Distribution A: Approved for Public Release

Chief of Staff, US Air Force
Gen John P. Jumper

Commander, Air Education and Training Command
Gen Donald G. Cook

Commander, Air University
Lt Gen John F. Regni

Commandant, College of Aerospace Doctrine, Research and Education
Col David S. Fadok

Editor
Lt Col Paul D. Berg

Senior Editor
Lt Col Malcolm D. Grimes

Associate Editor
Maj Donald R. Ferguson

Editor and Military Defense Analyst
Col Larry Carter, USAF, Retired

Professional Staff
Marvin W. Bassett, *Contributing Editor*
Philip S. Adkins, *Contributing Editor*
Debbie Banker, *Editorial Assistant*
Sherry Terrell, *Editorial Assistant*
Steven C. Garst, *Director of Art and Production*
Daniel M. Armstrong, *Illustrator*
L. Susan Fair, *Illustrator*
Ann Bailey, *Prepress Production Manager*

Air and Space Power Chronicles
Luetwinder T. Eaves, *Managing Editor*

The *Air and Space Power Journal*, published quarterly, is the professional flagship publication of the United States Air Force. It is designed to serve as an open forum for the presentation and stimulation of innovative thinking on military doctrine, strategy, tactics, force structure, readiness, and other matters of national defense. The views and opinions expressed or implied in the *Journal* are those of the authors and should not be construed as carrying the official sanction of the Department of Defense, Air Force, Air Education and Training Command, Air University, or other agencies or departments of the US government.

Articles in this edition may be reproduced in whole or in part without permission. If they are reproduced, the *Air and Space Power Journal* requests a courtesy line.

http://www.af.mil

http://www.aetc.randolph.af.mil

http://www.au.af.mil

http://www.cadre.maxwell.af.mil

Visit *Air and Space Power Journal* online at http://www.airpower.maxwell.af.mil or e-mail to aspj@maxwell.af.mil.

Senior Leader Perspective

Lorenz on Leadership 5
Maj Gen Stephen R. Lorenz, USAF

Focus Area

Expeditionary Air and Space Power 14
Lt Col Paul D. Berg, USAF, Editor

Features

Beyond Blue Four: The Past and Future Transformation of Red Flag 43
Maj Alexander Berger, USAF

The View from the Tower of Babel: Air Force Foreign Language Posture for Global Engagement 57
Col John L. Conway III, USAF, Retired

Aggressive ISR in the War on Terrorism: Breaking the Cold War Paradigm 73
Lt Col William B. Danskine, USAF

Narrowing the Global-Strike Gap with an Airborne Aircraft Carrier 85
Col George D. Kramlinger, USAF

Departments

Prelaunch Notes

Quick-Looks and the Latest **Chronicles Online Journal** *Articles* 10

Ricochets and Replies

. 11

PIREPs

Expeditionary Mobility Task Force: Projecting Combat Power 15
Brig Gen Bobby J. Wilkes, USAF
Col Murrell F. Stinnette, USAF
Maj Randall Reed, USAF

The Air Force Office of Special Investigations: Postured for the Future 23
Christine E. Williamson

Return of the Bomber Barons: The Resurgence of Long-Range Bombardment Aviation for the Early Twenty-first Century 29
Maj Jeffrey W. Decker, USAF

Vortices

Train While You Fight: A New Mind-Set for Airpower Operations in Low-Intensity Conflict 37
Lt Col Phil Haun, USAF

Quick-Looks and NOTAMs

Revised Air Force Doctrine Document 2-5, **Information Operations** 36
Capt Randy Mize, USAF

Stabilizing Critical Continuity of the Air and Space Expeditionary Force 55
Douglas E. Lee
Capt Joseph T. Morgan, USAF

Contingency Response Group: Time to Expand the Box and Think "Coalition" 70
Alexander M. Wathen

Updated Air Force Publication: **The U.S. Air Force Transformation Flight Plan, 2004** 84
Mort Rolleston

Book Reviews

Neither War nor Not War: Army Command in Europe during the Time of Peace Operations: Tasks Confronting USAREUR Commanders, 1994–2000 99
Richard M. Swain
Reviewer: Capt Gilles Van Nederveen, USAF, Retired

Blitzkrieg to Desert Storm: The Evolution of Operational Warfare 100
Robert M. Citino
Reviewer: CSM James H. Clifford, USA

Fallen Astronauts: Heroes Who Died Reaching for the Moon 101
Colin Burgess and Kate Doolan, with Bert Vis
Reviewer: Maj Michael P. Kleiman, USAFR

Post-Soviet Military Theory and Strategy: A Discussion of the Russian Journal **Military Thought** 102
Reviewer: LCDR Youssef Aboul-Enein, MSC, USN

The Militarization and Weaponization of Space 103
Matthew Mowthorpe
Reviewer: 2d Lt Brent D. Ziarnick, USAF

NATO's Eastern Agenda in a New Strategic Era 104
F. Stephen Larrabee
Reviewer: Dr. John Albert

Chinese Warfighting: The PLA Experience since 1949 105
Mark A. Ryan, David M. Finkelstein, and Michael A. McDevitt, eds.
Reviewer: 2d Lt Daniel L. Magruder Jr., USAF

America's Role in Nation-Building: From Germany to Iraq 106
James Dobbins et al.
Reviewer: Dr. Lewis K. Griffith

The Iraq War: Strategy, Tactics, and Military Lessons 107
Anthony H. Cordesman
Reviewer: Dr. Daniel J. Hughes

Intelligence in War: Knowledge of the Enemy from Napoleon to Al-Qaeda 109
John Keegan
Reviewer: Maj Paul Johnston, Canadian Armed Forces

Challenging Conventional Wisdom: Debunking the Myths and Exposing the Risks of Arms Export Reform 110
Tamar Gabelnick and Rachel Stohl, eds.
Reviewer: Lt Col Steven Payson, USAF

The Papers of George Catlett Marshall, **vol. 5,** *"The Finest Soldier," January 1, 1945–January 7, 1947* 111
Larry I. Bland and Sharon Ritenour Stevens, eds.
Reviewer: Dr. Harold R. Winton

"Oil for the Lamps of China"—Beijing's 21st-Century Search for Energy 113
Bernard D. Cole
Reviewer: Paul Younes

Commanding an Air Force Squadron in the Twenty-first Century: A Practical Guide of Tips and Techniques for Today's Squadron Commander 113
Lt Col Jeffry F. Smith
Reviewer: Maj Kevin D. Smith, USAF

The Fall of Hong Kong: Britain, China, and the Japanese Occupation 114
Philip Snow
Reviewer: Dr. Nicholas Evan Sarantakes

Fighting the Breakout: The German Army in Normandy from COBRA to the Falaise Gap 115
Rudolph Christoph Freiherr von Gersdorff et al.
David C. Isby, ed.
Reviewer: Dr. Robert B. Kane

Africa's Armies: From Honor to Infamy: A History from 1791 to the Present 116
Robert B. Edgerton
Reviewer: Col Bryant P. Shaw, PhD, USAF, Retired

The American Foreign Legion: Black Soldiers of the 93d in World War I 117
Frank E. Roberts
Reviewer: Dr. Richard Bailey

The Future Security Environment in the Middle East: Conflict, Stability, and Political Change 118
Nora Bensahel and Daniel L. Byman, eds.
Reviewer: Lt Col Kurt W. Schake, PhD, USAF

Beginnings of the Cold War Arms Race: The Truman Administration and the U.S. Arms Build-Up 119
Raymond P. Ojserkis
Reviewer: Dr. Mark J. Conversino

The Moral Warrior: Ethics and Service in the U.S. Military 120
Martin L. Cook
Reviewer: Dr. Christopher Toner

The Iraq War 122
John Keegan
Reviewer: Lt Col James P. Gates, USAF

Valkyrie: North American's Mach 3 Superbomber 123
Dennis R. Jenkins and Tony R. Landis
Reviewer: Lt Col Dave Howard, USAF, Retired

Raid on the Sun: Inside Israel's Secret Campaign That Denied Saddam the Bomb 124
Rodger W. Claire
Reviewer: Maj J. Rick Rosales, USAF

Mission Debrief 125

Air and Space Power Journal Board of Reviewers

Prof. Tami Davis Biddle
US Army War College

Lt Col Price T. Bingham, USAF, Retired
Melbourne, Florida

Dr. Kendall K. Brown
NASA Marshall Space Flight Center

Brig Gen Phillip D. Caine, USAF, Retired
Monument, Colorado

Dr. Clayton K. S. Chun
US Army War College

Dr. Mark Clodfelter
National War College

Dr. James Corum
USAF School of Advanced Air and Space Studies

Dr. Conrad Crane
Director, US Army Military Studies Institute

Dr. Dik A. Daso
National Air and Space Museum
Smithsonian Institution

Dr. William L. Dowdy
Alabama State University

Col Dennis M. Drew, USAF, Retired
USAF School of Advanced Air and Space Studies

Brig Gen Charles Dunlap Jr., USAF
Staff Judge Advocate
USAF Air Combat Command

Dr. Stephen Fought
USAF Air War College

Col David M. Glantz, USA, Retired
Journal of Slavic Military Studies

Col Thomas E. Griffith Jr., USAF
USAF School of Advanced Air and Space Studies

Dr. John F. Guilmartin Jr.
Ohio State University

Dr. Grant T. Hammond
Center for Strategy and Technology
Air University

Prof. Daniel Hughes
USAF Air War College

Dr. Thomas Hughes
USAF School of Advanced Air and Space Studies

Col Mark P. Jelonek, USAF
Commander, 614th Space Operations Group
Director of Operations, Fourteenth Air Force

Dr. Tom Keaney
School of Advanced International Studies
Johns Hopkins University

Lt Col Merrick E. Krause
Director, NDU Press
Editor, *Joint Force Quarterly*

Dr. Charles Krupnick
US Army War College

Dr. Benjamin S. Lambeth
RAND

Lt Col David MacIsaac, USAF, Retired
Montgomery, Alabama

Dr. Karl P. Magyar
Montgomery, Alabama

Col Edward Mann, USAF, Retired
Colorado Springs, Colorado

Dr. Jerome V. Martin
Command Historian
Headquarters US Strategic Command

Col Phillip Meilinger, USAF, Retired
Northrop Grumman Corporation

Prof. John H. Morrow Jr.
University of Georgia

Dr. Daniel Mortensen
USAF College of Aerospace Doctrine, Research and Education

Prof. James Mowbray
USAF Air War College

Dr. Karl Mueller
RAND

Dr. Richard R. Muller
USAF Air Command and Staff College

Col Robert Owen, USAF, Retired
Embry-Riddle Aeronautical University

Dr. Reina J. Pennington
Norwich University

Lt Col Thomas R. Searle
Headquarters US Special Operations Command

Dr. James Smith
USAF Institute for National Security Studies

Col James Spencer, USAF, Retired
USAF Academy

Col Michael A. Stanley
USAF Air War College

Col Richard Szafranski, USAF, Retired
Toffler Associates

Dr. James Titus
USAF Academy

Col Mark Wells, USAF
USAF Academy

Dr. Kenneth P. Werrell
Christiansburg, Virginia

Dr. Harold R. Winton
USAF School of Advanced Air and Space Studies

Lorenz on Leadership

MAJ GEN STEPHEN R. LORENZ, USAF

IN 1987 I WAS commander of the 93rd Air Refueling Squadron at Castle AFB in Merced, California. Late one night, I sat down and wrote out a list of leadership principles. There was nothing magical about them—they were simply useful precepts I had learned over the years. Today, especially after the terrorist attacks of 11 September 2001, our leaders need to reflect on the principles that guide them. I do not seek to instill mine on the readers of this journal. Rather, I only ask that Air Force leaders reflect on what their principles are, regardless of whether or not they have written them down. That said, I offer the following for consideration.

