Johnny Bivera)

Reappraising FDR's Approach to World War II in Europe

By MICHAEL S. BELL

President Franklin D. Roosevelt signs Neutrality Bill, November 1939

The Associated Press

> *We must remember that so long as war exists on earth there will be some danger that even the nation which most ardently desires peace may be drawn into war. . . . I hate war. . . . Let those who wish our friendship look us in the eye and take our hand.*
>
> —FDR, August 14, 1936

A survey of Franklin D. Roosevelt's strategic thinking prior to American entry into World War II reveals that the traditional historical narratives present a false dichotomy. Typically, FDR is portrayed either as an isolationist and reluctant belligerent being pushed into the war, or as an ardent interventionist seeking to enter the war by almost any means. Rather, FDR blended both of these policies into a coherent and consistent strategic approach toward the situation in Europe. Although his actions seemed to draw the United States inexorably into deeper involvement in the European war, FDR continued to pursue his goal of keeping the United States out of the conflict. Rather than dissembling or wavering, Roosevelt charted a steady and rational approach based on his strategic perspective.

By understanding FDR's strategy, it is possible to gain deeper insight into what appear as contradictory policies and actions on the eve of U.S. entry into the European war and, at the same time, into Roosevelt's strategic leadership. His approach toward the war simultaneously blended the isolationist aversion to war and desire to keep out of European conflicts with active efforts to overthrow Adolf Hitler and his Nazi regime, the aim of the interventionists.

Aims and Strategic Approach

Following the German invasion of Poland on September 1, 1939, Roosevelt pursued a conscious strategy aimed at keeping the United States out of the European war as a formal belligerent and, at the same time, ensuring the defeat of Hitler's regime. Within an overall policy of formal neutrality that favored the Allies, the Roosevelt administration looked for opportunities to act in pursuit of those two primary goals. Hoping to influence the outcome of the war, Roosevelt and his administration thought that they could bring about an internal collapse in Germany similar to the events in October and November 1918 that had hastened the sudden end of World War I and the demise of Imperial Germany.

Immediately before the Nazi invasion of Poland, Roosevelt resolved not to repeat the mistakes of Woodrow Wilson concerning neutrality prior to U.S. entry into World War I. FDR recalled Wilson's reminder to the American people when war broke out in 1914 "to be neutral not only in deed but in thought." In 1939, however, FDR rejected Wilson's approach and deemed it "impossible in a situation such as exists in Europe today for a fair-minded people to be neutral in thought."[1] Once war did break out, FDR addressed the American people by radio and, echoing the isolationists, professed that he hated war. He stated, "I hope that the United States will keep out of this war. I believe that it will." At the same time, Roosevelt discounted U.S. military intervention in the European war, announcing, "Let no man or woman thoughtlessly or falsely talk of America sending its armies to European fields." He observed that a neutrality proclamation was being prepared in accordance with the Neutrality Act and

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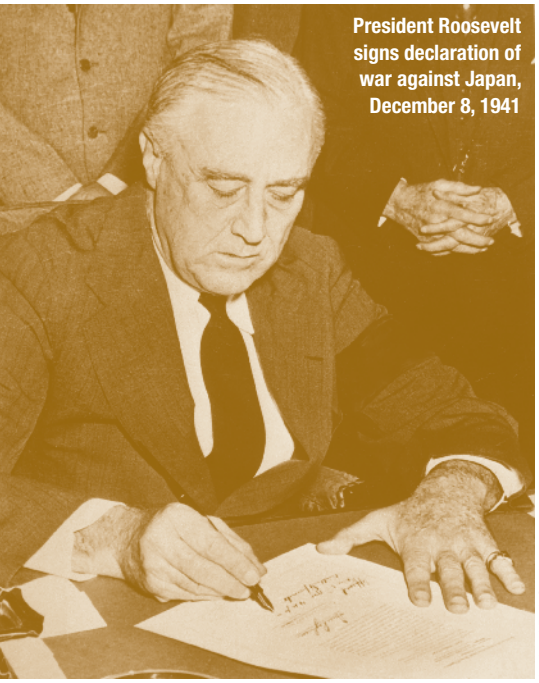
traditional U.S. foreign policies that reached back to the Presidency of George Washington and a longstanding American tradition of armed neutrality. In contrast to Wilson's 1914 approach, FDR declared, "This nation will remain a neutral nation, but I cannot ask that every American remain neutral in thought as well."[2]

Within the context of formal neutrality, Roosevelt deliberately pursued opportunities to aid France and Britain with munitions, aircraft, and supplies. On September 4, he discussed the question of neutrality with his Cabinet. With British and French declarations of war against Germany, the Cabinet decided to issue the customary neutrality declaration. According to Secretary of the Interior Harold Ickes, however, Roosevelt "was not in so much of a hurry to issue the proclamation required under the Neutrality Act." The President wanted to provide Britain and France with "all the opportunity to export munitions of war, none of which could be exported after this proclamation was once issued."[3]

The duty of this day has been imposed upon us from without. Those who have dared to threaten the whole world with war—those who have created the name and deed of total war—have imposed upon us and upon all free peoples the necessity of preparation for total defense.

—FDR, October 16, 1940



President Roosevelt signs declaration of war against Japan, December 8, 1941

National Park Service

Strategic Assessments and German Power

To fully grasp FDR's balancing of the two aims of his strategy, it is necessary to understand the strategic assessments accepted throughout Washington at the time. During the late 1930s, Roosevelt administration assessments envisioned Germany's power as extremely fragile and its people already chafing under oppression and several years of full mobilization. Those beliefs persisted after the outbreak of World War II in Europe, and conditions in Germany were believed to be comparable to those in 1918. In September 1939, FDR predicted either a German victory or the distinct possibility that "there will be a revolution in Germany itself" by June 1940.[4] He was not alone. In the State Department, Breckinridge Long noted, "It looks to me as if there is trouble brewing in Germany."[5]

within the context of formal neutrality, Roosevelt pursued opportunities to aid France and Britain with munitions, aircraft, and supplies

Military intelligence reports from Europe complemented the perceptions held in the White House and State Department. The Army attaché in London reported indications from his sources "that the supply of gasoline for military aircraft and mechanized vehicles in Germany was now estimated to be sufficient for approximately two or three months' operations only." He also believed that the Nazi-Soviet Pact would not alleviate the German fuel shortage since Soviet production barely met the requirements of the Soviet military.

In retrospect, it is evident that the Roosevelt administration's intelligence assessment that the Germany economy had been fully mobilized in the 1930s was inaccurate. In congressional testimony in the spring of 1940, Army Chief of Staff General George C. Marshall expressed the prevailing wisdom that the Germans "have converted their whole nation into an armed camp for the preparation of war with their whole efforts devoted to that purpose."[6] On the contrary, hoping to achieve his objectives without a protracted, general war, it was not until 1942 that Hitler placed the German economy on a war footing. Prior to full economic mobilization in 1942, Hitler chose to use, rather than expand, the existing German industrial base, and between 1933 and 1938, only about 10 percent of the gross national product was spent on armaments. Although Hitler clearly wanted war in 1939, he thought it would be short and was not prepared for a general war.

Although inaccurate, these assumptions about Germany provided the foundation for FDR's strategic approach. When Berlin opened offensives against Denmark and Norway in April 1940, some American observers optimistically recalled the situation in the summer of 1918. The month prior, Chief of Naval Operations Admiral Harold Stark provided FDR with his assessment that the blockade had produced undernourishment in Germany, a condition that "tends to undermine the nerves and morale of the entire population." Stark estimated that without new offensives, German stocks might last until the spring of 1941.[7] Not only would the renewed offensives deplete scarce German resources, but they also seemed in Washington to have been akin to the desperate German offensive on the Western Front in the summer of 1918. From the administration's perspective, there was no need for the United States to dispatch ground forces to fight in Europe. As long as France and Britain remained in the fight, it appeared that the German collapse was on the horizon.

Clearly, FDR's view of the Battle of France in May and June 1940 was influenced by his own tour of the Western Front in the summer and fall of 1918 during the German offensives along the Marne and in Champagne. Furthermore, he became more optimistic after the Dunkirk evacuation exceeded all expectations. At a Cabinet meeting on June 9, the President surmised "that if the French can hold out for three weeks they will be able to win against the Germans."[8] That same day, Adolph Berle, an Assistant Secretary of State and a member of FDR's New Deal "brain trust," noted that even if the Germans emerged as the "masters of the situation . . . they will be in such bad shape economically" that they will have to open

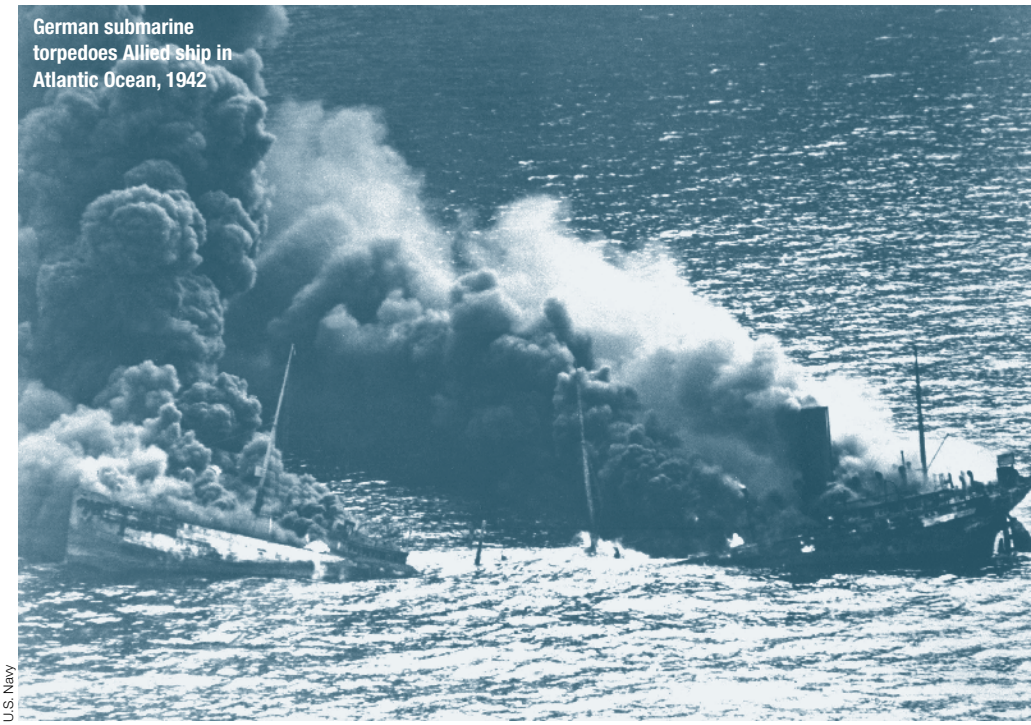
up peace initiatives.[9] Berle observed at the end of June, following the French armistice with Germany, "by all tests and standards that we know, a personality like Hitler's and a movement like that which he has instituted, smashes up in time."[10] Moreover, the assessments FDR received from the British served to validate the views in Washington.[11]

In the wake of the Battle of France, Roosevelt continued to chart a course for his administration to bring about a German collapse while minimizing the need for formal U.S. military intervention. Consistent with that strategic concept, Roosevelt announced in July 1940 "that we will not use our arms in a war of aggression, that *we will not wage war in Europe, Africa or Asia* is known not only to every American but to every government in the world."[12] To Roosevelt, the key was to maintain pressure on Germany until it collapsed upon itself. Economic sanctions and blockade formed the centerpiece of that pressure. With regard to American and British policy, he believed "that the only way out of the difficulties of the world was by the starving of the people of Europe, particularly in regard to their supply of fuel to carry on the war."[13]

Implementing the Strategy

To avoid Wilson's mistakes, improve his span of control, and aid in formulating and condensing information, Roosevelt established the Executive Office of the President soon after the German invasion of Poland. At the same time, he reduced the ability of the Secretaries of War and the Navy to plan and conduct operations outside of his knowledge by placing the Chief of Staff of the Army, the Chief of Naval Operations, and their planning staffs directly under him in the new Executive Office of the President. The next day he remarked, "Don't think that I am not watching everything with an eagle eye."[14]

Reflecting the ideas that had coalesced in his thinking prior to entering the White House on how to deal with aggressors, FDR pursued a strategy based on coalition economic sanctions, naval blockade, moral suasion in the form of propaganda and psychological warfare, and airpower to contribute to the defeat of aggressors such as Nazi Germany.[15] The result, FDR believed, would lessen and possibly eliminate the likelihood of the United States having to enter the European war as a direct combatant. That strategic approach, Roosevelt recognized, also entailed some risks. Strategic risk mitigation, furthermore, was a concept that he was accustomed to taking seriously. For example, as Assistant Secretary of the Navy on the outbreak of World War I, he confided that "it is *my* duty to keep the Navy in a position where no chances, even the most remote, are taken."[16] In December 1940, FDR observed, "If we are to be completely honest with ourselves, we must admit that there is risk in *any* course we may take. But I deeply believe that the great majority of our people agree that the course that I advocate involves the least risk now and the greatest hope for peace in the future."[17]



German submarine torpedoes Allied ship in Atlantic Ocean, 1942

U.S. Navy

In the estimate he presented to the military in June 1940 as France was collapsing, FDR asserted that Britain would be able to hold on against Germany. He added that if the United States had to enter the war, it would participate "with air and naval forces only."[18] In contrast to the views of the President, American military planners and intelligence officers replied that Germany would crush Britain as it did France. They maintained that rather than send any further arms and material overseas, the United States should rearm its own forces and focus on defending the Western Hemisphere and interests in the Pacific.[19] In the ensuing dialogue and FDR's subsequent meeting with Stark and Marshall on June 24, the military came to accept FDR's broader view of vital U.S. interests.[20] As a result, rather than continuing to advocate continental defense or the pursuit of narrowly construed, unilateral interests, the military planners recommended "further release of war material" to enable Britain to continue to resist Germany, adding the caveat that such assistance not be detrimental to "procurement programs of our own Army and Navy."[21]

to Roosevelt, the key was to maintain pressure on Germany until it collapsed upon itself

Roosevelt's approach, furthermore, was more than military; it simultaneously reflected his appreciation for the existing economic conditions and political environment. With the American economy just emerging from the Great Depression, FDR considered the economic, and subsequently the domestic political, impact of foreign orders. He commented to Secretary of the Treasury Henry Morgenthau in March 1940, "Let's face it, these foreign orders mean prosperity . . . and we can't get the Democratic Party elected in November without prosperity."[22] At the same time, he also pushed for enhancing military preparedness, but doing so in a way that would not cause a domestic uproar. Always sensitive to public opinion, in September 1940, Roosevelt remarked that naval preparedness was the only form of rearmament that was

Adolf Hitler hosts Benito Mussolini in Munich, June 1940

Foreign Records Seized

politically feasible. "American mothers don't want their boys to be soldiers," he observed, "so nothing really big can be done at present about expanding the Army. But the Navy is another matter; American mothers don't seem to mind their boys becoming sailors."[23]

In January 1941, the administration proposed the Lend-Lease Bill, symbolically labeled H.R. 1776 and portrayed as an "aid to democracies" bill, intending that Lend-Lease would maintain freedom in the United States by aiding the Allies and also keep the United States out of the European war as an active combatant. On March 11, 1941, Roosevelt signed into law "An Act to Promote the Defense of the United States" and subsequently designated Harry Hopkins, an old friend and progressive reformer living in the White House, "to advise and assist" him "in carrying out the responsibilities placed upon" him by the act.[24] Hopkins viewed his new duties liberally and enjoined government representatives serving on the Lend-Lease liaison group to "concentrate on 'licking Hitler,' whether or not it comes strictly under 'lend-lease.'"[25]

the success of German submarines meant that Lend-Lease would be of little use if war materiel and munitions did not reach British forces

With the passage of Lend-Lease, Berle judged that by early 1941, U.S. foreign policy "really moved into another phase of things, a semi-belligerent phase." He perceived that U.S. policy had undergone "a steady drift into a deep gray stage in which the precise difference between war and peace is impossible to discern." Consistent with the concept of formal but armed neutrality, Berle rejected the thought that the President's policy meant that war was inevitable. He averred, "Curiously enough, I am not sure that it means war, necessarily."[26] To bolster the administration's case for not adhering to strict neutrality, Attorney General Robert Jackson advanced the argument "that 'neutrality' does not imply impartiality where somebody else starts an unjustified war."[27]

The success of German submarines in the North Atlantic in 1941, however, meant that the administration's Lend-Lease efforts would be of little use if American-made war materiel and munitions did not reach British forces. Consistent with his view of American history and the demands of his strategy, FDR took a broad view of the Monroe Doctrine and during the election of 1940 noted that his policy was to "vigorously support the Monroe Doctrine for the protection of the American Hemisphere."[28] In 1941, Roosevelt extended the area covered by the Monroe Doctrine eastward into the middle of the Atlantic. In April, the United States occupied Greenland. Roosevelt subsequently justified the action by stating, "We are applying to Denmark what might be called a carrying out of the Monroe Doctrine" to prevent the transfer of Greenland to Germany.[29] He also extended the naval reconnaissance patrols that had been operating in the Atlantic since September 1939 from approximately 300 miles off the coast to over 1,000 miles "for the safety of the Western Hemisphere" and to fulfill "the obligation we have under the Monroe Doctrine." Those naval patrols radioed the locations of German submarines to British warships and aircraft. He also issued orders for American merchant ships to be convoyed to Iceland, an order soon expanded to include neutral and, ultimately, British ships. When asked how far the patrols would extend, Roosevelt replied, "As far on the waters of the seven seas as may be necessary for the defense of the American hemisphere."[30] At Iceland, U.S. Navy escort destroyers turned Lend-Lease convoys over to the Royal Navy for the remainder of the voyage to Britain.