Balancing Shortfalls

Shortfalls occur in our professional and personal lives. We never seem to have enough time, money, or manpower. The essence of this "scarcity principle" lies in accepting the reality of limited resources and becoming adept at obtaining superior results in less-than-ideal situations. Equally important, once people acknowledge the scarcity of resources, then they need not bemoan the situation any longer. In other words, they should "deal with it." Leaders must carry out the mission with the resources they have. They have to make it happen! This is part of being a military commander and leader. Commanders never go to war with all the resources they think they need—they balance their shortfalls to accomplish the mission.

Keeping Our Eyes on the Ball

In order to prevail, leaders must always keep in mind what they want to accomplish, regardless of the task, and not become distracted. They must articulate the mission to

their people. During my tenure as director of the Air Force budget, I didn't consider the budget the mission so much as I considered it a means for our service to defend the United States through the exploitation of air and space. In the Air Force, this means that leaders must connect actions and troops to the mission and never lose sight of this important relationship.

Leaders can assure their people's well-being (a major ingredient of mission accomplishment) by knowing how they feel and how they are doing. They should look them in the eye and ask how they are. Eyes don't lie. They reflect happiness, sadness, or stress. To get an honest answer, one should ask at least *three times*, and do so more emphatically each time: "How are you doing?" The first response is always, "Fine." The second, "I'm okay." Finally, when they realize that their leader is truly interested, they respond honestly. By the way, the only difference between a younger person and someone my age is the amount of scar tissue. Because I have lived longer than most of my military colleagues on active duty and therefore have more scar tissue, I can probably disguise my feelings more effectively. But the eyes are the true indicator. Again, leaders must never lose sight of the primary objective: *to focus on the mission and take care of their people*.

Those Who Do Their Homework Win

The equation for this principle is simple: knowledge = power. Take, for example, the battle for scarce resources. The person who has the most compelling story, backed by the strongest data, gets the most resources. We have seen this principle, which applies universally to all other undertakings, demonstrated repeatedly throughout history—especially military history!

The Toughest Word to Say in the English Language

According to an old adage, the most difficult word to say in English is *no*. But I have a contrarian's view. Saying *no* finishes the situation; saying *yes*, however, carries with it additional tasks, commitments, and responsibilities. For instance, when I agree to speak to a group, I have taken a more difficult path than I would have by declining. If I say *no* to a request for funding an initiative, my job is finished. If I say *yes*, then I must take on the task of finding resources. Leaders should also consider the effects of a response on working relationships. If a leader responds affirmatively 95 percent of the time, his or her people will readily accept the fact that the leader has carefully considered their request before responding negatively. I never say *no* until I research the issue and look into all of the alternatives. To this day, it still amazes me that most of the time I can say *yes* if I do a little work and make a personal commitment.

New Ideas Need Time and Nurturing to Grow and Bear Fruit

In order to overcome some of the challenges we face today, we need people to think and act out of the box. Furthermore, we must have the patience and faith to stay the course. Things do not happen overnight. People have to work very hard to make things happen. They must sell their ideas and do their homework without concern for who gets the credit. This principle is very important to remember as new generations of Airmen enter the Air Force to help fight the global war on terrorism.

Leaders Should Not Lose Their Temper—Unless They Plan To

To navigate the necessary course of action and ensure mission accomplishment, a leader must be willing to use more than one approach. Earlier in my career, I saw my boss—a mild-mannered, consummately professional four-star general—storm into a meeting and angrily bark out criticisms to his senior staff. When we left the room, he looked at me,

winked, and calmly said that sometimes a person has to put across a different face in order for people to take him or her seriously. My boss had planned the whole incident. He had not lost his temper at all—he did it for effect. If leaders cannot control themselves, how can they control others? They must have self-discipline. They should never, ever lose their temper—unless they plan to.

All Decisions Should Pass the Sunshine Test

Because leaders must make difficult decisions every day, it's important for people in the trenches to know that the process is fair and above reproach. Toward that end, we must be as open and accessible as possible and always act as if our decisions were public knowledge—as if they appeared in the newspaper, for example. If leaders are forthright about why they made a decision, their people might disagree, but they will understand the underlying logic and continue to trust them. As Air Force leaders, we need only look to our service's core values—integrity first, service before self, and excellence in all we do—to arrive at solid decisions that gain the public trust and instill faith in our processes.

Ego: Both a Facilitator and a Detriment

A unit's success depends upon its members keeping their egos in check. We cannot afford to let them run amuck. We need confident, capable people who work together to enhance the organization rather than individuals who pursue their own selfish agendas. As my father taught me, leaders need people with ambition—not ambitious people.

Early in my career, I applied for a development program—the predecessor of the current Air Force Intern Program. I had confidence that I would be accepted, so not seeing my name on the list came as a shock. To make matters worse, another officer in my squadron did make the cut. Inwardly, I withdrew from the organization and walked around several days feeling hurt and angry. Eventually, though, I realized that the Air Force only owed me the opportunity to compete. On the day the board met, my records did not meet its standards. Whose fault was that? Mine—no one else's. I put the issue behind me and embraced my squadron mate. This experience taught me the negative effect of allowing my ego to dominate my actions—specifically, my failure to realize that the Air Force had not promised to select me for the program. It did, however, guarantee me equitable consideration and fair competition. I should have expected nothing else. An Air Force person should compete only with himself or herself, striving for improvement every day!

Work the Boss's Boss's Problems

This principle goes one step beyond the adage "work your boss's problems." Most people make a decision through a soda straw, but if they would rise up two levels above themselves, they could open the aperture of that straw and get a strategic view of the decision. Taking a "god's eye" view—looking through the eyes of their boss's boss—allows them to make a much better decision. That is, leaders must become deeply committed to the organization and make their boss's challenges their own. If they can achieve this type of commitment—regardless of who the boss is or which political party controls the government—the only thing that matters is enhancing mission accomplishment by making the best decisions possible and doing the right thing under the circumstances.

Self-Confidence and Motivation: Keys to Any Great Endeavor

We can attribute most successful endeavors to persevering and putting forth maximum effort. Whenever I speak about leadership, I always begin with a quotation from Sir Winston Churchill: "To every man, there comes in his lifetime that special moment when he is figu-

ratively tapped on the shoulder and offered that chance to do a very special thing, unique to him and fitted to his talents. What a tragedy if that moment finds him unprepared or unqualified for that which would be his finest hour." I am particularly attracted to this statement because of the great things Churchill accomplished, even though he faced failure and defeat many times. Regardless of the difficulty or hardship, he remained committed and motivated. He never gave up. Churchill's words represent a call to action that has helped me overcome such challenges as surviving engineering courses as a cadet as well as serving as a wing commander, commandant of cadets at the Air Force Academy, and budget director for the Air Force despite having no prior experience in budgetary matters. Although I lacked in-depth knowledge of budgets and finance, perseverance got me through, as always. I never gave up. My best advice? Never give up. Never, ever give up!

Apply Overwhelming Combat Power to the Point That Will Have the Most Effect

I have a simple organizational method that has served me well for many years. I like to approach issues, goals, and tasks "big to small, top to bottom, or left to right." That is, I believe that one must be able to see the entire forest before working on individual trees. We must understand the big-picture issues before delving into smaller details. From a broad point of view, I find it helpful to pursue goals by progressing from the short term, through the midterm, to the long term. Leaders should make sure their subordinates have not only the "overall road map" they need for direction but also the resources to plan and complete tasks.

One of my favorite and most beneficial experiences involved an aircraft-sanitation worker at McGuire AFB, New Jersey. During a customer-focus class that I taught in an effort to counter what I perceived as lackadaisical attitudes prevalent in the organization, I noticed a lady in the audience whose body language was so agitated that she was figuratively *screaming* at me. I stopped the class and asked her what was wrong. Jeanie said she was frustrated because no one would help her with a work problem. I told her that if she explained the situation to me, I would try to help.

According to Jeanie, the sanitation truck that she operated was designed for servicing a KC-10, which sits high off the ground. Normally, she hooked the truck's waste-removal hose to the aircraft, flipped a switch, and gravity pulled the contents into her vehicle. At that time, however, McGuire also had the C-141, which sits only three feet off the ground. Consequently, when she attempted the same procedure on the C-141, the hose bent because it was not fully extended, as with the KC-10, and became clogged with waste. She then had to disconnect the hose, lift it over her head, and shake it to clear the obstruction—clearly an unpleasant task that she had to repeat multiple times if the aircraft's lavatory were completely full. Although such a problem might seem trivial, on a large aircraft that makes extended flights, the lavatory is a mission-essential piece of equipment. Armed with the knowledge of Jeanie's problem, I organized a team to solve it—and the members did so by engineering and installing a 3.2-horsepower engine that proved more than capable of overcoming the clearance problem.

But the greatest accomplishment in this case was neither the technical solution nor the vastly improved sanitation procedure but the effect the process had on Jeanie. It revived and energized her. Thereafter, each time I saw Jeanie she proudly displayed her truck, which she had polished and shined so highly that it would likely meet a hospital's sanitation standards.

This story drives home the point that leaders must look for both verbal and nonverbal messages from the people in their organization. If they can reach the person who operates the sanitation truck, then they can reach anyone.

Study the Profession and Read—Especially Biographies

During our Air Force careers, we have many opportunities to add to our education and knowledge. America's future depends upon our maximizing and complementing these occasions with our own regimen of reading and development. As a lifetime student of leadership, I have an insatiable appetite for learning and regularly read two or three books at a time. I have dedicated myself to learning from other people's experiences so that I do not waste time trying to reinvent the wheel. Studying and learning how other leaders overcame adversity will build confidence in one's own ability to make tough decisions. I have found my study of Gen Colin Powell and Gen Henry "Hap" Arnold especially rewarding.

Take Your Job (Not Yourself) Seriously

To drive home the important concepts when I discuss leadership, I include comical—sometimes outrageous—videos and pictures to accompany each principle. Audiences seem both surprised and refreshed to see a general officer use David-Letterman-style "top-10 lists" and irreverent videos ranging from Homer Simpson to bizarre advertisements as part of a serious presentation. However, I see these methods as the ideal way of delivering my message. Leaders must realize that because they communicate with a diverse, cross-generational population, they need to speak in terms their audience will understand. A leader must create a common, shared vision that everyone can comprehend and accept. I like to try to communicate my vision by talking about an experience or using an analogy that everyone can relate to, understand, and remember. It is critical that leaders deliver their message in easily grasped terminology. They should employ a type of universal device akin to the "Romulan translator" depicted in the *Star Trek* television series. The medium used by the communicator can take the form of an analogy, a video, or a story. However, the critical point is that the communicator package and deliver the message in a format that the varied groups we lead today will understand.

Today's leaders were born primarily during the last half of the twentieth century. They could have been born 100 years earlier or 100 years from now. By accident of birth, most, but not all American leaders, were born in the United States. They could have been born in another country like Iraq or Cambodia, but most of today's leaders were born in America. The United States, whether it wants to be or not, is the world's greatest power, and air and space power is now the permanent instrument of that power. Every one of the current leaders in our military at some time made a conscious decision to become a defender, not a defended. Balancing this all together, we see that our leaders have a heavy burden leading others in the global war on terrorism. Every day they get up in the morning to lead, and they have to give it their very best—not their second best. Visiting the wounded soldiers, sailors, marines, and Airmen in our hospitals makes us realize that leaders owe their people the very best. They cannot afford to have a bad day! They must know who they are and how they lead; they must have their own list of leadership principles.

As I said before, the most important point about these 13 personal leadership principles that I have laid out is to encourage leaders to define their own principles. In this article, I have sought to motivate and aid our service's leaders in identifying and clarifying their positions—not in memorizing mine. In order for a leader's set of principles to be effective, they should be based on a foundation—such as the ideals embodied in the Air Force's core values—and they must reflect who that leader is! It is never too early or never too late to write down a set of personal leadership principles. Future leaders in today's Air Force should start now—they will never regret it, and it will make them better leaders for our nation. □

LT COL PAUL D. BERG, EDITOR

Quick-Looks and the Latest *Chronicles Online Journal* Articles

THIS ISSUE OF *Air and Space Power Journal* (*ASPJ*) introduces the Quick-Look, a new type of short article that supplements our popular "Vignettes" and "Doctrine NOTAMs." Quick-Looks succinctly address important Air Force issues in an actionable way. About two pages in length, they state the background of a particular problem, discuss relevant considerations, and outline potential solutions. Introduced by the Airpower Research Institute (ARI) in 2003, these pieces are becoming an increasingly popular tool with Air Force organizations that wish to engage vital topics.

Quick-Looks can serve multiple purposes, such as highlighting unrecognized or overlooked challenges or opportunities. They function much like bullet background papers that leaders use to weigh policy alternatives. Often circulated to Commanders Action Groups and senior officials, they summarize complex problems and help busy leaders make appropriate decisions. Some Quick-Looks mark the beginnings of larger analyses of issues facing today's Air Force. Researchers in the ARI, Air Force Fellows program, and Air Command and Staff College appreciate how Quick-Looks help them frame difficult questions and develop systematic research plans. ARI began publishing them in 2003 and adds more all the time. You can view all of them on the Air University Research Web site at https://research.maxwell.af.mil/Publication.aspx?PubCat=Airpower+Research+Institute+Quick+Looks&PubYr=0. If you would like us to consider a Quick-Look you have written, just follow our guidelines for submitting articles, referenced near the bottom of this page.

The *Chronicles Online Journal* complements the printed editions of *ASPJ* but appears only in electronic form. Not subject to any fixed publication schedule, *Chronicles* can publish timely articles anytime. Furthermore, while *ASPJ* focuses narrowly on airpower and space power topics of concern to today's Air Force, the online journal covers a broader range, including historical, political, or technical matters. It also includes articles too lengthy for inclusion in the printed journals.

Articles appearing in *Chronicles Online Journal* are frequently republished elsewhere. The Spanish, Portuguese, and Arabic editions of *ASPJ*, for example, routinely translate and print them. Book editors from around the world select them as book chapters, and college professors use them in the classroom. Recent articles available at http://www.airpower.maxwell.af.mil/airchronicles/cc.html include

- Col Stephen R. Schwalbe's "Democracy in Iraq,"
- Lt Col Graham W. "Gray" Rinehart's "U.S. Superiority in Space—Considering Propulsion and Power," and
- Lt Col Paul D. Berg's "Experience, Paradigms, and Generalship in Rolling Thunder: Implications for Today."

The *ASPJ* editorial staff is always seeking insightful articles and book reviews. We offer both hard-copy and electronic-publication opportunities in English, Spanish, Portuguese, and Arabic. To submit an article for publication in any of these languages, please refer to the submission guidelines at http://www.airpower.maxwell.af.mil/airchronicles/howto1.html. To write a book review, please refer to the guidelines at http://www.airpower.maxwell.af.mil/airchronicles/bookrev/bkrevguide.html. □

Ricochets and Replies

We encourage you to send us your comments, preferably via e-mail to aspj@maxwell.af.mil. You may also send letters to The Editor, Air and Space Power Journal, *401 Chennault Circle, Maxwell AFB AL 36112-6428. We reserve the right to edit the material for overall length.*

BOYDMANIA

I would like to make a few points in response to Dr. David Mets's article on John Boyd and his legacy ("Boydmania," fall 2004). First, in many respects, he intentionally crafted the article tongue in cheek, and it has set off much discussion, for which we must heartily thank him. After all, encouraging professional dialogue is one of this journal's missions. The article did indulge in a rather unkind snipe at Boyd biographer Robert Coram, based on his published works. I subscribe to the Carl Becker concept that we are all historians and bound to interpret reality based upon our own experience. Thus, I feel that Coram is welcome as a commentator—sometimes we need a fresh perspective to help us understand ourselves. Obviously, Coram was a bit starstruck, but Boyd is a compelling subject.

Until the appearance of Coram's book, John Boyd's legacy had gone largely unheralded. He is now the subject of business strategists and foreign emulators. One of the things I most admire about Boyd's character is that he did some of his best work without regard to compensation. He famously refused anything but a token salary for his postretirement civilian efforts. He is antithetical to the megarich consultants and Enronized chief executive officers of contemporary times—a great example of service before self that is lacking today. The success of this book and of the various business models that have followed in its wake has certainly brought the Air Force enormous goodwill and greater public awareness of the challenges we face when technology and conservatism face off within the military. Like Isaac Newton, Boyd was not a person one would necessarily want to engage socially, but he was eminently interesting.

Despite Dr. Mets's comments regarding the lightweight-fighter and air-superiority-fighter concepts, I think they are the best overall endorsement of Boyd's ideas. They have given America such unquestioned aerial superiority that few nations have been willing to engage our military aviation during the past 15 years. When he writes, "Did the . . . F-15 and F-16 rescue us from doom? I doubt it" (p. 101), Dr. Mets implies that lightweight, agile fighters are largely unneeded because they have scored only a few aerial victories for the Air Force. He also doubts that they needed gun armament since they made all their kills with missiles (although the A-10 and F-15E have scored kills with a gun and laser-guided bombs, respectively, and the history of current operations still needs to be written). I contend that Israel has fully tested Boyd's ideas and has wrung the maximum benefit out of the F-15 and F-16. In Israel, airspace limitations and the immediacy of the threat validate everything Boyd professed: a combat aircraft must always outperform its adversary in close quarters, depending upon something as mundane as the rules of engagement. The beauty of these two aircraft is that the addition of higher-technology weapons has enhanced them and that they are excellent station keepers with visually acquired targets of concern. Beyond-visual-range technology is no blessing if a pilot mistakenly engages nonhostile targets.

Boyd's energy-maneuvering fighter theories grow more applicable every day; we are at the precipice of a revolution with relatively low-cost, high-speed, highly maneuverable unmanned combat aerial vehicles. Boyd would have especially enjoyed an energy-maneuvering supremacy that comes without having a human in the cockpit. Furthermore, the cannon on the F-16 has proven useful, even

as a fallback weapon for use in counterdrug and counterterror operations against suicide aircraft or other border-penetrating craft.

Finally, Dr. Mets makes a somewhat scathing indictment of the observe, orient, decide, act (OODA) loop in strategic thinking, stating that we turned inside that loop in 1975 during the *Mayaguez* incident with disastrous results (in fact, our enemies then seemed to have gotten inside our OODA loop and understood that our demands were deadly serious). Dr. Mets also cites as an OODA conceptual failure the burning of Washington in the War of 1812 after an ill-advised declaration of war. Such examples, however, are faulty analogies. Rash actions and tactical setbacks are not an indictment of OODA but are actually failures to observe and orient accurately. Communications, for example, are a necessary part of any action, and failures there can distort a force's entire combat orientation. The great American victory in the War of 1812's Battle of New Orleans was also the result of needlessly turning inside the British OODA loop (the war had ended) but became necessary because of slow communication. Andrew Jackson's tactical genius showed that our orientation had improved since the British burned Washington two years previously. A military cannot be too tentative or rash without consequence but can always employ the OODA loop to put itself in the best position to win. The loop, of course, is a judgment tool and can be misapplied. The point is to get a fast, clear, and accurate picture before engagement. In closing, my thanks for the excellent article and the commentary that followed!

MSgt Gary W. Boyd, USAF, Retired
McGuire AFB, New Jersey

CARBALLO ON DEAL

Accidents invariably happen for reasons but not necessarily big reasons. That is why I think Brig Gen Duane W. Deal's article "Beyond the Widget: *Columbia* Accident Lessons Affirmed" (summer 2004) conveys an important message. While discussing the reasons that led to the accident that cost the lives of seven astronauts on 1 February 2003, the author perceptively says, "It is far better to prevent, rather than investigate, accidents" (p. 32). Someone once said that "accidents happen after a series of 'small' major mistakes." A wise person learns from past mistakes and does not trip more than once on the same rock.

The seriousness, precision, responsibility, and—above all—sense of loyalty with which the author discusses the series of events preceding the *Columbia* accident lead us to believe we have learned some important lessons. Hopefully this incident will become fertile ground from which new measures will sprout, ensuring the consistency and safety of future spaceflights. In my view, these flights must continue since, as we say in Argentina, "When God closes a door, He opens a window." Many people believe that since the earth is becoming smaller, God is opening the window of space, where many of the answers to our questions and needs lie.

Blindness occurs among people who have good sight as well as among countries whose leadership seems to have discernment. Desiring to save money, we often resort to procedures, such as outsourcing, that seem to reduce costs but in the long term end up as false savings that actually cost us much more. As General Deal observes, "In the 1990s, the NASA [National Aeronautics and Space Administration] top-down mantra became 'Faster, Better, Cheaper' " (p. 32). Many times these factors pitch safety against deadlines and the need to reduce costs. But how much delay did the *Columbia* accident cause to the space program? Worse yet, what was its ultimate cost? Was this "savings" worth it? What about the loss of those precious lives and the suffering their families have had to endure? What about NASA's loss of prestige?

We hear people say that when it comes to religion, one can compromise on anything except core beliefs. Therefore, I believe that insofar as space is concerned, one can compromise on anything except safety issues. How should one withstand political or taxpayer pressure, which can often change the course of history? Have we forgotten Vietnam?

The space program felt pressured to launch that fateful flight.

This article has taught me many things about how to avoid mediocrity, apathy, and the bad judgment that leads to a false sense of security when one falls into a routine. Above all, it taught me about having the courage to say no and convince taxpayers that avoiding false savings helps ensure that we put their tax dollars to the best use possible.