The maturing military contacts between the United States and Britain led to a strategic planning conference in Washington from January 29 until March 29, 1941. The conference, the first of the American-British Conversations, produced a fundamental agreement on grand strategy known as ABC–1. In the Pacific, the two countries would maintain a policy of deterrence against Japan, and, in the event of U.S. entry into the war, the Anglo-American priority would become securing the Atlantic and defeating Germany and Italy. Although U.S. planners considered that a major invasion of Europe might be necessary, Roosevelt endorsed a joint strategy for victory over Germany that rested on complementing the British blockade with strategic bombing and subversion on the continent.[31] Following the conference, American military planners dedicated efforts to revising the basic joint war plan, Rainbow Five. Meanwhile, Roosevelt and his advisors resisted acknowledging any requirement for sending a large American ground force to Europe again. Other forces would substitute for another American Expeditionary Force. By May, based on Secretary of War Henry Stimson's directives, the War Department understood that the basic U.S. policy during the period of

so-called neutrality was that "British forces are to be considered as an American Expeditionary Force."[32]

Adapting the Strategy

Meanwhile, by September 1941, General Marshall faced growing pressures to reduce the size of American ground forces. Although he sought to preserve and possibly increase their size, he recalled that "proposals for the navy and air demanded first attention" and that "opposition to a large army was very widespread" on account of "a feeling that such an army was passé, no longer needed."[33] Clearly, FDR was sympathetic to articles in the media that depicted the potential U.S. contribution to the war effort as being confined to air and sea forces and manufacturing, and he requested that Marshall come to the White House to discuss the proposal to reduce the ground component of the Army.[34] Compounding Marshall's challenge was Secretary Stimson's belief that the recent demonstration in the Pacific by nine four-engined American bombers amounted to "the reversal of the strategy of the world" and would allow the projection of U.S. power in areas such as the Western Pacific "over the Japanese obstruction."[35]

Marshall's arguments, however, seemed to make an impact on FDR, who undoubtedly recognized the strategic risk if his assumptions about the effectiveness of sea and air power did not hold true. There is no evidence that Roosevelt continued to entertain the idea that American ground forces could be reduced to free up resources for air and naval programs. Instead, he increasingly examined ground force requirements, and Stimson was impressed when Roosevelt scrutinized tank production, "going over the figures with great penetration and great shrewdness."[36] Marshall's arguments, furthermore, set the stage for Presidential consideration of the results of a more detailed study of requirements that FDR had requested in July.

By late September 1941, the military planning effort FDR requested began to coalesce in what became known as the Victory Plan. Stimson found the planning process "very educational and very helpful."[37] The process clearly impacted the estimates held by both Marshall and Stimson. As a result of War Department planning activities, Marshall had continuously revised his own assessment of wartime ground force requirements, from an Army of 2,000,000 in the summer of 1940 to the 8,800,000 troops called for in the 1941 Victory Plan.[38] The planning effort also resulted in Stimson reappraising his view of wartime requirements. Reviewing the preliminary product, Stimson admitted he was "rather appalled" by "the size of the undertaking of matching Germany" but found that "the reasoning is good."[39] After discussing the Victory Plan for several days with the officers of the War Plans Division, Stimson characterized it as "a very fruitful study"[40] and judged that, even if not adopted, it would "have a good deal of educational effect on the President."[41]

In late September, Stimson and Roosevelt had a frank discussion of the Victory Plan and, in Stimson's words, "what would happen if and when we got into the war." According to the Secretary of War, FDR "was afraid of the assumption of the position that we must invade and crush Germany." Such a declaration, the President reasoned, would merely spark "a very bad reaction" and might serve, as Stimson recognized, "to stiffen and unite the German people." Further, it might make direct American intervention in the war more likely by undermining what Stimson believed was evidence that "public opinion in Europe and also German morale" were being affected by German setbacks in Russia.[42]

U.S. Coast Guard

Crew of USCGS *Spencer* watches explosion of depth charge that sunk German U–175 submarine, 1943

> ***We don't like it—we didn't want to get in it—but we are in it and we're going to fight it with everything we've got.***
>
> **—FDR, December 9, 1941**

Not convinced that full mobilization or active U.S. entry into the war were necessary, FDR continued to adapt his basic strategy. He considered arming merchant ships, the solution he had advocated to Woodrow Wilson in early 1917. Although noting that the Neutrality Act specifically forbade providing arms to merchant ships, he observed to the press that during "the so-called quasi-war against France in 1798," many armed merchantmen "beat off French privateers." He added that in accordance with international law, merchant ships achieved similar results during the War of 1812 against British attacks.[43] The following month, Roosevelt requested that Congress repeal the 1939 Neutrality Act and authorize him to arm merchantmen. In November, both Houses of Congress removed the major

restrictions of the act, allowing American merchantmen, armed and unarmed, to go anywhere legally and carry any cargo. On November 20, Secretary of the Navy Frank Knox proclaimed, "Our vessels will be armed in two weeks."[44]

by late September 1941, the military planning effort FDR requested began to coalesce in what became known as the Victory Plan

Smoke rises from Hickam Field during attack on Pearl Harbor

U.S. Navy

In the Cabinet, Stimson, Knox, Ickes, and Treasury Secretary Morgenthau chafed under the President's restraints on greater American military intervention in the war.[45] Roosevelt, however, apparently had no intention of asking Congress for a declaration of war. He remained committed to his belief that armed neutrality would achieve American aims. From the Oval Office, his strategy seemed to be working. Roosevelt observed that Hitler "knows he is racing against time" and that having "heard the rumblings of revolt among the enslaved peoples" knows that "the days in which he may achieve total victory are numbered."

Into the War

In the fall of 1941, members of the Roosevelt administration were hopeful, even those who urged greater active involvement in the war. Knox seemed confident that the United States would master the German submarine threat in the North Atlantic, and while waiting for authorization to arm merchant ships, he reported that "we have the guns ready and the crews trained." The situation in Europe seemed positive as well. Berle assessed that the German forces in the Soviet Union were "obviously risking everything" in a desperate gamble. Based on reports of German losses, Berle noted, "It seems increasingly clear that the German operations in Russia are approaching disaster."[46] On November 17, 1941, Coordinator of Information William Donovan reported to Roosevelt that the German people already were experiencing greater hardships than they had during "the years 1914–1918." Donovan noted "that a considerable number" of Germans were "extremely frightened" of British air raids and that German losses in the Soviet Union had produced "a staggering blow" on the home front. Morale seemed to be at low ebb. Recalling the phenomenon of 1918, Donovan predicted, "One major setback or even prolonged slaughter and the German will to sacrifice and to conquer might hang dangerously in the balance."[47]

Meanwhile, despite the optimism in some administration circles, the War Department General Staff's estimates in the Victory Plan continued to have an impact. In late November, Roosevelt called Stimson, Knox, Marshall, and Stark to the White House for "a conference over the general strategy of the situation." The threat of imminent military action by Japan, however, dominated the discussion.[48] Complicating matters, on December 4, isolationist papers published a detailed account of the Victory Plan. With Roosevelt's approval, Stimson addressed the disclosure in a press conference the following day. Characterizing the plan as "unfinished studies" that did not constitute "an authorized program of the government," Stimson nonetheless posed the question, "What would you think of an American General Staff which in the present condition of the world did not investigate and study every conceivable type of emergency which may confront this country and every possible method of meeting that emergency?"[49]

On the evening of December 7, 1941, following the Japanese attacks on Pearl Harbor and the Philippines, FDR dictated the war message that he read to Congress the next day. In the audience on Capitol Hill, Eleanor Roosevelt noted the "curious sense of repetition" she felt as she reflected on Wilson's message in 1917. From her perspective, the Japanese attack on the United States had been an act of pure desperation carried out as part of "German strategy."[50] FDR chose not to request a declaration of war against Germany and Italy and continued to pursue a policy of armed neutrality in the Atlantic. Nonetheless, following the Japanese attack, he told his Cabinet several times that he expected a desperate Germany to declare war on the United States.[51] Apparently, FDR had two motivations for waiting. By not asking Congress to declare war, he could continue to delay, and perhaps avoid altogether, U.S. entry into the European war. In addition, waiting for a German declaration of war on the United States would allow him to achieve Wilson's goal of being judged by historians as having had war thrust upon him.[52]

With the declaration of war on the United States by Hitler and Benito Mussolini on December 11, Roosevelt's hope of avoiding entry into the war came to an end.[53] Roosevelt informed Congress that German "forces endeavoring to enslave the entire world are *now* moving towards this hemisphere." The Roosevelt administration, however, interpreted the German declaration of war as an act of desperation by a regime coming apart and hoping to save its grip on power through

further expansion. As if expressing a sense of relief, the President asserted that the German quest for world dominance "long known and long expected" had finally "thus taken place." That day, Roosevelt requested that Congress "recognize a state of war between the United States and Germany" in the struggle between "the forces of justice and of righteousness" and "the forces of savagery and barbarism."[54]

with the declaration of war on the United States by Hitler and Mussolini, Roosevelt's hope of avoiding entry into the war came to an end

On the surface, Roosevelt's strategy might be judged a failure because it did not achieve its two immediate goals. Despite FDR's efforts, the United States entered World War II in December 1941 as an active belligerent while Hitler retained his hold on power. Such a cursory assessment, however, ignores the final outcome of the war and misses FDR's accomplishments as a strategist. Because of his strategic instincts, the situation after Pearl Harbor did not represent a complete catastrophe for the United States. Although Washington was only partially mobilized at the time, the preparations and planning that had been conducted since 1939 set the stage for a decisive U.S. contribution to the eventual defeat of Hitler's regime and its partners. Over the short term, FDR's strategic framework was not successful in achieving his goals in 1941, but it developed the plans and laid the foundation for what he undoubtedly considered essential to the prosperity of the United States, namely the eventual defeat of Nazi Germany and its partners and the preservation of a global system of free trade and open markets.

Following the outbreak of World War II in Europe, Roosevelt pursued an adaptive strategy. The centerpiece of his strategic framework was a set of goals that he derived from a fundamental appreciation of American interests and the threats to them. That goal-oriented framework enabled FDR to shift policies and mobilize and employ alternate means as part of his overall strategy, particularly as conditions and circumstances changed during the course of the war. Motivated by much more than military expediency or unilateral advantage, Roosevelt complemented military approaches with a broad political agenda that employed other elements of American power and influence as well as the power of potential allies. At the same time, the adaptive aspect of FDR's strategic leadership, and his consciousness of the inherent risks in any war, encouraged policy shifts, continuous military planning, and constant preparation for other eventualities. Roosevelt saw the purpose of the war as defeating Nazi Germany and creating the enduring conditions for a peaceful postwar world, and that vision generated a remarkable degree of consistency in his strategic direction in Europe. In a comment to Stimson in 1935, the President aptly described the strategic instincts that would serve him well after war broke out: "I have an unfortunately long memory and I am not forgetting either our enemies or our objectives."[55] **JFQ**

NOTES

[1] Harold L. Ickes, *The Secret Diary of Harold L. Ickes,* vol. 2, *The Inside Struggle, 1936–1939,* entry for August 26, 1939 (New York: Simon and Schuster, 1954), 704–705.

[2] Franklin D. Roosevelt, radio address, "On the European War," September 3, 1939, Master Speech File No. 1240, Franklin D. Roosevelt Speech File, Franklin D. Roosevelt Library (FDRL), available at <http://www.fdrlibrary.marist.edu/090339.html>.

[3] Ickes, entry for September 9, 1939, vol. 2, 715.

[4] Harold L. Ickes, *The Secret Diary of Harold L. Ickes,* vol. 3, *The Lowering Clouds, 1939–1941,* entry for September 16, 1939 (New York: Simon and Schuster, 1954), 9.

[5] Breckinridge Long, *The War Diary of Breckinridge Long: Selections from the Years 1939–1944,* ed. Fred L. Israel, entry for October 11, 1939 (Lincoln, NE: University of Nebraska Press, 1966), 27.

[6] Statement of General George C. Marshall, May 29, 1940, appearance before U.S. Senate Sub-Committee, Committee on Appropriations on Senate amendments to the Military Establishment Bill for 1941, *Appearances of General of the Army George C. Marshall Before the Congress of the United States, 1939–1945,* vol. 2 (Washington, DC: Office of the Secretary of Defense, n.d.), 362.

[7] Admiral H.R. Stark, "Rough Informal Estimate of the Foreign Situation," March 1, 1940, in folder: Navy: January–March 1940, Departmental File, Box 58, President's Secretary's File, FDRL.

[8] Ickes, entry for June 9, 1940, vol. 3, 202.

[9] Adolph A. Berle diary, entry for June 9, 1940, Box 212, Berle Papers, FDRL.

[10] Berle, entry for June 30, 1940.

[11] Hugh Dalton, *The Second World War Diary of Hugh Dalton, 1940–1945*, ed. Ben Pimlott, entry for May 24, 1940 (London: The London School of Economics and Political Science, 1986), 20; War Cabinet, Chiefs of Staff Committee Papers, "British Strategy in a Certain Eventuality," May 25, 1940, W.P. 40(168), CAB 66/7, Public Record Office, Kew.

[12] Draft of Roosevelt's Message to Congress, Second Appeal—Additional Defense Appropriation, July 10, 1940, Master Speech File Number 1289, Speech File, FDRL. Italics in the original by Roosevelt.

[13] Entry for July 19, 1940, Henry Lewis Stimson Diaries, XXX: 24–25, microfilm edition, Reel 6, Manuscripts and Archives, Yale University Library; Berle, entry for June 18, 1940.

[14] Executive Order No. 8248, "The Reorganization of the Executive Office of the President," September 8, 1939, in *The Public Papers and Addresses of Franklin D. Roosevelt, 1939: War—and Neutrality*, ed. Samuel I. Rosenman (New York: Harper and Brothers Publishers, 1941), 490–506; Ickes, entry for September 9, 1939, vol. 2, 721.

[15] Bok Peace Award submission 1923, Eleanor Roosevelt Papers, FDRL.

[16] Franklin D. Roosevelt to Eleanor Roosevelt, August 2, 1914, *F.D.R.: His Personal Letters*, vol. 2, *1905–1928* (New York: Duell, Sloan and Pearce, 1948), 239.

[17] Franklin D. Roosevelt, radio address, "On National Security," December 29, 1940, Master Speech File Number 1351, Speech File, FDRL, available at <http://www.fdrlibrary.marist.edu/122940.html>.

[18] Memorandum, "Views on Questions Propounded by President on War Sit," WPD 4250–3, Record Group 165, War Plans Division General Correspondence, National Archives.

[19] Memorandum for the Chief of Staff, "National Defense Policy," June 17, 1940, WPD 4250–3, Record Group 165, War Plans Division General Correspondence, National Archives.

[20] Memorandum from Marshall to Strong, June 24, 1940, and draft "Basis for Immediate Decisions Concerning the National Defense," June 22, 1940, WPD 4250–3, Record Group 165, War Plans Division General Correspondence, National Archives.

[21] Final revision, "Basis for Immediate Decisions Concerning the National Defense," June 27, 1940, WPD 4250–3, Record Group 165, War Plans Division General Correspondence, National Archives. On the shift of military planners, see Mark A. Stoler, *Allies and Adversaries: The Joint Chiefs of Staff, the Grand Alliance, and U.S. Strategy*

in World War II (Chapel Hill: University of North Carolina Press, 2000), 24–29.

[22] Henry Morgenthau, Jr., entry for March 30, 1940, Presidential Diaries, FDRL.

[23] Robert Murphy, *Diplomat Among Warriors* (Garden City, NY: Doubleday and Company, 1964), 68.

[24] Franklin D. Roosevelt to Harry Hopkins, March 27, 1941, "Franklin D. Roosevelt," Box 214, Special Assistant to the President, 1941–1945, The Papers of Harry L. Hopkins, FDRL.

[25] Lynn R. Edminster to Harry Hopkins, May 22, 1941, "Ideas about the War," Box 158, Special Assistant to the President, 1941–1945, The Papers of Harry L. Hopkins, FDRL.

[26] Berle, entry for March 9, 1941.

[27] Berle characterized Jackson's argument as consistent with the international law theories of the 17th-century Dutch jurist Hugo Grotius. Entry for March 13, 1941, Berle.

[28] Franklin D. Roosevelt, notes filed June 1940, Democratic Platform, Speech File (No Number), FDRL.

[29] Franklin D. Roosevelt, press conference, April 15, 1941, in *The Public Papers and Addresses of Franklin D. Roosevelt, 1941: The Call to Battle Stations*, ed. Samuel I. Rosenman (New York: Harper and Brothers Publishers, 1950), 117–120.

[30] Franklin D. Roosevelt, press conference, April 25, 1941, 132–135.

[31] Maurice Matloff and Edwin M. Snell, *Strategic Planning for Coalition Warfare, 1941–1942,* vol. 3, *The United States Army in World War II: The War Department* (Washington, DC: U.S. Government Printing Office, 1953), 33–48.

[32] Estimate of the Situation on Aid to Britain, May 19, 1941, 4323–31, War Plans Division General Correspondence, 1920–1942, Records of the War Department General and Special Staffs, RG 165, National Archives.

[33] George C. Marshall, interview, January 15, 1957, *George C. Marshall: Interviews and Reminiscences for Forrest C. Pogue*, ed. Larry I. Bland (Lexington, VA: George C. Marshall Research Foundation, 1991), 279.

[34] Memorandum of Conference in the Office of the Chief of Staff, September 20, 1941, Subject: Information for the President, "Ground Forces in Connection with Lippmann Article," NM–84 Entry 422, Box 20, RG 165, Records of the War Department General and Special Staffs, National Archives.

[35] Stimson, entry for September 12, 1941.

[36] Stimson, entry for September 17, 1941.

[37] Stimson, entry for August 30–September 7, 1941.

[38] Marshall, vol. 2, 491.

[39] Stimson, entry for September 13, 1941.

[40] Stimson, entry for September 17, 1941.

[41] Stimson, entry for August 30–September 7, 1941.