Just as our daily decisions may risk our lives, so may our professional decisions risk people's earthly (or we could say air and space) future. For that reason, we should definitely say no to routine and yes to proven doctrine, since doctrine is a tool that leaders can use to make sound decisions. It shows them the steps to follow and reduces the probability of mistakes.

I also enjoyed reading the discussion that dealt with avoiding the condensing of information or the shortening of project-related meetings since both can result in false savings. The best savings entail using sufficient time to attain the intended goal. Another factor that stands out is the importance of leadership. We could never attain our goals without good leaders who totally commit themselves to the mission, have contagious enthusiasm that moves their subordinates to perform every task with love, and seek perfection even in the smallest of tasks.

We must include air and space power among the main factors that will define much of the world's future. By the time those who do not recognize its importance realize their mistake, it may be too late.

Col Pablo Marcos Rafael Carballo,
Argentine Air Force, Retired
Córdoba, Argentina

LT COL PAUL D. BERG, USAF, EDITOR

Expeditionary Air and Space Power

THE CONCEPT OF US Air Force expeditionary operations is both old and new. The United States has employed expeditionary airpower for quite some time. Air units sent to Europe in World War I constituted part of the American Expeditionary Force. In World War II, US air units deployed worldwide, island-hopped across the Pacific, and advanced from base to base across North Africa and Europe. One often hears that a "garrison mentality" arose during the Cold War as Air Force units became ensconced in cozy main operating bases in the continental United States (CONUS), the Pacific, and Europe. However, during the Cold War, the Air Force repeatedly demonstrated the capacity to deploy large forces across intercontinental distances, establish new bases, and conduct campaigns as diverse as the Berlin airlift, Linebacker I, and Operations Desert Shield / Storm.

The Air Force's current expeditionary emphasis essentially amounts to a post–Cold War cultural change that emerged following experiences such as the Gulf War of 1991 and various operations in the Balkans during the 1990s. Such change builds on the service's expeditionary tradition and functions on at least three levels: strategic, service, and individual. On a strategic level, the United States reduced the infrastructure of its overseas military bases during the 1990s, yet most problems that call for military involvement occur overseas. Therefore, the need to project power from the CONUS to distant places logically spurs efforts to make the Air Force more physically deployable. Current demands for improved airlift capacity and smaller, lighter equipment reflect this physical aspect of being expeditionary. At the service level, organizational changes—most notably dividing the Air Force into air and space expeditionary forces (AEF) and promulgating associated operating procedures—mirror the bureaucratic aspect of becoming more expeditionary. Finally, at an individual level, the Air Force seeks to instill an expeditionary mind-set in each Airman, but the difficulty of precisely defining such an attitude may prove the most challenging aspect of the ongoing cultural change. All of these expeditionary aspects interact as the service's culture evolves and adapts to a changing world environment.

Cultural changes seldom occur quickly or easily. One can more easily conceptualize some Air Force functions in expeditionary terms than others. For example, most airlift and combat air units fit neatly into the traditional physical-deployment paradigm of expeditionary operations. Such units can move from CONUS bases to overseas locations much as they have since World War I, but technological and doctrinal advances promise to move them more efficiently. Assigning units and personnel to AEF "buckets" is easy enough to understand but entails administrative and practical complications. However, some units do not appear very expeditionary at first glance. For example, how expeditionary are space-operations units that can perform their functions from the CONUS without any need to relocate? Do B-2 missions flown to and from CONUS bases qualify as expeditionary operations? How about overseas missions flown by unmanned aerial vehicles yet controlled from CONUS ground stations? In some ways, such operations typify the Cold War–era garrison mentality that expeditionary operations are supposed to change. How can Airmen who perform these vital roles truly think in expeditionary terms?

Effects-based operations (EBO), a style of thought that emphasizes producing desired effects related to achieving strategic objectives, can answer these questions and place expeditionary operations in proper perspective. In EBO terms, the Air Force is expeditionary in order to produce desired effects anywhere in the world on short notice, an objective that may or may not require the physical deployment of assets. Proper organization and procedures are important but need to remain adaptable to changing circumstances. If we must instill an expeditionary mind-set in each Airman, then EBO represents one way to cultivate the requisite flexible approach to operations. Airmen may sometimes produce expeditionary effects without leaving home.

Professional discourse about the challenges inherent in expeditionary operations can advance the Air Force's capabilities and effectiveness. We dedicate this issue of *Air and Space Power Journal* to furthering that professional debate. ☐

Editor's Note: PIREP *is aviation shorthand for* pilot report. *It's a means for one pilot to pass on current, potentially useful information to other pilots. In the same fashion, we intend to use this department to let readers know about air and space power items of interest.*

Expeditionary Mobility Task Force

Projecting Combat Power

BRIG GEN BOBBY J. WILKES, USAF*
COL MURRELL F. STINNETTE, USAF
MAJ RANDALL REED, USAF

OVERCOMING THE DUAL challenge of time and distance to project and sustain combat power requires a "national military capability that is comprehensive in character, global in reach, swift in response, and highly effective in its actions."[1] Air Mobility Command (AMC) provides a critical component of that capability in the form of the Expeditionary Mobility Task Force (EMTF), which enhances the inherent expeditionary nature of air and space forces by focusing mobility capabilities in order to accelerate battle rhythm, maintain initiative, and increase the value of air and space to joint forces.[2] These forces draw upon the ability of air and space assets to spearhead the US response and shape the battlespace. Defining the EMTF's role in projecting combat power and shaping the battlespace rests upon three factors: force presentation, capabilities, and effects.

Force Presentation

The character of the EMTF resides in AMC's commitment to enrich its expeditionary culture and war-fighting focus.[3] In October 2003, the command stood down its two numbered air forces and transferred non-war-fighting functions (organizing, training, and equipping) to the headquarters staff. In like manner, former war-fighting operations of the numbered air forces passed to the newly reactivated Eighteenth Air Force. The organizational change within AMC yields two distinct advantages to the regional combatant commands. First, AMC presents a streamlined fighting force under a single numbered-air-force commander who is free from the concerns of Title 10 issues. Second, AMC strengthened air-mobility support by creating two light, lean, and agile response forces (the EMTFs) from the remnants of the legacy numbered air forces. Upon creation of the EMTFs, AMC altered the presentation of forces from global hemispheres to the combatant commands. The 15th EMTF, headquartered at Travis AFB, California, provides air-mobility support for Northern Command, Southern Command, and Pacific Command. Similarly, the 21st EMTF, headquartered at McGuire AFB, New Jersey, concentrates on Joint Forces

*General Wilkes is commander of the 21st Expeditionary Mobility Task Force (EMTF), McGuire AFB, New Jersey. Colonel Stinnette is special assistant to the EMTF commander, and Major Reed is a mobility strategist/EMTF executive officer.

Command, European Command, and Central Command. Meeting the air-mobility-support needs of the combatant commands hinges upon the central figure of the EMTF commander and manipulation of the Air Mobility Operations Group (AMOG) and the Contingency Response Wing (CRW) (fig. 1).

The EMTF commander—AMC's senior air-mobility expert to the combatant commands—has responsibility for leading air-mobility-response forces, executing that tasking in two ways. On the one hand, at the tactical and operational levels of war, the EMTF commander may deploy forward on behalf of AMC to serve in a number of capacities, including Director of Mobility Forces. On the other hand, the commander provides the means to expand the nation's air-mobility infrastructure despite strategic distances and austere locations—a distinct US advantage. In either case, the EMTF commander employs the task force forces in dynamic fashion to meet the needs of the war fighter. To do so with speed, the EMTF relies upon its three functional components: fixed, deployable, and specialized.

Each EMTF controls the fixed component through an AMOG, a network of overseas locations that serves as the vanguard of the task force—one group at Hickam AFB, Hawaii, and the other at Ramstein AB, Germany (fig. 2). By providing en route support to air and space forces, the AMOG holds open the door to expedite projection of the US military's combat power. The significance of the AMOG, however, goes far beyond en route support. The potential of US military forces to influence events abroad depends heavily upon the AMOGs for global access, which, among other things, denies adversaries the advantage of time as a sanctuary. Thus, it becomes even more important for the EMTF to expand the overseas network beyond 27 fixed locations. The task forces employ expeditionary support forces of the deployable component to provide access when and where we need it.

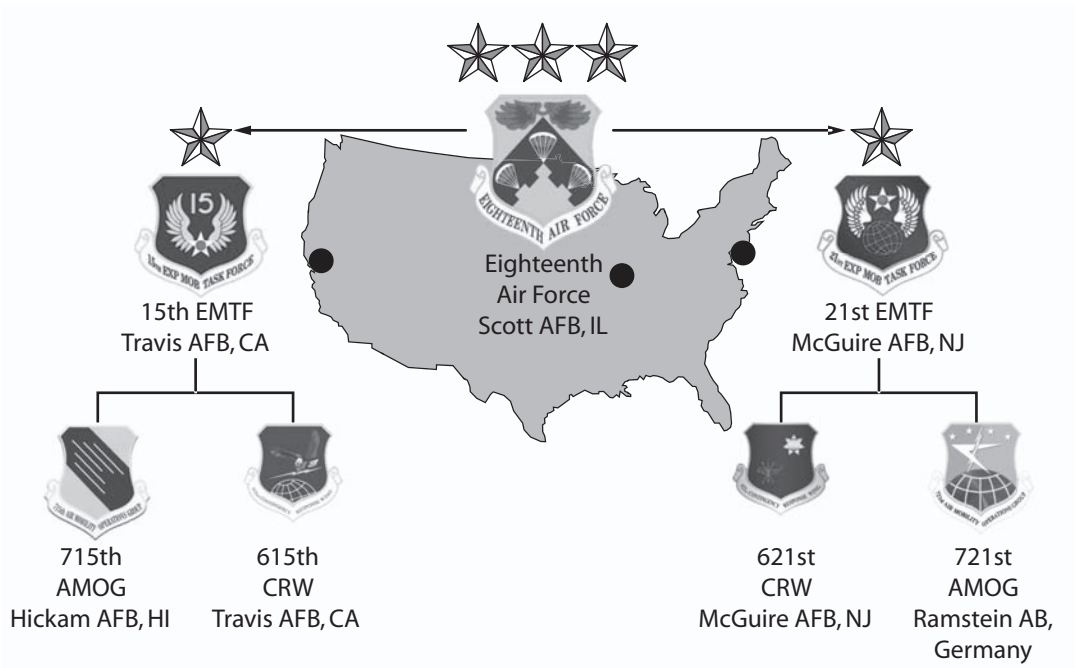


Figure 1. EMTF force presentation

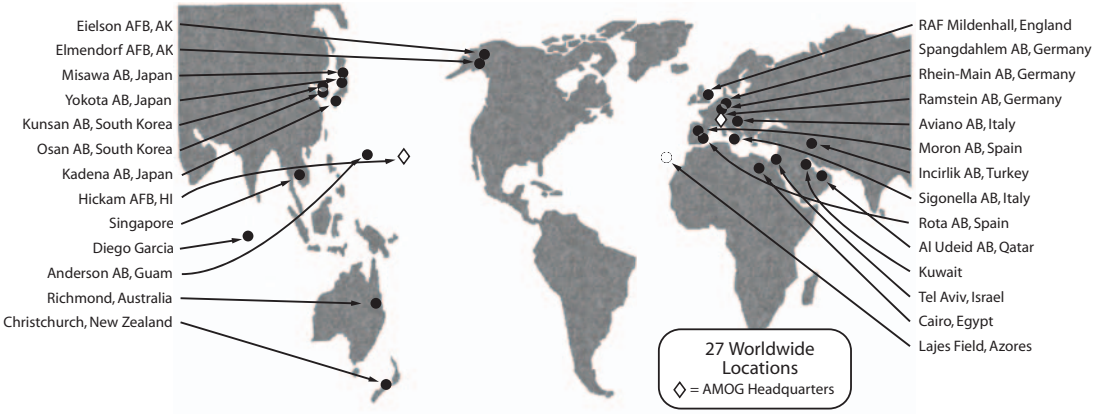


Figure 2. EMTF fixed-component laydown

Expanding the scope and reach of expeditionary forces rests with the deployable components of the EMTFs located at Travis AFB and McGuire AFB (see fig. 1). Each task force uses a variety of expeditionary teams from the CRW that surge from the United States within 12 hours of notification to deliver and sustain joint forces as well as employ theater air-mobility forces. This capability gives war-fighting commands the flexibility to place expeditionary forces according to need. Establishing mobility infrastructure at times and places of our choosing gives the United States a tremendous advantage, forcing an adversary into the undesirable position of having to defend everywhere, all the time.

In addition to the fixed and deployable components, the EMTF presents a specialized component comprised of Theater Deployable Communications (TDC) and Combat Camera (ComCam). This component seeks to establish initial communications infrastructure and provide battlespace imagery to speed the decision cycle of the US command chain. Compared to the fixed and deployable components, the specialized component is relatively small. Nevertheless, force presentation of the EMTF according to combatant commands helps mitigate the low density of the specialized component, thus allowing focused application where the war fighter needs this expertise the most.

In summary, AMC strengthens the character of the EMTF by presenting forces uniquely tailored to the combatant commander. These tailored forces increase the speed with which the task force can adjust to the supported command's air-mobility needs. Thus, as an expeditionary war-fighting entity of AMC, the EMTF provides a foundation of rapid projection and sustainment of US military might. The potency of the EMTF as a war-fighting entity rests on a unique array of capabilities.

Capabilities

Each component of the EMTF provides capabilities uniquely suited to supporting the projection and employment of expeditionary forces to achieve joint-force objectives. Beginning with the fixed component, the AMOG provides robust command and control (C2) of air-mobility forces, aerial port, and aircraft maintenance.

Fixed Component

The fixed component provides a standing capability for the United States to respond to any crisis around the globe. As the vanguard of the EMTF, the AMOG accelerates air-mobility

operations by exercising three essential functions, the first of which is C2.

Command and Control. C2 gives the network of bases within the AMOG the means to make adjustments for local conditions yet synchronize local activities with global operations to enhance responsiveness. This directly benefits the war fighter by optimizing the flow of forces. Too little flow prolongs the buildup of combat power; interestingly enough, too much flow yields the same result. Therefore, AMOG Airmen leverage C2 to manage factors that detract from optimized flow—chief among these are airfield limitations, retrogrades, stage-crew management, and in-transit visibility (ITV).

The basic measurement of airfield capacity is the maximum on ground (MOG), the highest number of aircraft that can cycle through an airfield simultaneously and still be loaded, unloaded, serviced, and repaired within scheduled ground times.[4] Sometimes, however, certain airfield limitations come into play. For example, an airfield normally capable of receiving and parking 20 aircraft in rapid succession may, for any number of reasons, have enough resources to service only five aircraft at any one time. Thus, that particular station has a working MOG of five. Any attempt to cycle too many aircraft through an airfield creates a self-induced choke point and slows down the arrival of combat forces and equipment. Failure to manage the MOG eventually restricts the timely buildup of US forces and risks loss of initiative. Commanders throughout the air-mobility system use C2 to meter the airflow to manage the MOG while maintaining the velocity necessary to meet the war fighters' needs. Such management also requires the use of C2 to address other flow-related challenges, namely retrograde missions, stage-crew management, and ITV.

Outbound flow performed by air-mobility forces has great value to war-fighting forces. Retrogrades support the joint force by moving patients and high-value items to rear areas or out of the theater entirely. Such missions passing through AMOG locations add to the challenges of force flow and MOG management. Air-mobility C2 provides a means of prioritizing and metering airflow to balance the inbound and outbound needs of combatant commanders.

Timing the arrival of inbound crews with the availability of rested crews to keep expeditionary forces on the move requires C2. Combatant commanders cannot afford for aircraft to sit idle while aircrews rest; nor can AMOG locations allow the number of aircraft to exceed the MOG. The C2 of stage-crew management ensures the matching of a rested and qualified crew to the right mission, a serviceable aircraft, and the exact amount of cargo and number of passengers required for all down-line stations.

Another important factor in maintaining flow, ITV allows the combatant commander to monitor the status and location of assets and personnel from the point of origin to final destination.[5] The AMOG uses ITV to meter flow based on the scheduled arrival and departure of cargo and passengers. Additionally, the AMOG updates the ITV system based on actual arrival and departure times, a procedure that maintains data integrity and directly benefits the war fighter. Accurate information allows the war fighter to request changes to the flow or plan engagements in pursuit of objectives based on predictable buildup of forces. These are only a few of the reasons why C2 of the fixed component is so critical to air-mobility forces in general and the war fighter in particular.

Aerial Port. During the Cold War, forces poised to repel a static threat had the benefit of stockpiled materiel in strategic locations. If necessary, US-based forces would utilize prepositioned equipment to ease the burden of transatlantic transport. Today the great uncertainty faced by the United States regarding the occurrence and location of threats causes war-fighting commanders to rely upon the timely air shipment of equipment, materiel, and personnel. As a result, the port function of the fixed component becomes the gateway for expeditionary forces.

In fiscal year 2004, more than 800,000 short tons of war-fighter cargo and two million pas-

sengers passed through the gateway of EMTF ports and terminals.[6] Sustaining significant war-fighter throughput requires the combined use of C2, ITV, and the synchronization of numerous modes of transportation. Additionally, ports place equal emphasis on optimizing throughput to ensure that the right materiel and people get to the right place at the right time through careful load planning and the availability of airplanes in a good state of repair.

Aircraft Maintenance. When expeditionary forces are on the move, aircraft maintenance assures that airframes can maintain the force flow required by the war fighter. The EMTF relies upon AMOG maintainers, among the most experienced in AMC, to produce three synergistic results. First, these maintainers are usually qualified to repair more than one aircraft type and to service commercial carriers. Second, having multiqualified Airmen allows a reduced US footprint by using a smaller force. Finally, their high level of experience helps maintain a reliable flow of forces to the war-fighting commander (one aircraft launch every nine minutes during fiscal year 2004) despite challenges such as compressed timelines, limited parts, and aging aircraft.

These capabilities—C2, port, and aircraft maintenance—allow the war-fighting commander to plan with confidence, knowing that the fixed component of the EMTF will hold open the door for combat forces to arrive ready for decisive action. However, war fighters require a more responsive system—a deployable component that can expand well beyond the 27 locations of the fixed component.

Deployable Component

Deployable teams extend the reach of both EMTF frontline forces and those based in the continental United States. These expeditionary Airmen can leave on a moment's notice to deploy, sustain, employ, and redeploy US forces. Three parts of the deployable component fall under the umbrella of the CRW: the Contingency Response Group (CRG), Control Team and Support Team, and Air Mobility Liaison Officer (AMLO). The fourth—the Air Mobility Operations Squadron (AMOS)—reports directly to the EMTF commander.

Contingency Response Group. An Air Force capability with effects that span the joint force, the CRG serves as the first of five force modules to assess and open air bases to extend the reach of air and space forces (fig. 3). The CRG concept of operations also specifies that the group have proficiency in handing over growing airfield operations to follow-on

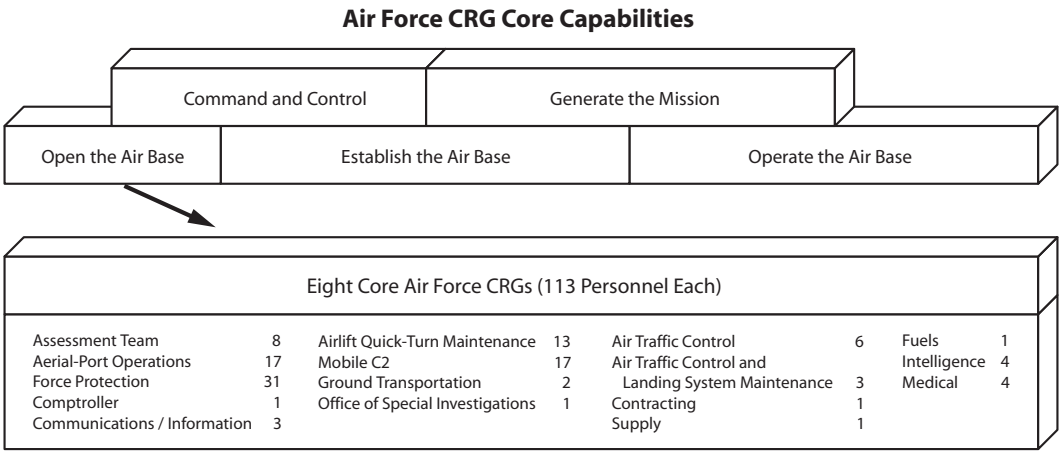


Figure 3. Contingency response group base-opening force module. (From Headquarters Air Mobility Command A3.)

forces, the latter divided among the remaining force modules: maintain C2, establish the air base, generate the mission, and operate the air base. Because establishing initial operations requires numerous skill sets, each CRG consists of 16 specialties among 113 Airmen. If required by the mission, the CRG's 16 specialties can expand their capabilities through augmentation of the air and space expeditionary force to include units such as RED HORSE (Rapid Engineers Deployable Heavy Operations Repair Squadron, Engineers) teams and increased force protection. Of the eight CRGs in the Air Force, six reside in the EMTFs (three in each CRW of an EMTF), one in US Air Forces in Europe, and one in Pacific Air Forces. Not only does the CRG expand air and space expeditionary airfield operations, it also provides scalability in the form of control teams and support teams.

Control Team and Support Team. The Control Team and Support Team are modular units designed to expand the capabilities of a lodgment. The former directs activities to keep the airflow moving; the latter augments existing forces that control ramp activities. In both cases, the EMTF—through the CRW—alters the size of the teams on a case-by-case basis to match capabilities to the degree of augmentation or extension required by operations in support of the war fighter. By avoiding the one-size-fits-all approach, the task force maintains agility and increases responsiveness to dynamic requirements. Maintaining self-sustaining teams—ready to deploy within 12 hours of notification and begin execution upon touchdown—produces agility, and flowing from one tasking to another results in responsiveness.