[42] Stimson, entry for September 25, 1941.

[43] Franklin D. Roosevelt, press conference, September 23, 1941, 393–396.

[44] Long, entry for November 20, 1941, 224.

[45] Frank Freidel, *Franklin Roosevelt: A Rendezvous with Destiny* (Boston: Little, Brown and Company, 1990), 394–395.

[46] Berle, entry for March 9, 1941; Frank Knox to John G. Winant, November 10, 1941, General Correspondence: 1941, The Papers of Frank Knox, LCMD.

[47] William J. Donovan to Franklin D. Roosevelt, November 17, 1941, Coordinator of Information: 1941, Box 128, Subject File, President's Secretary's File, FDRL.

[48] Stimson, entries for November 23 and 25, 1941.

[49] Stimson, entries for December 4 and 5, 1941.

[50] [Anna] Eleanor Roosevelt, *Eleanor Roosevelt's My Day: Her Acclaimed Columns, 1936–1945*, ed. Rochelle Chadakoff, entry for December 9, 1941 (New York: Pharos Books, 1989), 226.

[51] Ickes, entry for December 14, 1941, vol. 3, 664.

[52] Franklin D. Roosevelt, Extemporaneous, Informal Remarks at Dinner of the Trustees of the Franklin D. Roosevelt Library, Inc., Washington, DC, February 4, 1939, in Rosenman, *The Public Papers and Addresses of Franklin D. Roosevelt, 1939: War—and Neutrality*, 117–118. Wilson's declaration of war against Germany before Congress said, in part: "With a profound sense of the solemn and even tragical character of the step I am taking and of the grave responsibilities which it involves . . . I advise that the Congress . . . formally accept the status of belligerent which has thus been thrust upon [the government and people of the United States]." Woodrow Wilson, War Messages, 65th Congress, 1st Session, Senate Document no. 5, Serial no. 7264, available at <http://www.firstworldwar.com/source/usawardeclaration.htm>.

[53] On Hitler's long-range goals and his decision to declare war on the United States, see Gerhard L. Weinberg, *World in the Balance: Behind the Scenes of World War II* (Hanover, NH: University Press of New England, 1981), 68–69, 89–93.

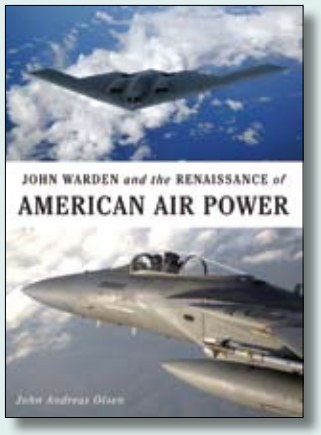
[54] Franklin D. Roosevelt, message to Congress, Declaration of War on Germany, December 11, 1941, Master Speech File, No. 1402, Speech File, FDRL.

[55] Franklin D. Roosevelt to Henry L. Stimson, February 6, 1935, *Franklin D. Roosevelt and Foreign Affairs*, vol. 2, *March 1934–August 1935* (Cambridge, MA: Harvard University Press, 1969), 397–398.

Field Marshal Keitel signs surrender instrument in Berlin, May 7, 1945

U.S. Army

Book Reviews



John Warden and the Renaissance of American Air Power
by John Andreas Olsen
Dulles, VA: Potomac Books, 2007
349 pp. $32.95
ISBN: 978–1–59797–084–6

Reviewed by
JOHN DARRELL SHERWOOD

Colonel John A. Warden III, USAF (Ret.), played a critical role in planning the first Gulf War air campaign and is widely regarded as the primary architect of effects-based warfare. If Warden did inspire a "renaissance of American air power" in the 1990s, we may now be living through an "air power Reformation," with some even calling for the abolition of the Air Force, given its inability to effect change on the ground in the current insurgency in Iraq. Before Service leaders decide to launch an Inquisition against their critics, they might be prudent to read John Andreas Olsen's tale of John Warden, one of their greatest Jesuits.

Warden graduated from the Air Force Academy in 1965 and flew 265 missions as a forward air control pilot over Vietnam in 1969. He then worked his way up the Air Force ladder, serving in a variety of operational and staff assignments in the 1970s and 1980s. From 1986 to 1988, he commanded the 36th Tactical Fighter Wing at Bitburg Air Force Base in Germany, one of the Air Force's premier Cold War units. Unfortunately for Warden, his personality did not mesh well with wing command. As an ideas man, Warden tried to enact too many changes too quickly at Bitburg, and his introverted nature made it difficult for him to socialize and market his reforms effectively. Uncomfortable with Warden "rocking the boat," General William L. Kirk, commander of U.S. Air Forces Europe, removed him from command in 1988, effectively ending Warden's chance to become a general.

What Warden failed to achieve as an operator, he made up for as an intellectual. While a student in the National War College's senior-level program during the 1985–1986 academic year, he wrote *The Air Campaign: Planning for Combat*, which laid out the basic tenets of his philosophy of airpower. These principles were later expanded and revised when the colonel became a planner in the Pentagon in 1988. Warden's basic premise is that airpower could become a commander's *primary* means of achieving both political and military ends. In short, he challenged the prevailing notion that the primary purpose of war was the defeat of an enemy army. Airpower, he reasoned, allowed commanders to directly target an enemy regime, thereby avoiding combat with its army. This was a far cry from the AirLand Battle Doctrine of the period, which employed airpower in support of ground troops to destroy interdiction targets, such as follow-on forces and supply trains.

Airpower's decisiveness, argued Warden, derived from its ability to directly strike centers of gravity. Using a five-ring model, he defined these centers as command and control, critical war industry, transportation infrastructure, population and agriculture, and fielded military forces. Airpower enjoyed its greatest *effect* when used against leadership (the bull's eye of his five-ring model) and diminished in impact against other rings, especially the outermost two (population and fielded military forces).

Many of Warden's ideas came from earlier prophets of airpower, namely Giulio Douhet and Billy Mitchell, and were not new. Instead, he mainly repackaged certain useful theories and married them to modern airpower technology. In future wars, precision-guided munitions would allow the Air Force to focus less on destroying targets and more on achieving desirable political outcomes with discrete applications of force.

During the first Gulf War, Warden's planning team, Checkmate, developed *Instant Thunder*, the prototype for the war's air campaign. *Instant Thunder* sought to target the Iraqi regime by striking command and control facilities, air defenses, essential war industries, and logistics targets as opposed to ground forces or population areas. Very shortly into the planning process, Warden fell into disfavor with General Charles Horner, the U.S. Central Command air component commander. Horner resented Warden's meddling and also vehemently disagreed with him about the relative importance of hitting Iraqi ground forces, especially the Republican Guard. Warden's initial plan minimized attacks on these forces because he believed that a ground campaign would not be necessary to liberate Kuwait and that intact Iraqi forces would be necessary for internal security after the war. The compromise air campaign would strike most of the targets identified in *Instant Thunder* but would also place heavy emphasis on destroying Iraqi forces on the ground in Kuwait.

John Andreas Olsen, the director of the Norwegian Defense Command and Staff College and a Royal Norwegian Air Force officer, points out that while Horner ultimately sent Warden back to Washington, the general did continue to rely on Warden's staff for planning and intelligence support throughout the war. As a consequence, Warden managed to leave an indelible mark on the air campaign. Like Kirk before him, Horner appreciated neither Warden's personality nor his willingness to argue passionately with his chain of command when it came to ideas and strategy. Unlike Kirk, Horner tolerated Warden at a distance, picking and choosing the ideas most suitable to his conception of the air campaign.

While airpower alone did not win the first Gulf War, it contributed mightily to the eventual outcome. More significantly, effects-based warfare was employed with great success in the Balkans and in Operation *Enduring Freedom*. By focusing on the role of a single individual, Olsen offers a comfortable vehicle for understanding the evolution of airpower doctrine in the 1990s. His book also explores anti-intellectualism in the Air Force, and how the Service could be unaccommodating to internal critics in its ranks. Iconoclasts may not make the best company at the Officers' Club, but their ideas and potential influence are critical to our nation's survival. They bridge the gap between the world of ideas and war and may ultimately help the Air Force reform itself and better adapt to the current war on terror. **JFQ**

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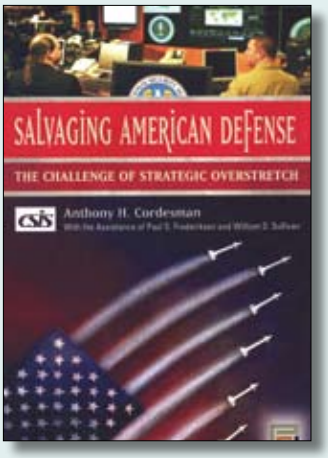


Salvaging American Defense: The Challenge of Strategic Overstretch
by Anthony H. Cordesman with Paul S. Frederiksen and William D. Sullivan
Washington, DC:
Center for Strategic and International Studies, 2007
488 pp. $29.95
ISBN–13: 978–0892064953

Reviewed by
SHAWN BRIMLEY

Salvaging American Defense could not have been published at a more critically important time. Ongoing operations have strained the military, and the contours of the future security environment are growing increasingly complex. Anthony Cordesman of the Center for Strategic and International Studies has released a wide-ranging and detailed assessment of American defense policy that is—and will remain for some time—the single best source on the subject. *Salvaging American Defense* is both an admonishment of the defense establishment and a plea to current and future leaders to better align ends, ways, and means.

Cordesman is not averse to offering blunt and incisive criticism, which begins in the first chapter and does not abate. Current operations in Iraq are an early target: "The idea that a deeply divided and primitive Iraq would become an instant shining example that transformed the Middle East always bordered on the theater of the absurd" (p. 35). Rejecting the notion that a rapid withdrawal would improve America's strategic position, Cordesman argues that "the U.S. bull is seen throughout the world as having broken the Iraqi china shop it claimed to rescue. It must now live with the political and strategic consequences" (p. 380).

Beyond current operations, Cordesman describes how a "massive failure" to predict the actual cost, development time, and effectiveness of almost every major defense investment has committed America to a "fundamentally unaffordable mix of research, development, and procurement programs" (p. 36). He paints a stark picture of an American military suffering from "strategic overstretch": perpetually unrealistic force and manpower plans stretching back to the end of the Cold War, combined with illusions of lifting the fog of war through a so-called revolution in military affairs and exacerbated by a strategy development process that allows decisionmakers to be derelict in their duty to make hard choices. Put simply, America's leaders are unable to make good on their strategic commitments with the current defense budget.

Many readers will find Cordesman's exploration of the defense budget and various force transformation programs valuable. No major platform escapes examination. After questioning the wisdom of the Army's investment in the Future Combat System, describing the "cost-escalation nightmare" of the Air Force's F–22A Raptor program, and arguing that constant schedule delays and expense escalation have cost the Navy "the ability to plan its fleet," Cordesman concludes that contractors, the military Services, program managers, and the Office of the Secretary of Defense have largely become "advocates and competitors rather than planners and managers." He argues that the "level of failure in today's programs represents a basic failure to make hard choices at the level of the Secretary of Defense, Deputy Secretary, Service Secretaries, Chairman of the Joint Chiefs, and Service Chiefs of Staff" (p. 326). Cordesman rejects the notion that new studies or bureaucratic patches are needed to fix a system in which "failure to make difficult and timely decisions is not only tolerated but encouraged. . . . [T]here will never be an effective system until failure is punished from the top down" (p. 328).

Cordesman is direct in criticizing various attempts at defense reviews, including the Quadrennial Defense Review (QDR): "The Department of Defense currently wastes tens of thousands of man hours on a process that at best can be described as a triumph of hope over experience" (p. 278). In his view, the QDR process is a microcosm of a wider failure to bridge the gap between theory and practice, perpetuating the chasm between strategy and resources. Cordesman is equally critical of strategic concepts advanced by the Joint Chiefs and the various military Services, calling many of them "wish lists" rather than meaningful plans.

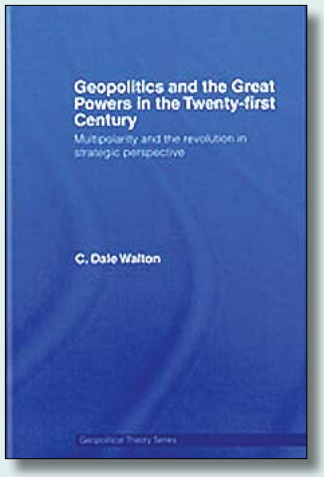
Salvaging American Defense provides an excellent foundation for the tough conceptual and budget battles that lie ahead. Wartime budgets that allowed the various players to have their cake and eat it too are certain to contract in the years to come. Vital questions regarding whether and how to adapt to a future security environment that will demand a robust supply of military capability geared toward preventive training and advising of foreign security forces must be clearly answered. Moreover, the question of how to institutionalize adaptation, while retaining and resetting forces capable of dominating along the full spectrum of warfighting, will constitute a core challenge for the next administration.

The military Services realize what is coming and are consolidating around their various positions regarding force size and shape, posturing for what will likely be the most important QDR yet. Years of missed opportunities to make clear choices and a long period of war in which budgets were loose and fiscal discipline eroded will demand strategic decisions that will decisively influence plans, programs, and budgets. However, Cordesman cautions against trying to divine a "critical minimum" or a "just enough" solution to force size or shape. "The United States cannot succeed by focusing on finding ways of doing more and more with less and less," Cordesman concludes, "particularly if this unconsciously ends in trying to do absolutely everything with absolutely nothing" (p. 439).

Salvaging American Defense has a wide topical aperture. In 450 pages, Cordesman explores the entire spectrum of defense policy and strategy, from ongoing operations in Iraq and Afghanistan, to the challenges inherent in formulating strategy, force posture, resource allocation, procurement, personnel management, and the need for larger and more effective civilian capabilities. In addition to problems in U.S. military strategy and resources, Cordesman covers challenges relating to the Intelligence Community, homeland security, interagency reform, public diplomacy, and relations with international partners and alliances. While the book might have benefited from a slightly narrower scope, Cordesman's command of the material and his no-holds-barred approach is worth the journey.

This book is a tough read; the topic is dense and complicated, and Cordesman assumes his audience will have a high degree of familiarity with the subject matter. This is perhaps for the best, as *Salvaging American Defense* is a serious book on an important topic. For defense professionals tasked with shepherding the Department of Defense through what is and will surely continue to be an incredibly difficult period, *Salvaging American Defense* may well prove indispensable. **JFQ**

Shawn Brimley is the Bacevich Fellow at the Center for a New American Security.



Geopolitics and the Great Powers in the Twenty-first Century: Multipolarity and the Revolution in Strategic Perspective
by C. Dale Walton
London: Routledge, 2007
141 pp. $125.00
ISBN–13: 978–0415358538

Reviewed by
THOMAS M. KANE

Despite the provocative title of Francis Fukuyama's 1992 work, history does not appear to have ended. Neither, scholar and strategic analyst C. Dale Walton reminds us, has geography. In *Geopolitics and the Great Powers*, Walton returns to the work of geopolitical thinkers Halford MacKinder and Nicholas Spykman to offer a compelling account of the factors likely to shape grand strategy in upcoming decades. Like MacKinder and Spykman themselves, Walton emphasizes the interplay between ancient geographical realities and new strategic possibilities afforded by emerging technology. In so doing, Walton updates such influential studies of military and political trends as Samuel Huntington's *Clash of Civilizations* and Alvin and Heidi Toffler's *War and Anti-War*, not to mention a considerable fraction of the more technical literature on the strategic implications of the so-called revolution in military affairs (RMA).

Walton's revival of MacKinder focuses on the earlier thinker's proposition that the centuries during which European countries pushed their influence throughout the world constituted a Columbian epoch, in which a country's destiny depended primarily on its maritime capabilities and powerful nations could satisfy any inclinations toward expansion by seeking colonies in what today would be called the less developed world. MacKinder believed that this epoch ended with the 19th century. Walton disagrees only about the date. The maritime nations, he tells us, extended their period of supremacy by embracing technology that MacKinder could not have anticipated and by making state policy more astutely than MacKinder dared to hope for. Nevertheless, Walton notes, the termination of the Cold War has once again created the conditions for the Columbian epoch to end. Once again, the world has become what Walton and MacKinder call a "closed system" in which the great powers must interact in everything they do. If any of them wish to improve their strategic position, they must do so at the direct expense of others.

Meanwhile, Walton argues, developments in such fields as biotechnology and crewless fighting vehicles call for "technological exuberance." Although he wisely avoids speculation about the details of future military technology, he both affirms that the United States has recently initiated an RMA through its use of information technology and predicts more RMAs to come. Future RMAs, he notes, will coincide with the period in which the great powers feel the consequences of living in a post-Columbian epoch. This, *Geopolitics and the Great Powers* argues, will produce a revolution in strategic perspective, combining new ways of fighting with new ideas about who is to wage war upon whom. The United States, Walton notes, could increasingly find itself on the sidelines. Although this will allow America to lay down some of its current "burdens," Americans risk paying a steep price if they permit a hostile "great power axis" to emerge (pp. 11, 46–47).

Walton's analysis addresses the role of terrorists, transnational nongovernmental organizations, and other "Lilliputians" in the post-Columbian epoch (p. 77). Some (Walton cites Rajan Menon, a fellow at the New America Foundation) have claimed that these actors reduce the significance of geography—and, thus, of geopolitics—in the contemporary world. *Geopolitics and the Great Powers* counters that ethnic groups, adherents of particular religions, and members of other groups that commonly involve themselves in strategy "without a license" tend to be concentrated in specific regions (p. 73). Although these groups transcend state boundaries, they seldom transcend geography. Moreover, Walton notes, their effects on international politics are most profound when they act alongside traditional nation-states (pp. 82–85). Future "great powers," he concludes, "have a practical choice to make—whether to show restraint in the support of violent non-state actors . . . or take their chances 'riding the tiger.'"