The core capabilities of these teams, like those of the fixed component, include C2, port, and quick-turn maintenance but may also include other specialties such as security forces, intelligence, and weather. The Control Team, the larger of the two, can sustain 24-hour operations. The Support Team also changes structure, although for lesser requirements than the Control Team. The fact that Control and Support Teams can establish air-mobility operations when and where needed provides two key advantages to the war fighter: increased access for expeditionary forces and a greater range of options for force employment. Options for employment become even greater thanks to the third leg of the CRW triad.

Air Mobility Liaison Officer. Through the AMLO—the EMTF representative to first-response ground forces at the division level or higher—the task force puts "boots on the ground" to help ground commanders integrate air mobility into their expeditionary planning and execution. AMLOs increase general understanding of air-mobility capabilities and limitations, assisting with load-planning and departure-planning exercises. Through this interaction, these officers learn to interpret the capabilities and limitations of their host service. Therefore, when ground units get the call to mobilize, AMLOs advise expeditionary air and space forces on the best way to support the ground commander's needs. During employment, they remain with their assigned units to conduct both landing and drop-zone operations as well as coordinate theater lift for sustainment and maneuver.

Air Mobility Operations Squadron. To plan and execute the full range of air-mobility missions in pursuit of joint-force objectives, the full-spectrum capability known as the AMOS combines eight core specialties: airlift, air refueling, aeromedical evacuation, tactics, weather, logistics, airspace, and intelligence expertise. During peacetime, AMOS personnel help war-fighting staffs gain experience by participating in air and space operations center (AOC) validation exercises and planning conferences. During conflict, AMOS Airmen deploy to the theater AOC and form the core expertise of the air-mobility division. The AMOS serves as a bridge from this division to AMC's Tanker Airlift Control Center—the functional AOC of Eighteenth Air Force—which provides a critical link between theater operations and the center's direct-delivery missions that support theater operations.

When the AMOS deploys in support of humanitarian operations, no active AOC may exist; therefore, the squadron deploys with its

own shelters and communications equipment to form a stand-alone air-mobility division. Finally, AMOS Airmen populate the theater Deployment and Distribution Operations Center within the J-4 to help integrate air mobility into the distribution network and refine airlift requirements to increase distribution velocity. The EMTF makes a heavy investment in the AMOS because that squadron devotes itself completely to supporting the war fighter at the operational level.

Specialized Component

The third component of the EMTF consists of two specialized teams that are every bit as important as the core capabilities of the fixed and deployable components. Both of them, TDC and ComCam, round out the expeditionary menu of capabilities focused on the war fighter.

Theater Deployable Communications. The TDC establishes near-instantaneous communications capability in austere locations, which greatly enhances the ability of joint forces to execute their assigned missions. Interoperable with sister-service and legacy communications systems, TDC systems can transmit and receive voice, data, and video signals from wireless, satellite, or hard-wire sources. Modular and scalable capability supports small or large force packages of up to 1,200 people. Select specialists from the TDC also form a cadre of communications technicians who support an airborne communications package capable of global, secure data and voice communications for cabinet-level civilians and combatant commanders.

Combat Camera. The 1st ComCam Squadron of the 21st EMTF—the only active duty combat-camera squadron in the Air Force—collects, edits, and disseminates imagery across the joint force, even up to the national leadership. Imagery used for combat assessment, decision making, and preservation of the historical record for items of national interest keeps this unit in high demand—a popularity well justified in other areas as well.

Adversaries can set the context of a conflict and sway public sentiment by being the first to provide information; therefore, they try to discredit the United States through disseminating misleading information and propaganda.[7] ComCam helps protect the legitimacy of US actions by making truthful images widely available in minimum time. As a result, the United States maintains the strategic initiative, placing opponents at a significant disadvantage.

The character and reach of the EMTF reflect the organization of the task force and the function of its components. However, when the EMTF integrates with air and space expeditionary forces as well as joint forces, projection of combat power becomes more than rapid transit across strategic distances. Power projection of compelling force is but one effect that increases the responsiveness and potency of all US military forces.

Effects

Today's military has a clear-cut imperative: establish the front line of defense abroad by taking the fight to the enemy, and seize the initiative at the source.[8] Although combat forces based in the continental United States are prepared to meet that imperative, they rely on support forces that are every bit as expeditionary. As stated before, the EMTF enhances the inherent expeditionary nature of air and space forces. As the vanguard of the air-mobility system, EMTF forces are crucial to the support of airlift and air-refueling missions that extend the speed and range of air expeditions. Portions of the EMTF's deployable and fixed forces work to increase the velocity of deploying units, while other parts speed downrange to unload cargo and passengers in preparation for decisive action. The war-fighting focus of the EMTF increases the responsiveness of global air mobility, which narrows the gap between deployment and employment of expeditionary air and space forces.

The qualities that make the EMTF such an important enabler for expeditionary air and space also apply to the joint force. A few notable additions include the AMLO, ComCam, and AMOS. Each of these EMTF components enhances the expeditionary combat power of

sister services in some fashion. For example, AMLOs streamline unit deployment to speed projection of heavy combat power. ComCam provides imagery for combat assessment available to all services, and the AMOS manages theater lift for sustainment of combat forces.

War-fighting commanders are sure to continue stressing the need for increased speed, agility, and access. The EMTF, as part of the greater air-mobility system, is fundamental to meeting the war fighters' needs. For that reason, the various components of the EMTF continue to evolve in order to produce desired effects for the joint force at the tactical, operational, and strategic levels of war.

The EMTF continues to move forward, improving capabilities and making real the joint vision of full-spectrum dominance, which seeks to "control any situation or defeat any adversary across the range of military operations."[9] Such an ideal capability will depend upon the EMTF, in concert with air-mobility aircraft, to move forces at will. This may sound simple, but providing even faster response, persistence through sustainment, and the ability to relocate forces to any spot on the globe is no easy task.

Meeting this high expectation requires forward-looking change, some of which is already under way or under consideration. Mastery of the base-opening skill set constitutes job number one for the CRG. Therefore, AMC is working to establish a formal training unit specifically designed for the CRG. Formal training serves as a mechanism to ensure that enough Airmen are equipped to meet growing demands for accelerated power projection.

At the operational level of war, full-spectrum dominance will require seamless air mobility, the net effect being little distinction between strategic and tactical air mobility.[10] Therefore, the EMTF is leading the way in advocating technological and process changes to leverage reachback operations with US-based C2 and to smooth the seams between global and theater air-mobility operations. Some of the changes involve exploring the best way to integrate air mobility more fully into the joint scheme of maneuver by developing a cadre of air-mobility strategists within the AMOS.

The EMTF represents a sea change in how AMC approaches air-mobility support to the war fighter. It began with harnessing capabilities of the fixed, deployable, and specialized components into one parent organization focused on the war fighter. Such focus translates to the purposeful orientation of the EMTFs along combatant-command lines, which channels task-force resources to assure that US forces are poised and capable of swift, persistent, and decisive response. □

Notes

1. Daniel Gouré and Christopher M. Szara, eds., *Air and Space Power in the New Millennium* (Washington, DC: Center for Strategic and International Studies, 1997), xxiii.

2. Air Force Doctrine Document (AFDD) 2-1, *Air Warfare*, 22 January 2000, 31.

3. Gen John W. Handy, "Warfighting Reorganization: Evolutionary Change to Support Expeditionary Air Force Operations," *The Air Mobility "Flight Plan,"* February 2004, https://private.amc.af.mil/visionForAMC/reorganization.htm (accessed 25 January 2005).

4. Any number of factors can influence the MOG, which describes the number of aircraft an airfield can hold. For instance, "parking MOG"—an indication of how many aircraft can physically occupy space on an airfield—does not allow for easy access to aircraft for fueling operations, maintenance, loading, and the like. "Working MOG," as described in the article, takes into account a myriad of factors that allow aircraft to cycle through an airfield. Limiting factors change, depending upon the resources available. For doctrinal references to the MOG, see former AFDD 1-1, *Air Force Task List*, 12 August 1998, 177; AFDD 2-6.2, *Air Refueling*, 19 July 1999, 57; and AFDD 2-6.3, *Air Mobility Support*, 10 November 1999, 33.

5. AFDD 2-4, *Combat Support*, 22 November 1999, 27.

6. Brig Gen Bobby J. Wilkes, commander, 21st Expeditionary Mobility Task Force, "EMTFs . . . One Year Later" (address to the Airlift Tanker Association Convention, Dallas, TX, 29 October 2004).

7. AFDD 2-5, *Information Operations*, 11 January 2005, 15–16.

8. *National Military Strategy of the United States of America, 2004: A Strategy for Today; A Vision for Tomorrow* (Washington, DC: Joint Chiefs of Staff, 2004), 2.

9. Ibid., 20.

10. Lt Gen John R. Baker, vice-commander, Air Mobility Command, "Supporting Joint Operations: Getting There" (address to the Air and Space Conference, Washington, DC, 13 September 2004).

The Air Force Office of Special Investigations

Postured for the Future

CHRISTINE E. WILLIAMSON*

PRIOR TO THE terrorist attacks of 11 September 2001, the majority of Air Force members knew little about one of the most critical mission priorities of the Air Force Office of Special Investigations (AFOSI): providing threat information to Air Force commanders. Since its inception in 1948, the AFOSI has kept commanders, whether at home or deployed abroad, apprised of threat information that could adversely affect the mission or safety of Air Force personnel. Today, the command has become substantially more integrated into joint ventures as well as law-enforcement and intelligence communities in order to maintain a global perspective and protect Air Force resources in an ever-evolving threat environment.

With the onset of Operations Enduring Freedom and Iraqi Freedom, the counterintelligence (CI) and antiterrorism (AT) missions of the AFOSI garnered attention at all levels of Air Force leadership. Although they are fundamental aspects of the AFOSI mission, CI and AT for the most part remain unknown to the people they protect. Col Kevin J. Jacobsen, commander of the AFOSI's Expeditionary Field Investigations Squadron in Southwest Asia during the combat phase of Iraqi Freedom, summed up the postcombat scenario in the Iraqi theater of operations: "This is an OSI-style war, dependent on source networks and threat collection and analysis."[1] This crucial element of the AFOSI mission has never been more apparent to Air Force commanders than it is today, and it will continue to serve as a key element of the Air Force war-fighting team of the future.

Evolution of an Antiterrorism Program

After the collapse of the Soviet Union, political scientists predicted a new multipolar world—one devoid of the balance of power that had existed for almost five decades between the world's two superpowers. The AFOSI agent of the Cold War era focused on threats from foreign-intelligence services such as those of the Soviet Union and East Germany. Certainly, this was a difficult task, but the lines were drawn much more clearly with respect to who might try to sabotage Air Force assets or recruit Air Force spies. The current climate, in which the United States stands as the world's only superpower, has seen the emergence of rogue nations whose opposition to America and its policies facilitates the harboring of terrorists and support of their causes.

Detecting emerging terrorist threats and their potential impact on Air Force operations became an essential part of the AFOSI's function by the 1970s, as the command's agents in Iran saw their mission evolve from uncovering foreign-intelligence threats to deterring terrorist ambitions against Americans serving in that country. Venturing into relatively new territory, those agents envisioned the changing threat environment as the shah's popularity waned and US service members

*The author is command historian, Air Force Office of Special Investigations, Andrews AFB, Maryland.

became targets for assassination. With little policy to guide them and few AT programs in existence, they—along with a support element from Headquarters AFOSI—successfully developed an aggressive AT program in the throes of the Islamic revolution as the Department of Defense's (DOD) only CI agency in the country.[2] Their model, the genesis of the AFOSI's AT program, provided a concrete foundation for current AT operations.[3]

This program progressed during the 1980s and 1990s as the rise in international terrorism posed a threat to US forces. After the bombing of the Khobar Towers in Saudi Arabia in 1996, the AFOSI created its Antiterrorism Specialty Team to provide a rapid-response CI/AT capability wherever Air Force commanders deployed. The team's agents, who receive training similar to that of special forces, were among the first US military personnel on the ground in Afghanistan at the onset of Enduring Freedom. The constant rotation between training and deployment gave this team invaluable experience and provided key lessons that the command has used to improve its support in a deployed environment. The Antiterrorism Specialty Team model has proved successful and has been benchmarked by a few other federal law-enforcement agencies. Furthermore, after the bombing of the USS *Cole* in Yemen in 2000, the AFOSI emerged as a key figure in the joint venture to establish force-protection detachments, designed to provide AT support to US forces transiting high-threat areas that have no US military infrastructure. Comprised of special agents and analysts from the AFOSI, Army Military Intelligence, and Navy Criminal Investigative Service, these detachments are located in such countries as Pakistan, Yemen, Jordan, the Philippines, Singapore, and Djibouti.[4]

Response to the 9/11 Attacks

In the wake of 9/11, AFOSI agents worldwide went on heightened alert, establishing operations around-the-clock to keep all levels of Air Force leadership apprised of information as events unfolded. At the Pentagon, these agents played a crucial role as part of the FBI team assembled to process the crime scene. Forensic and technical agents utilized their invaluable skills to identify and photograph crucial pieces of evidence. Agents at Headquarters AFOSI at Andrews AFB, Maryland, and at AFOSI Field Investigations Region Four, Randolph AFB, Texas, quickly determined the status of foreign nationals receiving Air Force training and checked their names against watch lists of terrorists. AFOSI agents in major cities across the nation linked into the FBI/Joint Terrorism Task Forces to identify potential threats to installations in the continental United States, and agents overseas conducted liaison at the highest levels of host-nation governments to assure their awareness of known threat information.[5]

Despite the immediate and collective response to the worst terrorist attack in the nation's history, AFOSI senior leadership found the command in a situation not unlike that of other agencies across the country who were caught off guard, not expecting an attack of such magnitude. The command responded by preparing its more than 1,500 agents worldwide for immediate action, but the events of 9/11 brought another issue to the forefront: how to better posture the AFOSI to support Air Force war fighters in an age of transnational terrorism. Consequently, the command developed three programs for successfully detecting, neutralizing, and deterring threats to the Air Force and other DOD resources: (1) the Investigations, Collections, and Operations Nexus (ICON); (2) the Talon program; and (3) "Eagle Eyes."

The ICON seeks to improve the integration of law-enforcement and intelligence information and offer analysis that will better connect the dots, eliminating intelligence gaps that plague other agencies without both CI and law-enforcement components.[6] Talon, designated the official DOD threat-reporting tool by Deputy Secretary of Defense Paul Wolfowitz in 2003, provides a vehicle for reporting raw criminal and intelligence data to commanders if such information represents a credible

threat.[7] The mandated reporting of this information within one hour in order to accelerate the process of development and analysis helps bridge the gap between law enforcement and intelligence; moreover, it puts rapid, refined, and actionable force-protection information in the hands of Air Force leaders at all levels.[8] Eagle Eyes, developed as a defensive AT program with the idea that every Airman is a sensor, educates troops, civilian workers, family members, off-base merchants, and communities surrounding Air Force installations in matters involving possible terrorist surveillance and attack planning.[9]

Reevaluating Mission Priorities

After 9/11 the AFOSI made a priority of putting agents on the ground in places like Bagram and Kandahar, Afghanistan, to collect threat data and determine vulnerabilities to Air Force people and resources before they arrived. Diverting personnel to support deployments has now become a permanent part of the command's structure. Since the beginning of fiscal year 2004, the AFOSI has deployed approximately 450 agents, almost one-fourth of its current total, to support Enduring Freedom and Iraqi Freedom.[10] Deployment of such a large percentage of the agent force, coupled with the fact that they go to several locations not previously utilized by the US military, created particular challenges for the AFOSI's leadership and planners. However, the command had to adapt as Air Force requirements evolved to supply deployed commanders with the threat information they needed.[11]

CI services to the Air Force increased exponentially after 9/11 and have steadily grown since the commencement of Iraqi Freedom in 2003, reflecting the immense focus the command has placed on its CI/AT mission since the terrorist attacks (fig. 1). CI services entail an array of operations, including protective measures for key Air Force and DOD officials, vulnerability assessments, analytical products, participation in Air Force and joint exercises, and threat-awareness briefings (fig. 2). The AFOSI increased its total protective CI services to Air Force commanders by over 100 percent from 2000 (1,430 services) to 2004 (3,014 services).[12] Specifically, AT services nearly tripled, from 231 in 2000 to 623 by 2004, including a spike to 736 in 2003. CI analysis and assessments increased exponentially from 73 documented reports in 2002 to an estimated 1,531 by 2004.[13] Analytical reports include the *Blue Line*, a publication that pro-

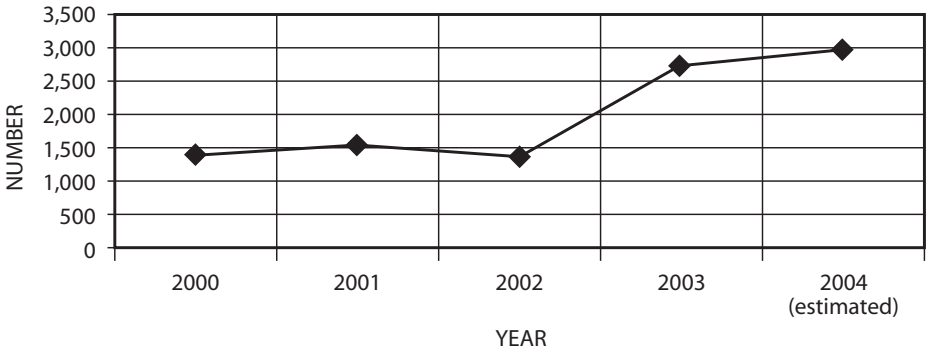


Figure 1. Increase in protective CI services to the Air Force. ("OSI CI Support" [Andrews AFB, MD: Data Integrity Division, Directorate of Plans, Headquarters AFOSI, 23 September 2004], 1.)

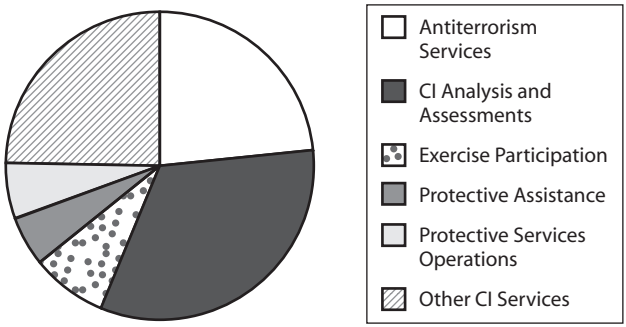


Figure 2. Types of CI services provided to Air Force units. ("OSI CI Support" [Andrews AFB, MD: Data Integrity Division, Directorate of Plans, Headquarters AFOSI, 23 September 2004], 1.)

vides a daily snapshot of threat information; in-depth CI notes, focusing on a specific threat or vulnerability in a region or country; and threat assessments for particular areas where Air Force assets may deploy. However, this represents just one piece of the overall AFOSI mission. The command also sought to find a way to use the same number of resources to fight the global war on terrorism while simultaneously ensuring good order, discipline, and the safety of Air Force personnel and family members on Air Force installations.[14]

Becoming an Integral Part of the Air and Space Expeditionary Force Posture

To better prepare agents and support personnel for deployment, AFOSI planners and leaders recognized the need to configure them into Air Force deployment orders and operational plans and to better integrate into the air and space expeditionary force (AEF) rotation cycle. Thus, on 1 June 2002, prompted by an abrupt 400 percent increase in AFOSI deployment requirements with the onset of Enduring Freedom, the command joined the AEF rotation to ensure that agents became part of the contingent of deployed Air Force war fighters.[15] The change reflected a historical turnabout in the command's approach to deployments, which it had formerly conducted independently of standard Air Force systems because of the nature of agents' missions in a deployed environment. Today, agents find themselves better prepared for projected deployments because their assignment to an AEF rotation cycle ensures the completion of proper training and other requirements.

Iraqi Freedom and Beyond: Postured for the Future

Before Iraqi Freedom began in March 2003, AFOSI agents had already staged at Kuwait City International Airport and prepared to enter Iraq before the Air Force established bases within the interior of the country. These personnel comprised some of the first US forces at Tallil Air Base, near Basra, and at Baghdad International Airport. A month later, the Office of the Secretary of Defense for Counterintelligence named the AFOSI as executive agent for CI support to the Coalition Provisional Authority.[16] Despite the official rescinding of that duty in November 2003, the command's CI support has remained an essential part of the CI mission in Iraq. AFOSI agents participated in some of the key operations conducted in postwar Iraq, including protective support to senior leader-

ship in the Iraqi theater of operations.[17] More importantly, though, the AFOSI deployment system has evolved as the needs of the Air Force have changed to ensure that the command can support Air Force war fighters in the future.