In exploring these issues, Walton focuses on the policy implications of his arguments. This approach forces him to curtail his discussion of related theoretical issues. Although *Geopolitics and the Great Powers* identifies the People's Republic of China as "one of the most potent players in the struggle for preeminence in Eastern Eurasia," Walton does not specifically respond to Alfred Thayer Mahan's similar arguments in *The Problem of Asia*. Although Walton finds Spykman's arguments about the relative importance of seapower and land power more appropriate to 21st-century political circumstances than those of MacKinder, he offers only a few sentences contrasting these authors' positions.

Readers who are primarily interested in the practical side of strategy are unlikely to miss such theoretical excursions. Walton uses geopolitical theory selectively, but the concepts he selects allow him to advance a plausible guide to the driving trends in contemporary statecraft. By integrating the effects of emerging technology, narrowly operational RMAs, and the activities of so-called Lilliputians into this argument, Walton advances an equally plausible guide to the ways in which these contemporary concerns may—and may not—shape longer-term developments. Throughout this project, Walton keeps sight of the reasons why strategy is worth studying. American policymakers, he notes, may soon lose the "very generous margin of error" that they have come to assume as a birthright (p. 107). They, like their counterparts in other states throughout the world, must adopt a strategic perspective appropriate to the new century, or "suffer accordingly" (p. 107). **JFQ**

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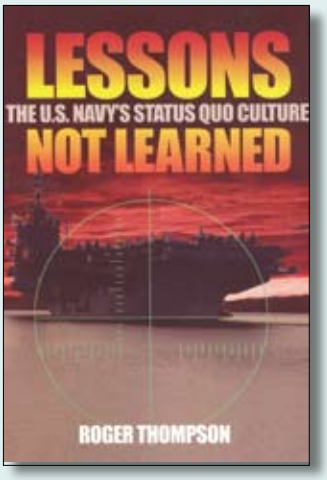

Lessons Not Learned: The U.S. Navy's Status Quo Culture
by Roger Thompson
Annapolis, MD:
Naval Institute Press, 2007
252 pp. $34.95
ISBN–10: 1–59114–865–0

Reviewed by
CHRISTOPHER R. DAVIS

Roger Thompson sets out to provide a deliberately provocative critique of the U.S. Navy, and he does not disappoint. His juxtaposition of facts and informative narrative with occasionally inflammatory conjecture makes for a spirited book. *Lessons Not Learned* ponders whether "the U.S. Navy is truly the most capable navy in the world, or is it closer to an overrated paper tiger" (p. 5). At a time when America is investing heavily in countering a land-based insurgency and preparing to release a new maritime strategy, this polemic serves as a valuable cautionary tale.

Thompson draws on his background in sociology to interpret the motives of U.S. Navy leaders, which he attributes largely to parochial interests and arrogance. Admittedly, confident statements by senior Navy leadership can appear partisan or border on hubris, but arrogance or pride should not be the default assumption. While it is difficult to divine underlying motives, the U.S. Navy well understands the threats that Thompson outlines. In this regard, the author is slightly behind the times. There is little doubt, for example, that antisubmarine warfare skills have atrophied since the fall of the Berlin Wall, but reversing this decline is a top priority today—which calls into question the author's contention that the U.S. Navy fails to learn from past mistakes or has institutionalized underachievement.

While plowing over old themes, unfortunately, Thompson leaves fertile new ground untouched. He correctly castigates the Navy for lax pre-9/11 security, for example, but evokes the USS *Cole* incident without touching upon the emergent asymmetric threat posed by suicidal or swarming small craft. In fact, the most contemporary portion of the book is the afterword penned by Colonel Douglas Macgregor, USA (Ret.). *Lessons Not Learned* may have been topical a decade or so ago, but today it is a dated rehashing of old themes with few new insights.

While Thompson impressively catalogues the outcomes of tactical engagements, he makes no attempt to analyze the results in terms of operational or strategic objectives. Rather, he implies that success at the tactical level is the only thing that matters. The author should have placed more attention on analyzing the U.S. Navy force structure, and the choices made about it, in light of existing political and military strategies. Thompson does not address, for example, the critical issue of whether the current all-nuclear submarine fleet or carrier-centric battle force is correct given our current naval strategy (or lack thereof), or if a blend of nuclear and conventional submarines or a "high-low" warship mix, for instance, would better achieve American national security objectives.

The author's key unexamined underlying assumption is that the U.S. Navy must be dominant and preeminent in all aspects; he fails to scrutinize the Navy's order of battle in light of existing national security policy and joint doctrine. In the chapters covering the Cold War period, for example, there is no mention of the maritime strategy that drove force planning and acquisition decisions at the time, much less any critical examination of competing naval strategies. In light of the 1,000-ship Navy initiative, readers would benefit from a comparative analysis—for example, should the United States rely on cooperative operations with foreign navies or go it alone? Furthermore, Thompson attributes U.S. Navy dominance primarily to the mistakes of former adversaries, calling to mind the old adage that one need only be faster than his fellow camper to avoid wild bear attacks—an excellent, albeit low, metric of effectiveness and efficiency.

Thompson touches upon several critical issues regarding the use of nuclear propulsion at a time when Congress is pushing to expand its use in surface combatants. But he lacks a critical eye for discerning the costs or benefits of conventional versus nuclear propulsion. While he excoriates Navy leadership for adopting the latter, he fails to analyze the strategic context of this decision. Did our Cold War maritime strategy, for example, require a submarine force dependent on nuclear power to achieve both the requisite speed for fast-attack sorties capable of bottling up the Soviets and the stamina needed for boomers to disappear into the abyss? Or were other options possible?

Thompson is at his best detailing the challenges diesel submarines pose for the U.S. Navy. While it is difficult in an unclassified forum to discern the result of exercises, much less operations, the author reaches some thought-provoking conclusions based on second-hand sources and private comments. The portrait that emerges is not flattering and plants seeds of doubt over the value of the Navy and the caliber of its leadership. Still, it is hard to comprehend how senior leadership overlooked vulnerabilities to the degree that Thompson postulates. It is also difficult to grasp how our allies' prowess, the forces against which the author judges our combat effectiveness, threatens America.

Thompson's intentionally provocative perspective is valuable in questioning current reality, and in so doing, *Lessons Not Learned* is a catalyst for avoiding past mistakes. On the whole, Thompson offers context to the continuing debate surrounding naval relevance in the war on terror. U.S. Navy leadership would do well to consider his conclusions thoughtfully, although the author should have provided them as more than an afterthought in the final two-page chapter. It is up to the reader, nonetheless, to determine if the author proves his thesis—keeping in mind that doubt, as Voltaire observed, is not a pleasant condition, but certainty is absurd. **JFQ**

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continued from page 31

and surrounding it was a ring of population, which included food sources. Finally, a ring of fielded military forces surrounded population. Warden contended that leadership was the most critical ring because it was "the only element of the enemy . . . that can make concessions."[38] If that ring could not be attacked directly, the goal then became to confound the leadership's ability to direct warmaking activities, and airpower could target the outer rings. Yet the focus of the attacks remained the impact on the center ring. He cautioned against attacking military forces, which he labeled "a means to an end," and urged that they "be bypassed—by strategy or technology."[39] Warden also eschewed direct attacks on civilians, and his rationale for attacking industry mirrored an Air Corps Tactical School text: "If a state's essential industries (or, if it has no industry of its own, its access to external sources) are destroyed, life becomes difficult, and the state becomes incapable of employing modern weapons and must make concessions."[40]

Warden's progressive notions of airpower meshed well with the political objectives sought by President George H.W. Bush following Saddam Hussein's invasion of Kuwait in August 1990. At the time of the Iraqi assault, Warden was the Air Staff's deputy director of Checkmate, its plans and warfighting division. A combination of factors led to his ideas forming the basis for the allied air campaign. Key among them was that his notions suited the President's desires. Bush viewed Saddam's aggression as a grave threat to the energy needs of the United States and its allies, but he would not condone devastating Iraq to remove the threat. Indeed, Bush viewed America's need to respond as a moral crusade, part of "the burden of leadership and the strength that has made America the beacon of freedom in a searching world."[41] He outlined his war aims as the removal of Iraqi troops from Kuwait, restoration of the Kuwaiti regime, protection of American lives, and conditions that would provide "security and stability" in the region. An air campaign that targeted Saddam—whom Bush equated to Hitler—or his power base would help fulfill those goals.

Warden's plan, named Operation *Instant Thunder* to highlight its differences from *Rolling Thunder*'s gradualism, called for 6 days of intense bombing against Saddam's command centers; transportation and communications complexes; nuclear, biological, and chemical facilities; and the Iraqi air force and its air defenses.[42] Relying on its dramatic precision bombing capability, American airpower would scrupulously avoid Iraqi civilians and extreme damage to the Iraqi economy. Lieutenant General Charles A. Horner, the Air Force commander who conducted the air campaign, thought that Warden's scheme relied too heavily on bombing Baghdad targets instead of the Iraqi army. Nevertheless, Horner kept Warden's intent to isolate Saddam in the plan's final version, and the first 6 days of Operation *Desert Storm* were, in large measure, a test of Warden's concepts.[43] Air planners hoped that those initial strikes "would not just neutralize the government, but change it by inducing a coup or revolt that would result in a government more amenable to coalition demands."[44]

Because he directed an abundance of airpower—more than 1,800 aircraft from 10 countries[45]—Horner could use it to attack more than simply leadership targets, and attacks against Iraq's Republican Guard divisions began soon after the start of the air campaign. Some of those strikes involved the use of smart munitions against Iraqi armor. The "tank plinking" missions portended a vastly increased scope for the notions of progressive

Col John A. Warden III, USAF (seated second from left), with planners on Project Checkmate, the aerial attack to start Operation *Desert Storm*

U.S. Air Force

airpower; 84 Air Force F–111s destroyed more than 1,500 armored vehicles with precision ordnance.[46] Whereas visionaries such as Mitchell and Warden argued that strategic bombing could obviate the need to engage enemy forces by wrecking vital nodes in the state's infrastructure, a seed was planted that airpower's incredible precision capability might be able to end—or thwart—wars quickly and easily by destroying key components of an enemy's deployed military apparatus on the battlefield.

Yet incredible precision did not equate to infallible bombing. The improved technology could not eliminate Clausewitz's friction from the air campaign. An estimated 2,300 Iraqi civilians died before the coalition ground offensive began, and airpower caused most of those deaths.[47] The element of chance had a profound impact on the bombing when two stealth fighters destroyed the al Firdos bunker in Baghdad, an Iraqi command facility, with smart munitions on February 13, 1991. Unknown to the Americans who planned and conducted the mission, the bunker harbored large numbers of Iraqi civilians, and more than 200 died in the attack. Television broadcasts instantly displayed the destruction to audiences around the globe. The episode halted all bombing in Baghdad for the next 4 days, and thereafter the theater commander, General Norman Schwarzkopf, USA, personally reviewed any Baghdad targets selected for attack.[48] Only five locations in Baghdad were hit for the remainder of the war.[49] Bombing also failed to destroy conclusively any of Iraq's mobile Scud missile launchers, despite an extensive air effort devoted to them.[50]

In the end, airpower doubtless helped spur the ouster of Iraqis from Kuwait. The airpower that counted most, though, in securing the withdrawal was not the precision effort against leadership targets, but rather the massive, comparatively imprecise bombing of Iraq's deployed armed forces. Of the 227,000 bombs and missiles delivered during the 43 days of the war, only 15 percent were precision munitions.[51] The vast bulk of the remainder fell on Iraqi troops that were arrayed to move or defend in conventional fashion. When an Iraqi armored force attempted to advance into the Saudi Arabian town of Khafji at the end of January 1991, coalition airpower annihilated it. The small percentage of bombs dropped on leadership targets severely damaged those targets by the end of January 1991; in fact, aircraft bombed almost 70 percent of Warden's *Instant Thunder* targets in the first 3 days of the air campaign.[52] Still, the Saddam regime continued to function, no coup materialized, and the uprisings by Shiite and Kurdish groups occurred only after Iraqi forces began leaving Kuwait—not in response to the Baghdad attacks. The mammoth amount of airpower applied against Iraqi troops shocked and dismayed many of them—100,000 who were carpet-bombed deserted[53]—and facilitated a fast-paced, "hundred-hour" ground war to take Kuwait. Airpower had delivered the goods, but the goods were not exactly the ones its advocates had promised.

airpower had delivered the goods, but the goods were not exactly the ones its advocates had promised

F–16C patrols skies over Kosovo during Operation *Allied Force*

U.S. Air Force (Brad Fallin)

▲ *Download as computer wallpaper at ndupress.ndu.edu*

Bombs in the Balkans

The "video game" images of bombs placed in air shafts endured as a new American President confronted a series of crises. On two occasions in the Balkans, Bill Clinton turned to bombing to prevent European destabilization and to help achieve humanitarian goals that he believed were essential to America's welfare. Beginning in 1993 in Bosnia, President Clinton committed American airpower to UN and North

Atlantic Treaty Organization (NATO) efforts to preserve a multiethnic Bosnian state and halt Bosnian Serb ethnic cleansing against Muslim and Croat populations. He eschewed sending ground forces, convinced that such an option might prove too costly in terms of lives risked and damage inflicted. Airpower's sensational precision capability promised to minimize both concerns. "Airstrikes cannot win a war, but they can raise the price of aggression," Clinton commented on the eve of beginning the American-led bombing campaign *Deliberate Force* in August 1995.[54]

Operation *Deliberate Force* comprised 12 days of bombing between August 29 and September 14, 1995. It was indeed an exercise in precision bombing, as 708 of the 1,026 bombs dropped were precision-guided munitions.[55] Most of the 48 targets consisted of supply depots, air defenses, and Bosnian Serb troops and their weaponry. The attacks produced no collateral damage that the Bosnian Serb leaders could exploit, and Serbian President Slobodan Milosevic, who backed the Bosnian Serbs with troops and equipment, admitted that only 25 civilians died in the raids.[56]

U.S. Air Force (Paul Caron)

Aircrew members receive premission briefing prior to airstrikes on targets near Sarajevo

U.S. Air Force (Edward Snyder)

F–117 Nighthawk drops GBU–28 laser-guided bomb unit

Milosevic was instrumental in persuading the Bosnian Serb leadership to halt their attacks and remove heavy weapons from Sarajevo; their agreement to comply led to the end of *Deliberate Force*. Yet Bosnian Serb leaders and Milosevic were also extremely concerned by a rapidly moving 100,000-man offensive from the Croatian army in July against the northern areas of Serb-held Bosnia, as well as an invasion from the south mounted by the Muslim-Croat forces of the Bosnian Federation. By mid-September, the amount of Bosnian territory under Serb control had shrunk from 70 to 51 percent, with the prospect of more losses to follow in a fast-paced conventional conflict.[57] President Clinton's September 20, 1995, declaration that "the NATO air campaign in Bosnia was successful" and "show[ed], once again, that firmness pays off" omitted the fact that much of the firmness had come from the pressure of ground power.[58]

Clinton's perception that airpower had coerced the Bosnian Serbs caused him to return to that formula in response to Serbian ethnic cleansing in Kosovo. His motivations for bombing in 1999 paralleled his 1995 objectives. "Why are we in Kosovo?" he asked rhetorically during the air campaign designated Operation *Allied Force*. "Because we have a moral responsibility to oppose crimes against humanity and mass ethnic and religious killing where we can. Because we have a security responsibility to prevent a wider war in Europe, which we know from our two World Wars would eventually draw America in at far greater cost in lives, time, and treasure."[59] Although the 1999 Kosovo conflict was a periodically waged guerrilla struggle, unlike the conventional war that Bosnia had become by 1995, Clinton believed that the progressive notions of airpower offered the best chance to accomplish his Kosovo goals at a minimum cost. He further thought that bombing was a more acceptable solution than a ground invasion not only to the American public but also to the 19 states comprising NATO, and he placed a high premium on preserving the Alliance. Yet he understood that maintaining NATO support—as well as an endorsement from the global community at large—would be difficult "at a time when footage of airstrikes is beamed to homes across the world even before our pilots have returned to their bases, a time when every accidental civilian casualty is highlighted."[60]

To compel Milosevic to stop ethnic cleansing in Kosovo, Clinton began *Allied Force* on March 24, 1999. U.S. Army General

Wesley Clark, NATO's Supreme Allied Commander, oversaw the air campaign, initially designed for 3 days of precision bombing. Clark's air commander, Air Force Lieutenant General Michael Short, wanted a more extensive air effort against targets in Belgrade, albeit with precision munitions. Disagreements on target priorities continued throughout the 78-day air campaign, with Clark preferring to focus on Serb forces in Kosovo, and Short stressing targets in Belgrade and Serbia proper. Both men, though, fully appreciated the President's desire to conduct an air campaign that all NATO nations would find acceptable. American aircraft flew the bulk of the sorties and dropped most of the 28,000 munitions expended, 38 percent of which were precision-guided.[61] Only one American aircraft—and no American pilots—was lost, providing a measure of vindication for the progressive tendencies that had sparked the campaign. A further indication that the progressive approach had succeeded came in the civilian death toll. The emphasis on precision bombing, reinforced by restrictive rules of engagement for aircrews, produced collateral damage that killed just 500 noncombatants.[62]

As in *Desert Storm*, however, the focus on precision could not eliminate friction and its impact. The relatively small number of civilians who died in *Allied Force* significantly affected the conduct and tenor of the air campaign. On April 14, a pilot who thought that trucks filled with refugees near Djakovica were part of a military convoy bombed the vehicles, killing 73 noncombatants. The Serbs portrayed the incident as a "regular occurrence" and amplified those sentiments after a precision-guided bomb destroyed a Belgrade bridge seconds before a train began crossing it. Clark personally approved all raids on Belgrade following the bridge incident.[63] Although only four people died from the war's most notorious bombing error, a mistake in labeling Belgrade's Federal Procurement and Supply Directorate that caused B–2 pilots to bomb the Chinese embassy on the night of May 7, the repercussions were profound. The miscue produced a Washington-directed halt to any further bombing in the Serb capital for the next 2 weeks.[64] Referring to the high volume of air attacks that occurred that evening, NATO spokesman Jamie Shea stated, "A great deal was done accurately and professionally. But everything is overshadowed by one very, very bad mistake."[65]

Besides producing a dismal picture of American military prowess, the friction from *Allied Force* had far more severe ramifications. NATO's bombing may well have triggered a massive Serb effort to eradicate Kosovo's Albanians. The true exodus of Kosovar Albanians coincided with the start of the air campaign. Approximately 18,500 refugees had fled to Albania before the bombing began; 5 days after it started, an additional 65,000 had poured across the border.[66] Spurred by greatly intensified Serb efforts at ethnic cleansing, 620,000 Kosovar Albanians were refugees by mid-April, a total that climbed to 800,000 a month later.[67] By the end of *Allied Force* in June, Milosevic's forces had expelled half of Kosovo's 1.6 million Albanians (and most of the remainder were internally displaced), killed roughly 3,000 people, destroyed 600 settlements, and caused $1.3 billion in damage.[68] Ultimately, most of the survivors tried to return home after the war but in many cases found their homes ransacked or ruined. The desire for retribution became a hallmark of the fragile peace that followed, with the previously persecuted Albanians now recognized as Kosovo's majority populace.

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Airpower played an uncertain role in securing the peace. To some, such as the distinguished British military historian John Keegan and Dartmouth professor Andrew Stigler, bombing was *the* factor that caused Milosevic to cave to NATO demands.[69] "There are certain dates in the history of warfare that mark real turning points," declared Keegan. "Now there is a new turning point to fix on the calendar: June 3, 1999, when the capitulation of President Milosevic proved that a war can be won by airpower alone."[70] Other observers, such as University of Chicago professor Robert Pape and RAND analysts Benjamin Lambeth, Daniel Byman, and Matthew Waxman, were not so sanguine. They maintained that a combination of factors, to include Serbia's loss of Russian support and NATO's threat of a ground invasion, produced Milosevic's submission.[71] In the final analysis, *Allied Force* provided America with a precedent for using lethal airpower as a means of humanitarian intervention and may have spurred the human catastrophe that it was designed to prevent. Still, for many American political leaders and military chiefs, Keegan's progressive vision of the air war was the one that resonated.

The Challenges of "Long" War

For President George W. Bush, airpower offered the quickest means to respond to the most costly acts of terrorism on American soil. Bush viewed the September 11, 2001, attacks as an enormous threat not only to the Nation's security but also to American values. "This enemy tries to hide behind a peaceful faith," he remarked on November 8, 2001. "But those who celebrate the murder of innocent men, women, and children have no religion, have no conscience, and have no mercy." Thus, he insisted, "We wage a war

Ground crews ready F–15E Strike Eagle for combat mission

U.S. Air Force (Dave Nolan)

to save civilization itself."[72] Airpower was an essential component of that war effort, and the President sought to apply it in a manner that highlighted its progressive attributes. To wreck Taliban and al Qaeda strongholds in Afghanistan, American forces, supported by NATO units, blended "real-time intelligence, local allied forces, special forces, and precision airpower" in Operation *Enduring Freedom*.[73] Bush commented in December 2001 that precision-guided munitions offered "great promise" and "have been the majority of the munitions we have used. We're striking with greater effectiveness, at greater range, with fewer civilian casualties. More and more, our weapons can hit moving targets. When all of our military can continuously locate and track moving targets—with surveillance from air and space—warfare will be truly revolutionized." Thus, he maintained, America was "redefining war on our terms."[74] Those terms included the tenets of progressive airpower.

By November 12, after 5 weeks of air attacks, roughly 6,000 bombs and missiles had fallen on Afghanistan, of which more than 2,300 were satellite-guided 2,000-pound joint direct attack munitions (JDAMs).[75] Much of the bombing occurred in remote areas, and Secretary of Defense Donald Rumsfeld stressed that "every single target was characterized as . . . low collateral damage."[76] The emphasis on using precision munitions to avoid civilian casualties remained a hallmark of the air campaign. Yet the desire to keep civilian losses to a minimum—and maintain the good graces of observers throughout the Muslim world—affected airpower's ability to produce positive results. In the first 6 weeks of *Enduring Freedom*, on 10 occasions air commanders believed that they had located top Taliban and al Qaeda leaders but failed to receive clearance to fire before the enemy escaped.[77]

Despite the overwhelming emphasis on avoiding civilians, friction persisted, and bombing still produced collateral damage. In October, five villages near Kandahar collectively reported, in accounts corroborated by local commanders and Afghan officials, more than 100 civilian victims of U.S. airstrikes.[78] Also in that month, American aircraft attacked warehouses in Kabul that the Red Cross claimed it used to store foodstuffs and blankets. Red Cross officials maintained that they had marked the warehouses with red crosses painted on the roofs of the buildings, while American spokesmen countered that Taliban troops had removed supplies from the facility into military vehicles parked inside its gates.[79] Regardless of the truth, the perception emerged that Americans had deliberately bombed the facility, a belief made stronger by the limited amount of airpower used in *Enduring Freedom* (its sortie count was roughly half that of *Allied Force*[80]) and the continued American declarations that they avoided attacks on nonmilitary structures. "The constant message that there are few 'high-value targets' in Afghanistan is intended to educate the public that the war will not be won with a cruise missile," asserted analyst William Arkin. "But the end result fosters the impression that if there aren't good military targets, then the United States must be bombing civilians."[81]

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Precision airpower could not eliminate friction and its accompanying collateral damage, nor could it singlehandedly render Taliban and al Qaeda military forces impotent. While it could help defeat the Taliban regime, wrecking its fighting capability required troops on the ground. President Bush relied on the hodgepodge armies of the Northern Alliance—whose fighters often massed together on horseback—to accomplish that task. That force of about 20,000 men, supplemented by American bombs and a small number of American and NATO special operations teams, advanced against and defeated 25,000 Taliban and al Qaeda fighters by early December.[82] Yet President Bush's December 11 assertion that "these past two months have shown that an innovative doctrine and high-tech weaponry can shape and then dominate an unconventional conflict" missed the mark;[83] the war waged in Afghanistan, through the fall of Kandahar on December 9, was a conventional conflict that depended on a ground offensive, backed by heavy amounts of airpower. Moreover, the airpower needed was a blend of precision ordnance and "dumb" bombs—the rapier proved useful against certain "high value" targets, while the bludgeon remained effective against deployed enemy troops in unpopulated areas. One Northern Alliance warlord noted that bombs had killed more Taliban in 2 days through close air support than the Alliance had been able to kill during the previous year.[84]

The President concluded from the destruction of the Taliban regime in Afghanistan that the progressive notions guiding that venture could also remove a recalcitrant Saddam from power in Iraq. Bush believed that Saddam possessed weapons of mass destruction and planned to use them against America or its allies. To preclude that possibility, he announced on March 19, 2003, that U.S. and coalition forces had begun "military operations to disarm Iraq, to free its people and to defend the world from grave danger."[85] Airpower provided the initial thrust of Operation *Iraqi Freedom* and appeared to offer an efficient solution to the Saddam problem. When on-scene intelligence reported that the Iraqi dictator would spend the night of March 19 at a farm near Baghdad, Bush ordered an airstrike on the facility.[86] Two F–117 stealth fighters each dropped a pair of laser-guided EGBU–27 "bunker buster" bombs on the target, and then 36 Tomahawk cruise missiles slammed into it, but the raid did not kill Saddam.

Despite that failure, precision bombing was the linchpin of the "shock and awe" air campaign 2 days later. According to Harlan Ullman, the concept's architect, the goal was "to create in the minds of the Iraqi leadership and their soldiers, this Shock and Awe, so they are intimidated, made to feel so impotent, so helpless, that they have no choice but to do what we want them to do, so the smartest thing is to say, 'This is hopeless. We quit.'"[87] American political and military leaders did not use the term *shock and awe* directly, though clearly their intent matched Ullman's. After more than 1,500 bombs and cruise missiles had struck Iraqi governmental and military installations on the night of March 21, General Tommy Franks, USA, commander of U.S. Central Command, remarked, "This will be a campaign unlike any other in history, a campaign characterized by shock, by surprise, by flexibility, by the employment of precision munitions on a scale never before seen, and by the application of overwhelming force." He referred to the previous evening's attacks as "decisive precision shock [by] shock air forces."[88] Secretary of Defense Rumsfeld agreed, observing that coalition forces would end Saddam's dictatorship "by striking with force on a scope and scale that makes clear to Iraqis that he and his regime are finished."[89]

While the raids did indeed produce a fantastic display of American military prowess

seen worldwide, they did not compel surrender or instantly cripple Iraqi warfighting capability. Furthermore, the great media attention generated by the air attacks, and the previous hints that American leaders had made concerning their magnitude, caused several observers to focus on anticipated destruction. One report called the attack on Baghdad targets "the most devastating air raid since Dresden."[90] Aside from a sympathetic call from Russian President Vladimir Putin, the remainder of the calls President Bush received in the aftermath of the attacks were critical. Bush was upset that much of the world failed to appreciate the American ability to apply lethal doses of airpower precisely. He later noted that "it was not understood that the United States had found a way to wage war that as much as possible spared civilians, avoided collateral damage and targeted the leaders and their means to fight and maintain power. Wars of annihilation, carpet-bombing and fire-bombing cities should be a thing of the past."[91]

Bush was upset that much of the world failed to appreciate the American ability to apply lethal doses of airpower precisely

Such progressive sentiments continued to guide the application of airpower as American and coalition ground forces advanced across Iraq. By late April 2003, the Air Force had dropped roughly 18,000 munitions, which included 11,000 guided and 7,100 unguided bombs.[92] Many of those struck Iraqi army units. In stark contrast to the opening salvos of *Desert Storm*, in which only 7 percent of available allied aircraft bombed Iraqi ground forces, 51 percent of the aircraft pummeled the Iraqi army at the start of *Iraqi Freedom*.[93] Most of those aircraft relied on precision-guided munitions, another key difference from *Desert Storm*.[94] When two Republican Guard divisions near Baghdad tried to use a sandstorm to shield them from bombing, an array of satellite-guided JDAMs decimated their formations.[95] On April 5, the U.S. Army's 3d Infantry Division made its famous "thunder run" through Baghdad, and 4 days later, Iraqis toppled the giant statue of Saddam in the center of the city. On May 1, President Bush flew to the deck of the USS *Lincoln* off the California coast and announced the end of major combat operations in Iraq.

U.S. Air Force (Joshua Strang)

U.S. Navy

First STOVL F–35 is unveiled

Airpower had played an enormous role in the success achieved thus far, and its precision capability contributed significantly to the rapid ground advance. That capability also helped keep aircrew losses low by allowing the release of guided munitions from relatively safe standoff distances. Only three fixed-wing coalition aircraft had been shot down when the President made his May 1 announcement, and two of those had fallen by mistake to American Patriot air defense batteries. Yet once again, airpower's superb precision capability could not guarantee a pristine combat environment and the absence of friction. Although the Iraqi army and Republican Guard waged a predominantly conventional war, Iraq's potent Fedayeen militia used guerrilla tactics that often placed civilians at risk during bombing missions. Airpower alone killed an estimated 1,500 to 2,000 Iraqi noncombatants in the war's first 6 weeks.[96]

In helping to disarm Iraq and oust Saddam, airpower contributed the most by wrecking enemy formations and affecting the will of Iraqi troops. Whereas bombing had produced a 40 percent Iraqi desertion rate in *Desert Storm*, by early April 2003, the level of desertion during *Iraqi Freedom* reached 90 percent in some units, despite the shorter duration of bombing and the smaller amount of munitions used.[97] The rapid coalition ground advance through the heart of Iraq—territory that was off limits in 1991—undoubtedly contributed to the decision of many Iraqis to stop fighting. In addition, the fast-paced war of movement that highlighted Operation *Iraqi Freedom*'s first 6 weeks suited American political and military leaders—though it did not prove perfectly suited to the notions of progressive airpower. While precision bombing certainly helped to facilitate a rapid ground advance,

its performance was sometimes less precise than its advocates proclaimed.

In the war that has evolved since the President's May 2003 speech, ground forces have dominated as well, and the notions of progressive airpower have often proved ill suited to the developing conflict. That struggle has been anything but a fast-paced conventional war with a clearly defined enemy. Indeed, the opponent faced by coalition forces has not been a constant, but rather a vacillating, amorphous entity comprising various combinations of foreign fighters, indigenous insurgents with disparate motivations, and criminal elements. Enemy fighting techniques have varied from an infrequently waged guerrilla war replete with suicide terrorism, booby traps, and roadside bombs to the massed uprising seen in Fallujah in spring 2004. Generally, when the enemy chooses to fight, civilians are likely to be close at hand, which increases the likelihood of friction and does not bode well for airpower effectiveness. America's war to achieve a stable, secure, democratic Iraq continues against the backdrop of the long war against global terrorism. Given that world public opinion will play a large role in determining the success of either conflict, America's use of force in Operation *Iraqi Freedom* cannot be seen as arbitrary. It must prove acceptable to those in Iraq who may be affected by it, as well as to those watching from outside the country, particularly throughout the Islamic world.

Regrettably, friction has continued to produce collateral damage in Iraq and casts grave doubt on airpower's ability to act as a progressive force. On May 19, 2004, American aircraft targeting an enemy safe house near the Syrian border killed as many as 20 people, who witnesses claimed were attending a wedding.[98] A little more than a year later in the same area, American aircraft again targeted insurgent safe houses, and Iraqi Interior Ministry officials reported 40 civilian deaths, mostly members of an extended family.[99] On October 17, 2005, a precision-guided bomb killed as many as 20 civilians, including 6 children, and wounded 25, according to an Iraqi doctor who treated the wounded. "[They] were not terrorists," stated the doctor. "They were only a bunch of civilians whose curiosity prompted them to gather around a destroyed Humvee."[100] More recently, airstrikes produced civilian casualties in Iraq on August 8 and October 12 and 23, 2007, and in Afghanistan on April 27 and 29, June 16 and 21, August 3, October 18 and 24, and November 28, 2007. All of those episodes received media attention.[101]

Skyways Ahead

American airpower faces an enormous challenge in Iraq and Afghanistan because of the progressive vision that has helped shape it during the past eight decades. That vision portrays bombing as a rational, just military instrument that helps achieve victory more quickly, with less destruction and fewer lives lost (on *both* sides), than surface combat. This notion of efficiency has had an enduring appeal to American Presidents as well as air commanders. In many respects, those political chiefs have found airpower's siren song even more enticing than have the airmen, for it seemingly offers political leaders a way to eliminate a perceived evil cheaply, and without having to inflict undesired pain. In the classic phrasing of Johns Hopkins professor Eliot Cohen, "Airpower is an unusually seductive form of military strength, in part because, like modern courtship, it appears to offer gratification without commitment."[102]

friction has continued to produce collateral damage in Iraq and casts grave doubt on airpower's ability to act as a progressive force

Presidents Roosevelt, Truman, Eisenhower, Johnson, Nixon, George H.W. Bush, Clinton, and George W. Bush all turned to bombing to help fight wars that each viewed as a just crusade, and each believed that airpower's progressive ideals blended well with war's righteous cause. All wanted to achieve victory by risking the fewest American lives, and relying on airpower risked fewer Americans than turning to armies or navies. In the final analysis, though, making airpower's progressive ideals a component of a wartime crusade leads to a strategy based more on faith than sound reasoning. Despite the promise of pristine warfare, the combination of high technology aircraft, munitions, and intelligence-gathering into such current concepts as "net-centric warfare" or "effects-based operations" cannot cure the great malady of friction that infects all military endeavors. Danger, exertion, uncertainty, and chance will forever comprise what Clausewitz called "the climate of war," and stealth, JDAMs, Predators, and Tomahawks cannot purify that environment.

To a degree, perhaps, airpower's high-tech components can reduce friction's effects. Iraqis in Baghdad during *Desert Storm* avoided defense ministries and other government installations but otherwise continued their lives as they had before the war.[103] During Operation *Iraqi Freedom*'s shock-and-awe air raids, the street lights remained on in Baghdad, as once

Cockpit camera view onboard F/A–18C shows Paveway laser-guided bombs and Sidewinder missiles

U.S. Navy (Steve Lightstone)

again bombs fell only on government and military facilities.[104] Yet eliminating bombing's fear factor does not necessarily increase the likelihood of achieving America's desired political objectives. Cohen, who directed the Gulf War Airpower Survey for the Air Force following *Desert Storm*, observed that "American airpower has a mystique that it is in the American interest to retain."[105] The notions of progressive airpower have consistently undercut that perspective. Moreover, the constant repetition of progressive aphorisms by American political and military leaders significantly heightens the impact of any mistakes made, as demonstrated by reactions to bombing the al Firdos bunker in Baghdad and the Chinese embassy in Belgrade.

The progressive notions of airpower would find a greater degree of acceptance if they were applied to *battlefield* uses rather than so-called strategic bombing. Billy Mitchell and his disciples viewed airpower as an instrument best used against the "vital centers" of an enemy state. John Warden thought along similar lines, focusing on a state's core leadership elements. To all of them, airpower transformed war because it could deliver a knockout punch that obviated traditional surface approaches to fighting and their concomitant death and destruction. Experience, though, has failed to vindicate those beliefs. Instead, American airpower has demonstrated an impressive capability to transform what occurs on the battlefield—*provided* that the war fought is a fast-moving, conventional conflict waged in areas away from a civilian populace.

The first year of the Korean War, Vietnam in 1972, the latter stages of *Desert Storm*, *Deliberate Force* in August-September 1995, *Enduring Freedom* through the middle of December 2001, and *Iraqi Freedom* until the beginning of May 2003 all provided some degree of opportunity for airpower to make important contributions to ground campaigns occurring simultaneously. During the specified portions of those conflicts, airpower suited the type of war that was fought, and that fact tended to reduce the amount of friction produced by bombing. In 1972 Vietnam, *Deliberate Force*, and *Enduring Freedom*, local allies rather than American forces conducted the ground offensives, but airpower, working as the "hammer" to ground power's "anvil," made an ideal complement to the ground advances.[106] In all likelihood, the *truly* progressive characteristics of airpower are those that allow *ground* power to succeed more quickly and cheaply than it otherwise would.

Unfortunately, airpower is a progressive instrument only when it comes to applications that provide a minimal threat to the civilian populace. Battlefield support in remote areas, against a fast-moving enemy that fights conventionally, offers the greatest prospect for success. Bombing has limited applicability in a stagnant conventional conflict, like the last 2 years of the Korean War. In the often confused environment of counterinsurgent warfare, airpower's lethal application is more likely to prolong a conflict than shorten it and may well increase the ultimate numbers of lives lost by motivating angry civilians to join the ranks of enemy combatants. If the political goal is to "win hearts and minds," as was the case in Vietnam and appears to be the case in Iraq and Afghanistan, lethal airpower is an unlikely answer even when precisely applied. For bombing to succeed in such a conflict, impeccable intelligence information must exist regarding not only the target but also the likelihood of collateral damage. Clausewitz's friction must remain dormant, and expecting that is a great gamble that America's political leaders may not wish to take.

The Zarqawi raid highlights several of the difficulties involved in using airpower against an insurgent commander. An attempt to pinpoint Osama bin Laden's deputy, Ayman al-Zawahiri, in a remote Pakistani village on the Afghan border and kill him with Hellfire missiles fired from a Predator drone failed in January 2006.[107] Zarqawi was equally elusive, and vital information from Jordanian security officials about his couriers was necessary to give the raid a chance for success. Those clues combined with more than 2 *years* of painstaking analysis from an American special operations task force and finally placed Zarqawi in an isolated farm house north of Baghdad. An Army Delta team outside the house verified that few civilians were present inside. Still, Zarqawi's death has not slowed Iraq's escalating sectarian violence. The January 2006 airstrike that missed Zawahiri but instead killed four al Qaeda "senior leaders" does not appear to have stymied al Qaeda activities in Afghanistan; moreover, that attack killed as many as 14 civilians, including women and children, and caused thousands of Pakistanis to demonstrate against the raid.[108] The example of Chechen leader Dzhokhar Dudayev, whom

U.S. Marine Corps (Jeremy W. Ferguson)

Marines fire Shoulder-Launched Multipurpose Assault Weapon in Fallujah, Iraq

in all likelihood, the truly progressive characteristics of airpower are those that allow ground power to succeed more quickly and cheaply than it otherwise would

the Russians killed with a television-guided bomb in 1995, shows that killing an insurgent leader does not necessarily assure the end of a ferocious insurgency.

While the failure to account for friction has undercut airpower's ability to achieve progressive results, it has also spurred resentment for progressive rhetoric. Episodes of collateral damage offset positive pronouncements of airpower accomplishments made by American leaders. Although proponents may proclaim that airpower can end wars quickly and cheaply, skeptics—in particular, non-American skeptics—can argue that such progressive views apply only to proponents who are also U.S. citizens. The emphasis on the speedy conclusion of hostilities and a small loss of life appears ideally suited to Americans, who have the world's greatest airpower and have displayed a willingness to use it in the last decade and a half as their first choice of military options.

To some observers, the espoused progressive notions are morally bankrupt, and really equate to assuring the smallest possible loss of life for *American* airmen, rather than guaranteeing no civilian casualties. Author David Halberstam summarized Operation *Allied Force* as follows: "The war may have started with Milosevic's brutality against the Albanians, but what much of the world was soon watching was a big, rich, technologically advanced nation bombing a poor, little country, and doing it in a way that showed its unwillingness to accept casualties itself."[109] Air Force Lieutenant General Michael Short, the air commander responsible for conducting *Allied Force*, seemingly confirmed that assessment by listing one of his primary objectives as "zero losses. . . . I wanted to destroy the target set and bring this guy [Milosevic] to the negotiating table without losing our kids."[110] Many of the world's onlookers likely nodded at Short's admission and believe that such emphasis will continue to guide applications of American airpower.

Many around the globe also discount American assurances that precision bombing will not threaten noncombatants, and still American political and military leaders make such promises, only to have episodes of friction prove them wrong. The more limited the conflict, the greater the progressive rhetoric seemingly becomes, and the greater the probability that friction will undermine the political goals sought. The key problem in proclaiming progressive airpower as an aspect of American military prowess is that it does not suit war's basic nature, much less the types of war America faces in the 21st century. As Clausewitz observes, the fundamental nature of war is constant, a swirling mix of violence, hatred, and enmity; calculated reason; and probability and chance. No amount of technological wizardry can remove those components, no matter how sophisticated the technology or how sound the intentions of those who apply it. Clausewitz adds, "Kind-hearted people might of course think there was some ingenious way to disarm or defeat an enemy without too much bloodshed, and might imagine this is the true goal of the art of war. Pleasant as it sounds, it is a fallacy that must be exposed: war is such a dangerous business that the mistakes which come from kindness are the very worst."[111] As long as they continue to rely on airpower to help achieve their objectives in war, American air commanders and their political leaders must acknowledge Clausewitz's realism, not the idealist notions of Mitchell and his successors. President Bush's subdued statements regarding the impact of the Zarqawi raids are steps in the right direction. **JFQ**

NOTES

[1] Statement of President George W. Bush, June 8, 2006, "Defense Department Update," June 12, 2006, accessed at <www.dod.gov/hom/dodupdate/documents/20060608f.html>.

[2] Carl von Clausewitz, *On War*, ed. and trans. Michael Howard and Peter Paret (Princeton: Princeton University Press, 1976), 104, 119, 121.

[3] *The Public Papers of Woodrow Wilson: War and Peace,* vol. I, "Address Delivered at a Joint Session of the Two Houses of Congress," April 7, 1917 (New York: Harper and Brothers, 1927), 14.

[4] John S.D. Eisenhower, *Yanks: The Epic Story of the American Army in World War I* (New York: Free Press, 2001), 288.

[5] William Mitchell, "Aeronautical Era," *The Saturday Evening Post*, December 20, 1924, 99, emphasis added. Mitchell repeats this assertion in *Winged Defense* (New York: G.P. Putnam's Sons, 1925; rpt. New York: Dover Publications, 1988), 16; and *Skyways* (Philadelphia: J.B. Lippincott Company, 1930), 262.

[6] Mitchell, *Winged Defense*, x.

[7] Mitchell, "Aeronautical Era," 99–103.

[8] Ibid., 3.

[9] Isaac D. Levine, *Mitchell: Pioneer of Airpower* (New York: Duell, Sloan, and Pearce, 1943), 146–148.

[10] Major Muir S. Fairchild, lecture, "National Economic Structure," April 5, 1938, 3–5, Air Force Historical Research Agency, Maxwell Air Force Base, file number 248.2019A–10.

[11] Under *ideal* conditions at 21,000 feet, a B–17 bombardier using the Norden bombsight might place *one* bomb out of all that he dropped into a 100-foot diameter circle surrounding the center of the target—and conditions in combat would rarely be ideal. See Michael J. Nisos, "The Bombardier and His Bombsight," *Air Force Magazine*, September 1981, 106–113.

[12] Cited in Robert E. Sherwood, *Roosevelt and Hopkins: An Intimate History* (New York: Harper and Brothers, 1948), 100.

[13] Quoted in Michael S. Sherry, *The Rise of American Airpower: The Creation of Armageddon* (New Haven: Yale University Press, 1987), 156.

[14] James Parton, *"Air Force Spoken Here": General Ira Eaker and the Command of the Air* (Bethesda, MD: Adler and Adler, 1986), 526, n. 17.

[15] David MacIsaac, ed., *The United States Strategic Bombing Survey*, 10 vols. (New York: Garland Publishing, 1976), I, *Overall Report (Europe)*, 37; VII, *Summary Report (Pacific War)*, 16. Other estimates of civilian deaths from bombing in Germany ranged from 300,000 to 600,000, while one estimate of civilian deaths in Japan exceeded 900,000. See Sherry, 260, 413.

[16] See Ronald Schaffer, *Wings of Judgment: American Bombing in World War II* (New York: Oxford University Press, 1985), on how military necessity affected America's air campaigns.

[17] MacIsaac, *Strategic Bombing Survey*, vol. VII, *Summary Report (Pacific War)*, 26.

[18] Carl Spaatz, "Strategic Airpower: Fulfillment of a Concept," *Foreign Affairs* 24 (April 1946), 385. In 1947, Spaatz became the first Chief of Staff of the newly formed U.S. Air Force.

[19] Whether airpower alone had contributed to victory in a cost-effective manner is debatable. Of the 291,557 battle deaths suffered by Americans in World War II, 52,173 were airmen. See Sherry, 204.

[20] Harry S. Truman, *Memoirs*, II, *Years of Trial and Hope* (Garden City, NY: Doubleday, 1956), 339.

[21] Robert F. Futrell, *The United States Air Force in Korea 1950–1953* (New York: Duell, Sloan and Pearce, 1961), 452.

[22] Ibid., 482.

[23] See Roger Dingman, "Atomic Diplomacy during the Korean War," *International Security* 13 (Winter 1988/1989), 50–91; Daniel Calingaert, "Nuclear Weapons and the Korean War," *Journal of Strategic Studies* 11 (June 1988), 177–202; Edward C. Keefer, "President Dwight D. Eisenhower and the End of the Korean War," *Diplomatic History* 10 (Summer 1986), 267–289.

[24] Quoted in Doris Kearns, *Lyndon Johnson and the American Dream* (New York: Signet, 1976), 263.

[25] Quoted in George C. Herring, *"Cold Blood": LBJ's Conduct of Limited War in Vietnam,* U.S.

Air Force Academy Harmon Memorial Lecture no. 33 (Washington, DC: U.S. Government Printing Office, 1990), 2.

[26] Curtis E. LeMay with MacKinlay Kantor, *Mission with LeMay* (Garden City, NY: Doubleday, 1965), 565.

[27] Joint Chiefs of Staff briefing text, "Air Operations Against North Vietnam and Laos," January 1967, *Target Study—North Vietnam*, Air Force Historical Research Agency, file number K178.2–34.

[28] Mark Clodfelter, *The Limits of Air Power: The American Bombing of North Vietnam* (New York: The Free Press, 1989), 134–135.

[29] By January 1968, Hanoi had received almost $600 million in economic aid and $1 billion in military assistance. See JASON Summer Study, "Summary and Conclusions," August 30, 1966, *Pentagon Papers*, Gravel Edition, 4:116; and Department of Defense Systems Analysis Report, January 1968. The Systems Analysis Report stated: "If economic criteria were the only consideration, North Vietnam would show a substantial net gain from the bombing."

[30] National Security Study Memorandum 1 (February 1969), Congressional Record 118 pt. 13 (May 1972), 16833.

[31] Oleg Hoeffding, "Bombing North Vietnam: An Appraisal of Economic and Political Effects," December 1966, RAND Corporation Memorandum RM–5213, 17.

[32] Spencer C. Tucker, ed., *The Encyclopedia of the Vietnam War* (New York: Oxford University Press, 2000), 7.

[33] Guenter Lewy, *America in Vietnam* (New York: Oxford University Press, 1978), 446.

[34] Murray Marder, "North Vietnam: Taking Pride in Punishment," *The Washington Post*, February 4, 1973; Martin F. Herz, *The Prestige Press and the Christmas Bombing, 1972* (Washington, DC: Ethics and Public Policy Center, 1980), 54; Tammy Arbuckle, "Bombing Was Pinpointed," *Washington Star*, April 1, 1973.

[35] Quoted in "Outrage and Relief," *Time*, January 8, 1973, 14.

[36] Mary-Ann Bendel, interview of Curtis E. LeMay in *USA Today*, July 23, 1986, 9A.

[37] John A. Warden III, "Employing Airpower in the Twenty-first Century," in *The Future of Airpower in the Aftermath of the Gulf War*, ed. Richard H. Shultz, Jr., and Robert L. Pfaltzgraff, Jr. (Maxwell Air Force Base, AL: Air University Press, 1992), 61.

[38] Ibid., 65.

[39] Ibid., 67–68.

[40] Ibid., 66.

[41] *Public Papers of the Presidents: George Bush—1991,* vol. 1, "Address Before a Joint Session of Congress on the State of the Union," January 29, 1991 (Washington, DC: U.S. Government Printing Office, 1992), 79.

[42] Thomas A. Keaney, "Airpower in the Gulf War: Plans, Execution, and Results," in *Airpower: Promise and Reality*, ed. Mark K. Wells (Chicago: Imprint Publications, 2000), 291.

[43] Robert A. Pape, *Bombing to Win: Airpower and Coercion in War* (Ithaca: Cornell University Press, 1996), 228–229.

[44] Keaney, 295.

[45] Ibid., 298.

[46] Public Broadcasting System, *Frontline*, "The Gulf War: Appendix: Air Force Performance in Operation *Desert Storm*," available at <www.pbs.org/wgbh/pages/frontline/gulf/appendix/whitepaper.html>.

[47] Eliot A. Cohen, "The Mystique of U.S. Airpower," *Foreign Affairs* 73 (January-February 1994), 122.

[48] Ibid., 121; Keaney, 299.

[49] Pape, *Bombing*, 230.

[50] Thomas A. Keaney and Eliot A. Cohen, *Gulf War Airpower Survey Summary Report* (Washington, DC: U.S. Government Printing Office, 1993), 17, 89–90.

[51] Cohen, 110.

[52] Pape, *Bombing*, 228–229.

[53] Robert A. Pape, "The True Worth of Airpower," *Foreign Affairs* 83 (March-April 2004), 121.

[54] *Public Papers of the Presidents: William J. Clinton—1995,* vol. 2, "Interview with Bob Edwards and Mara Liasson of National Public Radio," August 7, 1995 (Washington, DC: U.S. Government Printing Office, 1996), 1210.

[55] Robert C. Owen, "The Balkans Air Campaign Study: Part 2," *Airpower Journal* 11 (Fall 1997), 12.

[56] Ibid., 26, n. 112.

[57] Ibid., 15.

[58] *Public Papers of the Presidents: William J. Clinton—1995,* vol. 2, "Statement on the Decision to End Airstrikes in Bosnia," September 20, 1995 (Washington, DC: U.S. Government Printing Office, 1996), 1410.

[59] *Public Papers of the Presidents: William J. Clinton—1999,* vol. 1, "Commencement Address at the United States Air Force Academy in Colorado Springs," June 2, 1999 (Washington, DC: U.S. Government Printing Office, 2000), 871.

[60] Ibid., 868.

[61] Benjamin S. Lambeth, "Lessons from the War in Kosovo," *Joint Force Quarterly* (Spring 2002), 12.

[62] Ibid.

[63] Stephen D. Wrage, "The Ethics of Precision Airpower," in *Immaculate Warfare: Participants Reflect on the Air Campaigns over Kosovo, Afghanistan, and Iraq*, ed. Steven D. Wrage (Westport, CT: Praeger, 2003), 91.

[64] Benjamin S. Lambeth, *NATO's Air War for Kosovo: A Strategic and Operational Assessment* (Santa Monica, CA: RAND, 2001), 144.

[65] Online Newshour, "Chinese Embassy Bombed," May 8, 1999, available at <www.pbs.org/newshour/bb/europe/jan-june99/china_5-8.html>.

[66] U.S. Agency for International Development, Bureau for Humanitarian Response, Office of U.S. Foreign Disaster Assistance, Kosovo Crisis Factsheet #12, March 30, 1999, available at <http://iys.cidi.org/humanitarian/hsr/99a/0006.html>.

[67] Derek S. Reveron, "Coalition Warfare: The Commander's Role," in *Immaculate Warfare*, 60.

[68] Ibid.

[69] John Keegan, "Please Mr Blair, never take such a risk again," *The Daily Telegraph*, June 6, 1999; Andrew L. Stigler, "A Clear Victory for Airpower: NATO's Empty Threat to Invade Kosovo," *International Security* 27 (Winter 2002/2003), 124–157.

[70] Keegan.

[71] See Pape, "The True Worth of Airpower"; Lambeth, *NATO's Air War for Kosovo: A Strategic and Operational Assessment*; and Daniel L. Byman and Matthew C. Waxman, "Kosovo and the Great Airpower Debate," *International Security* 24 (Spring 2000), 5–38.

[72] George W. Bush, "Speech to Representatives of Firemen, Law Enforcement Officers, and Postal Workers," Atlanta, GA, November 8, 2001, accessed at <www.september11news.com/President BushAtlanta.html>.

[73] George W. Bush, "President Speaks on War Effort to Citadel Cadets," Charleston, SC, December 11, 2001, available at <www.whitehouse.gov/news/releases/2001/12/20011211-6.html>.

[74] Ibid.

[75] William M. Arkin, "Bad News in the Good News," washingtonpost.com, November 12, 2001.

[76] Ibid.

[77] Thomas E. Ricks, "Target Approval Delays Cost Air Force Key Hits," *The Washington Post*, November 18, 2001, A1.

[78] Susan B. Glasser, "Afghans Live and Die with U.S. Mistakes," *The Washington Post*, February 20, 2002, A1.

[79] William M. Arkin, "Bombing the Red Cross," washingtonpost.com, November 4, 2001.

[80] Rebecca Grant, "An Air War Like No Other," *Air Force Magazine*, November 2002, 31.

[81] William M. Arkin, "Civilian Casualties and the Air War," washingtonpost.com, October 21, 2001.

[82] Pape, "The True Worth of Airpower," 126–127.

[83] Bush, "President Speaks on War Effort to Citadel Cadets."

[84] Richard B. Andrews, Craig Wills, and Thomas E. Griffith, Jr., "Winning with Allies: The Strategic Value of the Afghan Model," *International Security* 30 (Winter 2005/2006), 140.

[85] George W. Bush, "President Bush Addresses the Nation," Washington, DC, March 19, 2003,

available at <www.whitehouse.gov/news/releases/2003/03/20030319-17.html>.

[86] Vice President Dick Cheney helped persuade President Bush to launch the attack. Cheney told the President: "This is the best intelligence we've had yet on where Saddam's located. If we get him, it may save a lot of lives and shorten the war. And even if we don't, we're going to rattle his cage pretty seriously, and maybe disrupt his chain of command. That's well worth the effort in and of itself." See Bob Woodward, *Plan of Attack* (New York: Simon and Schuster, 2004), 391.

[87] Quoted in John T. Correll, "What Happened to Shock and Awe?" *Air Force Magazine*, November 2003, 52.

[88] Ibid., 52–53.

[89] Statement made at March 21, 2003, press conference. Quoted in John A. Tirpak, "Aerospace World Special: Gulf War II; Desert Triumph," *Air Force Magazine*, May 2003.

[90] Quoted in Correll, 57.

[91] Woodward, 405.

[92] Sandra Jontz and Kendra Helmer, "Still going: War emphasizes need to keep aircraft carriers," *Stars and Stripes*, "Freedom in Iraq" edition, June 2003, 25.

[93] Wesley P. Hallman, "Airpower and Psychological Denial," *Joint Force Quarterly* 37 (2d Quarter, 2005), 35.

[94] Ibid., 36. Allied air forces had used precision munitions against Iraqi ground forces only 6.7 percent of the time in *Desert Storm*, compared to 67 percent in *Iraqi Freedom*.

[95] Ibid., 44.

[96] See the Iraq Body Count Database, available at <www.iraqbodycount.net/database/>.

[97] Hallman, 36.

[98] "Pentagon says it attacked fighters—not wedding," CNN.com, May 19, 2004, available at <www.cnn.com/2004/WORLD/meast/05/19/iraq.main/index.html>.

[99] Robert F. Worth, "Airstrikes by U.S. Continue Near Syria Border," *The New York Times*, August 31, 2005.

[100] Quoted in "Iraq airstrikes kill dozens in Ramadi area," CNN.com, October 17, 2005, available at <www.cnn.com/2005/WORLD/meast/10/17/iraq.main/index.html>.

[101] Damien Cave, "U.S. Attack Kills 32 in Sadr City," *The New York Times*, August 9, 2007; Paul von Zielbauer, "U.S. Investigates Civilian Toll in Airstrike, but Holds Insurgents Responsible," *The New York Times*, October 13, 2007; "NATO air raid 'kills civilians,'" BBC News, October 23, 2007; Carlotta Gall and David E. Sanger, "Civilian Deaths Undermine Allies' War on Taliban," *The New York Times*, May 13 2007; Griff Witte and Javed Hamdard, "U.S.-Led Airstrike Kills 7 Children in Afghanistan," *The Washington Post*, June 18, 2007; "NATO strike 'kills 25 civilians,'" CNN, June 22, 2007; Abdul Waheed Wafa and Taimoor Shah, "U.S. Airstrike on 2 Taliban Commanders in South Wounds at Least 18 Civilians, Afghans Say," *The New York Times*, August 4, 2007; "Women and children killed, NATO admits," *Globe and Mail* (Canada), October 27, 2007; Abdul Waheed Wafa, "NATO Strike Is Said to Kill 14 Civilians in Afghanistan," *The New York Times*, November 29, 2007.

[102] Cohen, 109.

[103] William M. Arkin, "Baghdad: The Urban Sanctuary in *Desert Storm*?" *Airpower Journal* 11 (Spring 1997), 4–20.

[104] Correll, 57.

[105] Cohen, 124.

[106] On the use of the airpower "hammer" in concert with the ground power "anvil," see Pape, "The True Worth of Airpower"; on the success of airpower with indigenous forces in Afghanistan, see Andrews, Wills, and Griffith, "Winning with Allies."

[107] Griff Witte and Kamran Khan, "U.S. Strike on Al Qaeda Top Deputy Said to Fail," *The Washington Post*, January 15, 2006, A1.

[108] Carlotta Gall and Douglas Jehl, "U.S. Raid Killed Qaeda Leaders, Pakistanis Say," *The New York Times*, January 19, 2006, 1A; Witte and Khan.

[109] David Halberstam, *War in a Time of Peace: Bush, Clinton, and the Generals* (New York: Scribner, 2001), 460.

[110] Quoted in William Drozdiak, "NATO General Predicts Victory in Two Months," *The Washington Post*, May 24, 1999, A1.

[111] Clausewitz, 75.

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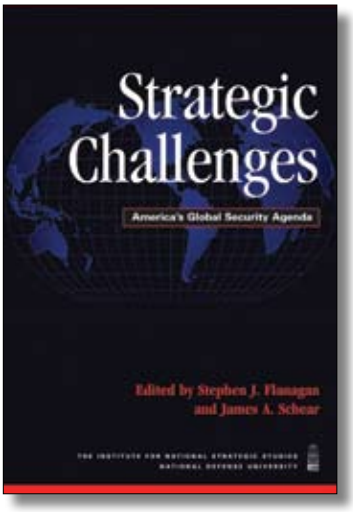

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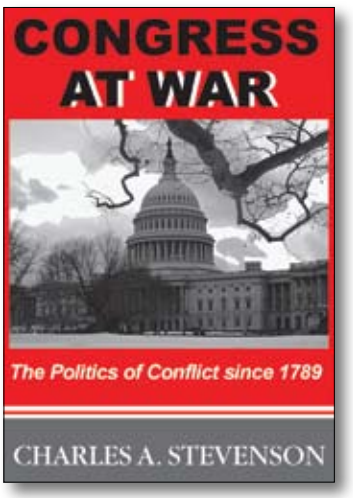
The Politics of Conflict Since 1789

by Charles A. Stevenson

The author reviews the historical record of the U.S. Congress in authorizing, funding, overseeing, and terminating major military operations. Refuting arguments that Congress cannot and should not set limits or conditions on the use of the U.S. Armed Forces, this book catalogs the many times when previous Congresses have enacted restrictions—often with the acceptance and compliance of wartime Presidents. While Congress has formally declared war only 5 times in U.S. history, it has authorized the use of force 15 other times. In recent decades, however, lawmakers have weakened their constitutional claims by failing on several occasions to enact measures either supporting or opposing military operations ordered by the President.



Dr. Charles A. Stevenson teaches at the Nitze School of Advanced International Studies of The Johns Hopkins University. A former professor at the National War College, he also draws upon his two decades as a Senate staffer on national security matters to illustrate the political motivations that influence decisions on war and peace.

Concise, dramatically written, and illustrated with summary tables, this book is a must-read for anyone interested in America's wars—past or present.

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Airmen participate in convoy training

U.S. Air Force (Kenny Holston)

This article is intended to stimulate discussion and provide ideas for building a viable U.S. military—one that can be refocused, reconstituted, and recapitalized while remaining operationally engaged without exhausting people or resources. It is also intended to assist policymakers in examining the recent history, current challenges, and likely future of the Reserve Components.

During the past 30 years, circumstances have driven Total Force policies well beyond their original intent, which was primarily to sustain a large garrison force by leveraging capabilities in the Reserve Components. Although the guidelines in this article are focused on the U.S. Air Force in particular, many apply throughout the Department of Defense (DOD). They may serve as a starting point for policymakers to begin developing a force concept that would allow the Services and DOD to move beyond current Total Force thinking to a new vision that better captures the essence of an operationally centered Reserve Component.

Too often in addressing the pressing problems of the day, we do not take time to consider the next horizon. Chief of Staff of the U.S. Air Force General T. Michael Moseley, in his vision document "Heritage to Horizons," challenged us to contemplate the future during these turbulent times. Following his lead, we provide the following to discuss what we see as the next horizon—building a viable force.

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ONLINE FEATURE

THE NEXT HORIZON

Building a Viable Force

By JOHN A. BRADLEY, GARY L. CRONE, *and* DAVID W. HEMBROFF

U.S. Air Force (Lance Cheung)

C–130 ready for takeoff at Sather Air Base, Iraq

Understanding *Active Duty*

A simple observation sets the tone for the future: the term *Active duty* is no longer the purview of the Active Component. Thousands of Reservists are on Active duty every day. In June 2007, for instance, the Air Force awarded its first six Air Force Combat Action medals, recognizing Airmen who distinguished themselves while engaged with hostile forces, at a ceremony dedicating the new Air Force Memorial. One of the six recipients was Master Sergeant Charlie Peterson, an Air Force Reservist.

Indeed, the Guard and Reserve are Active Components, too. The contributions of Guardsmen and Reservists over the past decades indicate an operational force. Despite these contributions, we still tend to refer exclusively to Active duty as the Active Component. The time has come, however, when we need to accept that a viable force requires *all* components to be Active, not just the Active Component. What will vary is when and how often each is Active.

The Challenge

Our future challenge, to repeat, is to determine how to build a viable force—one that can refocus, reconstitute, and recapitalize forces while remaining operationally engaged, without exhausting people or resources. This concept recognizes that we have evolved past original Total Force thinking. We are no longer talking about sustaining a peacetime garrisoned force, as then–DOD Secretary Melvin Laird first envisioned in 1970. Instead, we are talking about a force that needs to organize and fight with a shared mission and purpose. In the Air Force Reserve, we call this "One Air Force, Same Fight."

As we move to this next horizon, we should look to a time when we can put the term *Total Force* to rest, not because it is a bad thing, but because it will have served its purpose and it is time to move on. Right now this term is so ingrained in policy and doctrine that it is difficult to remember that it was first imposed on the Services by civilian leadership within DOD to overcome biases regarding component programming and budgeting.[1]

Secretary Laird used the term *Total Force* because, at the time, we tended to view the Guard and Reserve Components as if they were from a different planet than the Regular Component. In the Air Force, we would say "the Air Force, and the Air Guard and the Reserve" as if the Guard and Reserve were not part of the Air Force.

The term *Total Force* made the Services and DOD consider all components together when making planning and programming decisions. It put us on the same planet and tried to move us toward a better planned and programmatically integrated force. In regard to the Air Force, we have moved beyond planning integration and are well into operational integration at all levels, and our programs are as integrated as allowed by law. In short, we are well on our way to becoming *one Air Force*.

Air Force Reserve is increasingly becoming an integrated operational force adopting the warrior ethos

U.S. Air Force

Uniqueness Is Strength

For us, understanding that we are all one Air Force does not mean we ignore the unique and vital distinctions of each component's identity. Like three strands woven together to make a stronger cable, the uniqueness of the various components makes the Air Force stronger than any of its parts.

The Reserve and Guard are distinct from the Regular Component because their members have civilian occupations, which are an important source of their members' financial support in addition to their military careers. The Air National Guard has a purpose and identity separate from the Air Force as defined in each state mission. It is the dual purpose of the Guard that gives it the flexibility to perform both state and Federal missions—resulting in a uniquely prepared force that effectively serves both governors and the President.

the term Total Force *made the Services and DOD consider all components together when making planning and programming decisions*

Unlike the Guard, however, members of the Reserve only have the same mission as the Regular Component: to deliver sovereign options for the defense of the United States and its global interests—to fly and fight in air, space, and cyberspace. This alignment provides for participation opportunities unique to the Air Force Reserve, such as individual mobilization augmentees, who are assigned to the Regular Component.

The mission of Air Force Reservists under Title 10 (the Federal law that authorizes the Armed Forces) is the same as the Regular Component. This alignment with the Regular Component opens the door to a variety of "associate" options that allow the Regular and Reserve Components to work together in creative and effective ways. Practically any com-

bination of Regular and Reserve Component force alignment is now possible—given the resources and time to organize them.

The Regular Component is also unique in that its members are on duty 24 hours a day, 7 days a week, 365 days a year. Members of the Regular Component remain the backbone of our professional Air Force, providing a central focal point for performing Air Force missions and operating and sustaining the air expeditionary force. Moreover, they are citizen-Airmen, too. Many are active in their communities. Many of their family members have civilian employers, and many Regular Component families rely on their communities for support and income. For the Air Force Reserve, then, the future is best and brightest when we see ourselves as vital partners banded together into one Service performing the same mission as the rest of the Air Force. This force by its very nature is a more operational force than initially envisioned by Secretary Laird.

The idea of "one Service" with the same mission is important. We have worked extremely hard in the Air Force Reserve over a number of years to be good partners in the Air Force. All of us—officer and enlisted, traditional Reservists, Air Reserve technicians, Active Guard and Reserves, and those of us who were recalled to Active duty—are part of the same Air Force.

Last year, the Air Force Reserve published a vision of the future and a plan to achieve it. We call that vision "One Air Force, Same Fight—An Unrivaled Wingman." One of the responsibilities of Unrivaled Wingmen is that they cannot be Airmen just part of the time. We believe they are *always* Airmen in the U.S. Air Force.

Tradition of Operational Service

Over the years, the Air Force has also made big changes in how it uses its Reserve Components. We are an operational Air Force Reserve today compared to the past. When we began almost 60 years ago, and for the next 40 years, we were seen as a strategic Reserve. For almost 20 years now, we have been an operational Reserve. We still have a strategic component because we could all be mobilized. On the whole, however, we are an operational force—one used every day.

The Air Force Reserve is relied on in everything the Air Force does. This does not mean 100 percent of us are engaged all the time. But daily there are thousands of Reservists involved in air mobility, strategic airlift, tactical airlift, air refueling, special operations, pilot training, advanced flying training, space operations, air operations centers, airborne warning and control systems, command and control, fighters, bombers, rescue operations, and weather operations—to name just some of our missions.

We probably have the most diverse major command in the Air Force when it comes to missions. Every part of the Service needs us frequently. As a result, we are not only training 1 weekend a month, 2 weeks a year. Members of the Air Force Reserve are out there every day performing a significant part of the Air Force mission.

one of the responsibilities of Unrivaled Wingmen is that they cannot be Airmen just part of the time

The Air Force has developed the expeditionary air force model for training, deploying, and presenting air forces to the combatant commanders, and we have been using it successfully for several years now. The Air Force Reserve is a vital part of that force, and we are proud of that. Since September 11, 2001, more than 60 percent of Air Force Reservists have been deployed as volunteers or under mobilization authority. By *deployed*, we mean serving away from home. Some of these people have been mobilized for periods of 1 to 2 years, yet our retention and recruiting numbers remain high. We participate because we are needed, and our Airmen are doing fabulous work.

Because of our success in sustaining daily operations, along with our superb performance in the air expeditionary force and the war on terror, General Moseley is giving us more opportunities to continue participating in daily operational missions. The Air Force refers to this as Total Force integration (TFI).

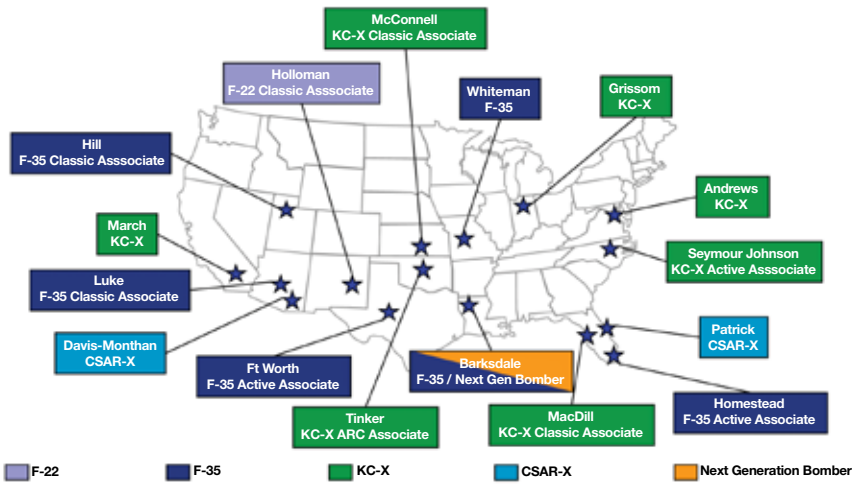
Increased Integration

During a recent ceremony at Maxwell Air Force Base, General Moseley announced additional TFI initiatives, which are part of efforts to unite over 680,000 men and women who comprise the Regular Air Force, Air National Guard, Air Force Reserve, and civilians into a *seamless* force. These included plans for Active associations and community basing with units around the country, such as:

- 169th Fighter Wing, McEntire Joint National Guard Base, South Carolina, fully manned by Spring 2008 (Air National Guard)
- 482d Fighter Wing, Homestead Air Reserve Base, Florida (Air Force Reserve)
- 301st Fighter Wing, Naval Air Station Fort Worth Joint Reserve Base, Texas (Air Force Reserve)
- 158th Fighter Wing, Burlington, Vermont (Air National Guard).

Under these Active associations, the Reserve and Guard units will continue to have principal responsibility for the unit's fighters,

Air Force Reserve Potential Basing of Future Weapons Systems



Source: *One Air Force, Same Fight—An Unrivaled Wingman*

but the wing will also incorporate Regular Component Airmen to serve side by side with their Reserve and Guard counterparts.

In Vermont, for instance, the Air Force plans to expand the community basing effort. In the city of Burlington, Regular Component Airmen are stationed at an Air National Guard location without traditional support functions provided on a military installation, such as housing, medical care, a commissary, or a military exchange. Instead, provisions are made so that Airmen can access these services in the local community, integrating the Airmen into the populace they have sworn to defend. This is a move from the traditional garrisoned force to one living and working in a community in the same way that the Guard and Reserve have from the beginning.

Also, to enhance seamless training among its components, the Air Force has consolidated all Air Force Reserve Command commissioning programs with the officer training school at Maxwell Air Force Base.

General Moseley has said that these recent actions will help ensure the Air Force's ability to continue fulfilling its mission to defend the country. He added, "Our efforts to revolutionize our service are critical to forging an Air Force with the capability and capacity to dominate all its war fighting domains across the spectrum of 21st century conflict."[2] These recent decisions mean more associations in the future with the Regular Component and the Guard. This is not a passing trend; it is a fact of life.

A Force in Being

These recent announcements reflect the latest in decades of Total Force evolution. In 1970, Secretary Laird first articulated the original concept, which was based on the assumption that lower peacetime sustainment costs of Reserve Component units can result in a larger Total Force for a given budget. Secretary Laird intended to produce a maximum Total Force capability through an optimum mix of Regular and Reserve forces in the context of a primarily peacetime garrisoned force. The waypoints below articulated in the 1970 memo constituted our first detailed Total Force navigational map. They were intended to:

- strengthen and improve the readiness, reliability, and timely responsiveness of the combat and combat support units of the Guard and Reserve and individuals in the selected Reserve
- support and maintain minimum average trained strengths of the selected Reserve as mandated by Congress
- provide and maintain combat standard equipment for Guard and Reserve units in the necessary quantities
- provide necessary controls to identify resources committed for Guard and Reserve logistic support through the planning, programming, budgeting, procurement, and distribution cycle
- implement the approved 10-year construction programs for the Guard and Reserve subject to their accommodation within approved tables of allowance, giving priority to facilities that will provide the greatest improvement in readiness levels
- provide adequate support of individual and unit Reserve training programs

Secretary Laird intended to produce a maximum Total Force capability through an optimum mix of Regular and Reserve forces in the context of a primarily peacetime garrisoned force

C–17 Globemasters await de-icing on flightline

U.S. Air Force (Abner Guzman)

- provide manning levels for technicians and training and administration Reserve support personnel equal to full authorization levels
- program adequate resources and establish necessary priorities to achieve readiness levels required by appropriate guidance documents as rapidly as possible.

In effect, the Total Force concept was a central feature of the national security strategy of "realistic deterrence." Its objective was to maintain the selected Reserve of the National Guard and Reserve as a "force in being," able to deploy rapidly and to operate beside Regular Component units.[3] As a result of this approach, the Air Force, along with other Services, began to consider better ways to organize, train, and equip their Reserve Components.

Since Secretary Laird's first pronouncements, Total Force policy development has steadily evolved from sustaining a large peacetime garrisoned force comprised of separate components to deployable and integrated Reserve Component forces performing sustained operations every day.

"Homogenous Whole" Policy

The shift toward increased integration began in earnest in 1973, when then–Defense Secretary James R. Schlesinger[4] further institutionalized Laird's thinking by stating that Total Force was no longer a concept; it was a policy that required action by DOD and the Services. The objective of the policy was to integrate the Regular, Guard, and Reserve forces into a "homogeneous whole." The waypoints that Secretary Schlesinger established to achieve this whole stated that the Services should:

- move as much postmobilization administration as possible to the premobilization period and streamline all remaining postmobilization administrative and training activities
- produce selected Reserve units that meet readiness standards required for wartime contingencies
- emphasize and strengthen selected Reserve management.

By shifting the Total Force from a concept to a policy, Schlesinger forced the Services to rethink how they programmed and budgeted for Reserve Component missions. In a 1982 memo,[5] Secretary Caspar Weinberger identified additional planning and programming guidance to achieve Total Force goals, including the ideas that the current imbalance of old and new equipment within and between the Regular, Guard, and Reserve Components must be rectified to produce a force that is compatible, responsive, and sustainable throughout *all* components; and a long-range planning goal must be set to equip all units within the Regular, Reserve, and Guard Components to their full wartime levels.

C–17 practices evasive maneuvers during simulated missile attack

U.S. Air Force (Rick Bloom)

The shift toward a more operationally centered Reserve continued as the Reserve Components increased their readiness levels and the Cold War drew to a close. In 1995, budget realities led Defense Secretary William Perry to recognize that increased reliance on the Reserve Components "is prudent and necessary in future policy, planning, and budget decisions."[6] In doing so, he set waypoints that directed the Services to establish Total Force objectives that would further operationalize the Reserve Components to capitalize on their capabilities to accomplish operational requirements while maintaining their mission readiness for overseas and domestic operations, and to increase integration by identifying and planning for future requirements, having flexibility in training and employing Reservists, and programming the funding to meet these requirements, including capitalizing on already funded training.

the shift toward a more operationally centered Reserve continued as the Reserve Components increased their readiness levels and the Cold War drew to a close

Era of "Reserve Dependence"

By the time Secretary William Cohen released his Total Force memo in 1997,[7] policymakers were recognizing the increasing reliance on Reserve Components and requesting that DOD leaders address any remaining barriers to achieving a fully integrated force.

Secretary Cohen stated, "By integration I mean the conditions of readiness and trust needed for the leadership at all levels to have well-justified confidence that Reserve Component units are trained and equipped to serve as an effective part of the joint and combined force within whatever timelines are set for the unit—in peace and war." He went on to state that the goal was a seamless Total Force that provides the President and Secretary of Defense the flexibility and interoperability necessary for the full range of military operations.

Secretary Cohen underscored this idea in his concluding statement: "We cannot achieve this as separate components." He further acknowledged the degree of dependence on Reserve Component support when

he stated, "Today, we cannot go to war, enforce peace agreements or participate in humanitarian missions without calling on Guard and Reserve forces."

Secretary Cohen articulated four main areas that remain relevant today to achieving a seamless force:

- Quality of life programs are needed to recruit and retain Reserve Component forces. We must work together to address employer concerns and provide family support programs.
- Our laws, policies, systems, structures, and processes must support a Total Force.
- We must simplify our ability to employ Reserve Component forces when and where needed.
- Commanders need personnel, readiness, training, equipment, maintenance, and construction resources for flexibility and interoperability in joint and combined operations.

As the Services moved to develop more seamless forces, the apparent reliance on Reserve Component members of the selected Reserve grew to such a level of dependence that the department could no longer engage in any significant operational mission without first mobilizing members of the Reserve Components.

Air Force Reserve supports Army paratroopers in Northern Iraq

U.S. Air Force

By 2003, the shift from reliance to dependence was so significant that then–Defense Secretary Donald Rumsfeld said that the time had come when DOD needed to "promote judicious and prudent use of the Reserve Components with force rebalancing initiatives that reduce strain through the efficient application of manpower and technological solutions based on a disciplined force requirements process."[8]

To achieve a disciplined force structure, Secretary Rumsfeld set the following goals that the Services are still working toward achieving:

- configure the size and organizational structure of Regular and Reserve forces to reduce need for involuntary mobilization of the Guard and Reserve

our course direction is still good, but we probably need a new destination to keep us better focused on the future

- eliminate the need for involuntary mobilization during the first 15 days of a rapid response operation or for any alerts to mobilize prior to operation
- structure forces to limit involuntary mobilization to not more than 1 year every 6 years
- establish a more rigorous process for reviewing joint force requirements to improve timely notice of mobilization
- make the mobilization and demobilization processes more efficient and give Reservists meaningful tasks and work for which alternative manpower is not available, retaining them on Active duty only as long as absolutely necessary.

Today, at both DOD and Service levels, we are actively working to shift our planning and programming efforts from sustaining a peacetime garrisoned force, as originally envisioned by Secretary Laird, to a more operationally centered Reserve force.[9] Given today's budgets and national security commitments, this shift is both necessary and prudent—and probably long lasting. In essence, it has become our new destination and should be acknowledged as such.

So what does the future hold for the Air Force Reserve, since we have been integrating operationally for 39 years? We are a leader in force integration—we are proud of it, and it has done good things for the Air Force as well as for the Air Force Reserve. Our performance is good and our future is bright, so it is only natural to prepare for and plan where we are going next.

In short, we think our course direction is still good, but we probably need a new destination to keep us better focused on the future. In reaching many of the objectives outlined above, we are fast approaching—and for some services, have already passed—the original destination of Total Force planning.

Outlining a More Viable Force

We need a new destination based on the concept of an operationally centered Reserve Component that maintains the ability to surge but is more viable as an operational force. We need one that is more unified in nature. We need a more viable force—one capable of refocusing, reconstituting, and recapitalizing without exhausting its people or its resources while sustaining operations.

To realize and sustain an operationally centered Reserve Component, we must have a framework for a broad review of initiatives and planning guidelines; ensure that we can provide the capabilities that satisfy the requirements of the combatant commanders; and align with DOD rebalancing guidance, which says that the Services should structure their forces to limit involuntary mobilization to no more than 1 year every 6 years.[10]

For the Air Force, an operational Reserve force is predominantly a part-time force, trained to the same readiness standards as the Regular Component, with a portion of the force performing missions and engaged at all times. Members of this operational force are readily available to be voluntarily placed on Active duty to support daily operations or used as a surge capacity to conduct operational missions whenever there are not enough trained and ready units or individuals in the Regular Component.

Again, operational force policy should begin with the recognition that the term *Active duty* is no longer the purview of the Regular Component; thousands of Air Force Reservists are on Active duty every day. Our

challenge is to determine how and when Reservists can best perform Active duty while protecting the individual Reservist and the voluntary nature of Reserve service. To succeed, we must improve our ability to forecast, plan, and program participation to produce more assured access to volunteers than our current practices allow.

Through this synergy of assurance, we will be able to preposition our Reserve force for future mission requirements and reduce the need for activating Reservists without their consent. The Air Force has already achieved considerable success in crafting its organizational constructs to fully support an operational Reserve through its current force integration policies. To build on this success, an operationally engaged Reserve force policy should:

any discussion of how we operationalize our forces must be part of a larger discussion of a viable force

- define the inherent attributes of a volunteer operational force to ensure that Air Force Reserve force management polices, organizational constructs, and participation models support volunteer operational force participation
- identify and remove existing barriers to volunteer participation that are breaking or impeding the ability to provide volunteers to fight the war on terror, increase Reserve participation in the air and space expeditionary force, and provide more contingency support
- embrace study, experimentation, and testing in areas where demand for Reserve participation is either outpacing pre-9/11 expectations or is exceeding the ability to perform the mission exclusively with volunteers
- develop and implement volunteerism concepts that include future participation requirements scheduled in advance for multiple-year periods to accommodate Reservists and their civilian employers
- address the four-way relationship that protects the Airman, maintains family support, provides a framework for employer support and involvement, and meets Air Force needs to satisfy growing combatant commander requirements
- identify and develop tailored incentives, when needed, to maximize volunteerism in areas where demand is exceeding the ability to perform a mission exclusively with volunteers
- develop and utilize tools that will accurately forecast a threshold of maximum voluntary participation efforts, so that we can predict when we will need to resort to activation without member consent
- comprehensively review the existing full-time support force development system

U.S. Air Force (Daniel St. Pierre)

Reservists unload Army emergency response equipment at March Air Reserve Base to assist in fighting California wildfires

and adopt, expand, and utilize the best construct to support an operational Reserve.

Sustaining Volunteerism

Our initial viable force goal for attaining an operationally engaged Reserve should be sustaining operational support with volunteers at or near the levels of participation we have provided the Air Force and its joint partners for the past 3 years of near steady-state operations through both volunteerism and mobilization. We should also focus special attention on advocating and implementing authorities, policies, and practices that improve our component's capability to provide greater certainty in voluntary participation levels across fiscal years.

Planning and implementing our operational force and manpower policies will be based on the two main tenets of Reserve service. First and foremost, we are a *volunteer* force. Second, we are *not* a full-time force. We should keep those two tenets in hand along with the following planning guidelines as we develop, implement, and sustain new Reserve operational force policies. These policies should:

- ensure that our selected Reserve is ready to go to the fight within 72 hours of mobilization notification or sooner, and explore operationalizing all the other Reserve subcomponents; this requires fundamentally rethinking how the Air Force resources, organizes, trains, equips, and accesses individuals not in the selected Reserve
- retain the same training and equipping standards in the selected Reserve as in the Regular Component
- ensure that voluntary participation contracts among Reservists, DOD, and Reservists' employers protect the individual Reservist and ensure the volunteer nature of their service
- follow personnel management policies that enable and identify the force most suited to meet mission requirements, along with personnel and information management systems that allow varying levels of participation and seamless duty status changes
- ensure that utilization policies recognize that current practices of a 15- to 18-month activation of Airmen without their consent may not be sustainable in the long run for Servicemembers, their families, or their employers.

Clearly the steps outlined above are specific to the Air Force, but many of the planning objectives should resonate beyond. As each Service defines the path for making its Reserve Component more operational, it must do so in the larger context of a force policy that applies to the entire Department of Defense—a viable force policy. Therefore, any discussion of how we operationalize our forces must be part of a larger discussion of a viable force.

There are three fundamental reasons why DOD needs a viable force policy for the 21st century:

- Today's military must be able to sustain and reconstitute while engaged in multiple cyclic operations lasting for several years, without exhausting its people or resources.
- Shifting budget priorities over time combined with higher operating costs to meet growing national security commitments at home and abroad have yielded a smaller standing force.
- Force downsizing has created a dependence on the Reserve Component's participation to conduct sustained daily operations.

every day thousands of Air Force Reservists and Air National Guardsmen are on Active duty performing Air Force missions

With that in mind, we provide some ideas on a way ahead. Unlike the operational waypoints outlined above, the waypoints below may apply broadly to other Services and should be factored in when considering any new viable force policy. To achieve a fully viable force, we must first embrace the following principles:

- Viable force policy is one for all components, not only the Reserve Components. Building a viable force requires maximizing capabilities regardless of assigned component.
- Even in an all-volunteer force, there must remain assured access to the Reserve Components for operational and surge participation that is consistent with Reserve service.
- Clear service expectations are imperative for all members whether we are at peace or war—and whether the war is long or short.
- The term *Active duty* is no longer the purview of the Regular Component; thousands of Reserve and Guard members are on Active duty every day.
- The whole force mobilizes and the whole force surges; mobilization and surge capabilities are not the sole responsibility of the Reserve Components.
- Viable force planning and programming require a crystal-clear understanding of the purpose and best value of every component: Regular, Reserve, Guard, and civilian.
- Individual participation expectations must be consistent with force planning constructs to ensure that actual participation meets the combatant commander's expectations.

The need for an operationally engaged force requires that the Services execute realistic programming decisions based on sound planning guidelines. These include:

- instituting measurable force policies that maximize return on investment while mitigating the risks inherent in the current global security environment
- building a force that can rapidly rebalance capabilities within Service components as well as between Services, when necessary
- placing capabilities in the Reserve Component whenever their participation is cost effective and access is assured, sustainable, and responsive to the needs of the force
- adjusting incentives to reward participation and provide supplemental compensation to mitigate mandatory service beyond prescribed DOD and Service expectations
- ensuring that DOD can commence a rapid response to any threat worldwide without first resorting to unexpected Reserve mobilization.

To ensure that force policy guidance is clearly understood at all levels of planning, key terms need to be clarified and redefined:

Viable force: A force capable of refocusing, reconstituting, and recapitalizing without exhausting its people or its resources, while remaining engaged in the full spectrum of operations across all domains.

Reserve operational force: An Air Force Reserve operational force is predominantly a part-time force, trained to the same readiness standards as the Regular Component, a portion of which is performing the mission and engaged at all times. Members of this force are readily available to be voluntarily placed on Active duty in support of daily operations or used as a surge capacity to conduct missions whenever there

are not enough trained and ready units or individuals in the Regular Component.

Assured access: When the Services plan for Reserve Component participation consistent with Reserve service, combatant commanders will be supported as planned.

Integration: Integration refers to the conditions of readiness and trust necessary for leadership at all levels to have confidence that Reserve Component units are trained and equipped to serve as an effective part of the joint and combined force within whatever timelines are set for the unit or individuals in peace and in war.

Implementing all of the above will not be easy. It requires cross-component solutions. Unlike previous attempts at Total Force solutions that were applied to all components or that considered all Service components, cross-component solutions necessitate involving all components of the Air Force as integral parts of designing implementations for these changes.

The Air Force has already achieved many of the goals outlined in past and present Total Force policies. As a Service we remain on the cutting edge of Total Force integration. Every day thousands of Air Force Reservists and Air National Guardsmen are on Active duty performing Air Force missions—working side by side with, following, and leading their Regular Component counterparts.

We think many of the planning and programming considerations for a viable force based on the concepts outlined above are relevant to other Services and may assist them as they move to their next horizon.

Because the Air Force is so well integrated across its components, we are already looking ahead to our next horizon of building a viable force capable of refocusing, reconstituting, and recapitalizing without exhausting its people or its resources, while remaining engaged in the full spectrum of operations across all domains.

In the future, these discussions need to include more than Reservists talking to Reservists. Real solutions to real force integration challenges are best addressed at the Service level with full participation of all components and with full recognition of the unique capabilities each component brings to the fight.

Together the Services can reach the next horizon if we keep focused on policies that make us not only more integrated but also a more viable force. **JFQ**

NOTES

[1] Melvin R. Laird, "Annual Report of the Secretary of Defense on Reserve Forces for Fiscal Year 1971," memorandum, February 26, 1972.

[2] T. Michael Moseley, speech delivered at Maxwell Air Force Base, September 13, 2007.

[3] Laird.

[4] James R. Schlesinger, "Readiness of the Selected Reserve," memorandum, August 23, 1973.

[5] Caspar W. Weinberger, "Equipment Shortages in the Guard and Reserve," memorandum, June 21, 1982.

[6] William J. Perry, "Increased Use of Reserve Forces in Total Force Missions," memorandum, April 7, 1999.

[7] William S. Cohen, "Integration of the Reserve and Active Components," memorandum, September 4, 1997.

[8] Donald H. Rumsfeld, "Rebalancing Forces," memorandum, July 9, 2003.

[9] We use the term *operationally centered* to contrast the current participation paradigm with the Cold War "train to be ready for the big one" mindset that controlled Reserve expectations during the 1980s and 1990s. An operationally centered Reserve is still capable of surging, but it assumes significantly more Reserve forces are on Active duty every day than during the Cold War period.

[10] Rumsfeld.