In the AFOSI's strategic plan of 2003, Brig Gen Leonard E. Patterson, commander, stated that the challenges facing the Air Force and the United States in the twenty-first century would be characterized by regional instability fueled by ethnic, cultural, territorial, and resource rivalries. As the DOD evolves from a Cold War mentality and adapts to the complex threats inherent in future operating environments, the AFOSI is also adapting to assure its alignment with the Air Force's strategic plan as well as with other key national-strategy documents, including the *National Military Strategy of the United States*, *Joint Vision 2020*, and *Air Force Vision 2020*.[18]

A crucial element in achieving the AFOSI vision—to become the world's best investigative agency in the world's best air and space force—calls for the command's integration not only with Air Force partners but also with sister services, as well as federal and international law-enforcement agencies (fig. 3). The AFOSI operates in tandem with joint partners and other agencies to ensure that it has the most up-to-date threat information for Air Force leaders.[19] As part of that vision and at the heart of the OSI strategic perspective (thereby at the forefront of the AFOSI's contribution to total Air Force capabilities), the command's core competencies include providing (1) timely, specialized investigations; (2) collection, analysis, and dissemination of relevant

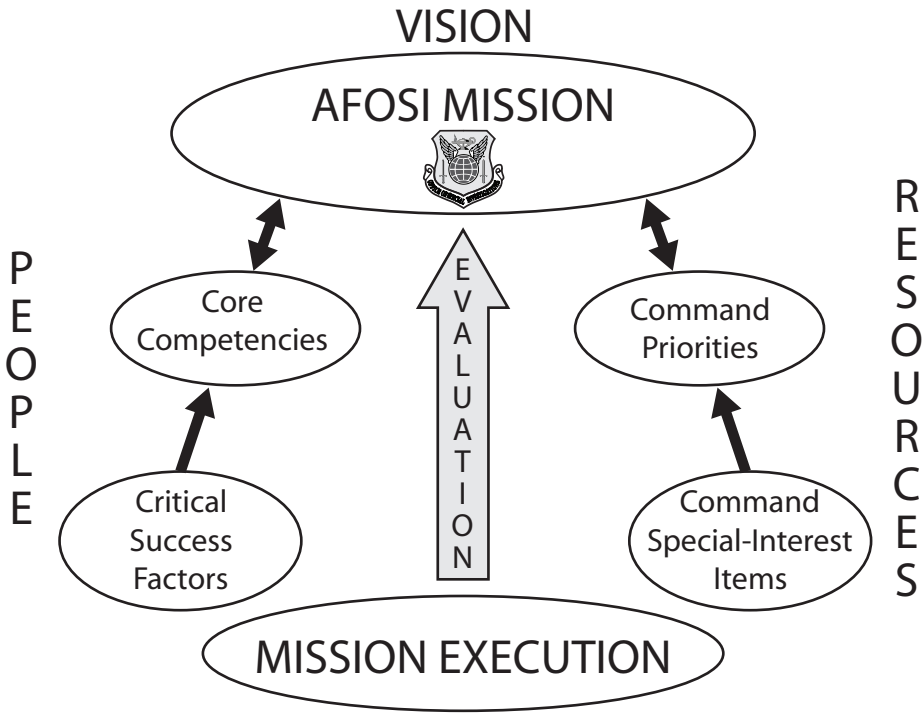


Figure 3. Vision of the Air Force Office of Special Investigations. (*AFOSI Strategic Plan* [Andrews AFB, MD: Performance Management Division, Directorate of Plans, Headquarters AFOSI, 2003], 6.)

threat information; and (3) specialized support to sensitive Air Force projects, technologies, and capabilities.[20]

As part of its outlook for the future, the AFOSI's operational goal is to detect threats and give Air Force commanders early warning capabilities as well as actionable investigative products that enable them to protect their people while preserving good order and discipline. The command can realize this goal by continuously developing the AFOSI ICON and integrating with the DOD's overarching CI policy. Utilization of the ICON will allow agents to detect and counter threats through investigations and the effective use of information technology, followed by rapid dissemination of threat information when and where Air Force commanders need it.[21] As a key member of the joint CI environment, the AFOSI will help assess CI implications for the current DOD planning model and for the resulting or enhanced capabilities of the future. Simultaneously, the command will serve as an integral part of the goal set by the DOD's CI community of developing CI capabilities and implementing them, both in a continuous state of warfare and outside traditional threat definitions—the "new normalcy" of the DOD's operating environment.[22]

Conclusion

Since its inception in 1948, the AFOSI has operated behind the scenes to detect and deter threats to the Air Force. Once known to Air Force members only for its criminal and fraud investigations, the command has seen its CI/AT role evolve with changing threats to the Air Force and become prevalent in the post-9/11 operating environment. The vision and foresight demonstrated by the AFOSI's leadership in developing a CI/AT program over the past three decades have allowed the command to adapt to new, more complex threats and have helped posture the AFOSI as the eyes and ears of the Air Force war fighter, today and tomorrow. □

Notes

1. Col Kevin J. Jacobsen, interview by Christine E. Williamson, 15 April 2004, in History, Air Force Office of Special Investigations, 2003, 9, 11, 20.
2. Christine E. Williamson, "OSI in Iran, 1966–1979" (Andrews AFB, MD: AFOSI History Office, 2004), v–vi.
3. Ibid.
4. See History, Air Force Office of Special Investigations, 2000–2003.
5. History, Air Force Office of Special Investigations, 2001, 109.
6. Brig Gen Leonard E. Patterson, "ICON, Talon, Eagle Eyes: OSI Develops New Programs in the Aftermath of Sept. 11," *Global Reliance*, March–April 2002, 10.
7. Paul Wolfowitz, deputy secretary of defense, to AFOSI/CC, memorandum, 15 April 2003.
8. Patterson, "ICON, Talon, Eagle Eyes," 10.
9. Ibid.
10. "Deployed Numbers for OIF" (Andrews AFB, MD: AFOSI Readiness Division, Directorate of Operations, December 2004), 1.
11. Christine E. Williamson, "The Evolving Role of the OSI Deployed Agent Force," *Global Reliance*, November–December 2004, 23.
12. "OSI CI Support" (Andrews AFB, MD: Headquarters AFOSI Data Integrity Division, Directorate of Plans, 22 September 2004), 1.
13. Ibid.
14. "The Increase in AFOSI's CI Support since 9/11" (Andrews AFB, MD: Headquarters AFOSI Data Integrity Division, Directorate of Plans, 1 October 2003), 1.
15. Maj Mike Richmond, "OSI Gets Expeditionary," *Global Reliance*, November–December 2002, 4.
16. Office of the Secretary of Defense for Counterintelligence to AFOSI/CC, memorandum, 15 April 2003.
17. Office of the Secretary of Defense for Counterintelligence to AFOSI/CC, memorandum, 1 November 2003.
18. "AFOSI Strategic Plan" (Andrews AFB, MD: Performance Management Division, Directorate of Plans, Headquarters AFOSI, 2003), 1–2.
19. Ibid., 2.
20. Ibid.
21. Ibid.
22. Office of the Secretary of Defense for Counterintelligence, *Department of Defense CI Strategy, 2005–2008* (Washington, DC: Department of Defense, 2004), 1.

Return of the Bomber Barons

The Resurgence of Long-Range Bombardment Aviation for the Early Twenty-first Century

MAJ JEFFREY W. DECKER, USAF*

The age of the manned strategic penetrating bomber is over. Flying missions into the heart of the U.S.S.R with gravity bombs is virtually a suicide flight. But just as the Navy could not give up battleships, the Air Force refuses to recognize the end of the World War II bomber mission. If the Air Force had a ground-force mission, we would still be breeding cavalry horses.

—Senator William Proxmire (D-WI), 1976

AIR OPERATIONS SUPPORTING US and coalition forces in Afghanistan and Iraq underscore America's continued reliance on long-range bombardment aircraft. Staging from within the continental United States, Oman, and British bases at Royal Air Force (RAF) Fairford in the United Kingdom and Diego Garcia in the Indian Ocean, B-1B, B-2B, and B-52H bombers played a crucial role in the overthrow of the Taliban government, disruption of the al-Qaeda terrorist organization, and defeat of the Baathist regime in Iraq. Close air support from loitering bombers over the area of operations also proved noteworthy. Whether requested by special-operations troops on horseback in Afghanistan (with the latest in satellite-communications gear) or by intelligence assets on Baghdad street corners, the bomber force delivered precision munitions on any target, anywhere, thus demonstrating the viability, flexibility, and adaptability of the twenty-first-century Airman and long-range bombardment aviation.

Since Senator Proxmire's remarks in 1976, bombers have not faded away to the "boneyard" in Arizona but have maintained and increased their relevance. The Bush administration's *National Security Strategy of the United States of America* (*NSS*), which advocates preemption rather than deterrence or response and reemphasizes the need "to protect this nation and its people against further attacks and emerging threats," means that the long-range bomber will undoubtedly play a central role in assuring the national security of the United States in the early twenty-first century and supporting what is now known as the Bush Doctrine.[1]

Long-Range Bombardment Aviation and the Bush Doctrine

In each of the three major military operations of the past decade—the Gulf War, Kosovo and now Afghanistan—long range strategic aircraft have progressively assumed a larger share of the operational burden, thanks to their long range, to their heavy payload and to constant improvements in precision-guided munitions (PGM).

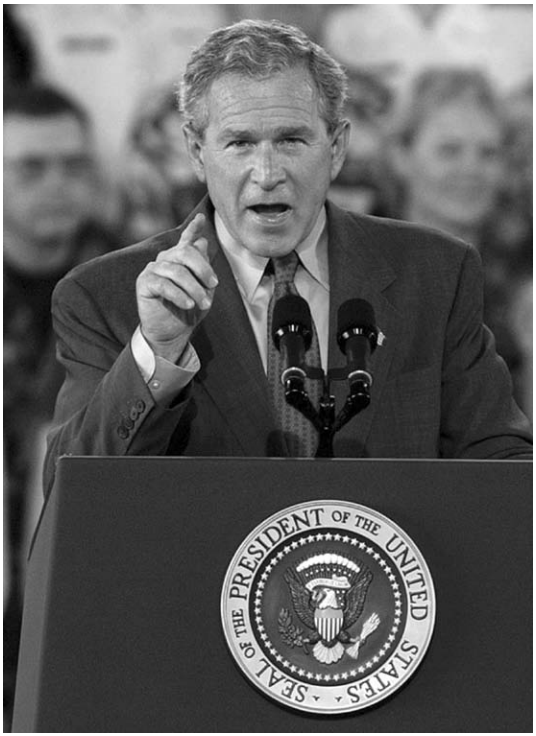
—Giovanni de Briganti
"2001: The End of Tactical Airpower?"

*Major Decker is commander of the 9th Munitions Squadron, Beale AFB, California.

As a candidate for the presidential election of 2000, George W. Bush campaigned to transform America's armed forces. During an address at the Citadel, he outlined his thoughts on military transformation: "Our forces in the next century must be agile, lethal, readily deployable, and require a minimum of logistical support. We must be able to project our power over long distances, in days and weeks, rather than months. . . . *In the air, we must be able to strike from across the world with pinpoint accuracy with long-range aircraft* and perhaps with unmanned systems" (emphasis added).[2]

The national security environment as espoused in the *NSS* of 2002 advocates a policy of preemption and "defend[ing] the peace by fighting terrorists and tyrants."[3] Previous national security strategies reflected the "struggle over ideas: destructive totalitarian visions versus freedom and equality."[4] This "cold war" strategy dictated a deterrent posture requiring bombers, missile-equipped submarines, and intercontinental ballistic missiles on hair-trigger alert. Today, however, "America is . . . threatened less by conquering states than we are failing ones. We are menaced less by fleets and armies than by catastrophic technologies in the hands of an embittered few. *We must defeat these threats to our Nation, allies, and friends*" (emphasis added).[5] As President Bush stressed in a congressional address shortly after the terrorist attacks of 11 September 2001, "the only way to defeat terrorism as a threat to our way of life is to stop it, eliminate it, and destroy it where it grows."[6]

Though America has continuously adhered to a defensive-oriented policy since the beginnings of the republic, President Bush's decision to defend "the United States, the American people, and our interests at home and abroad by identifying and destroying the threat before it reaches our borders" is a response to the enemies America now faces—irrational, nonstate actors (terrorist organizations) who rely on support from rogue states.[7] The president reiterated this warning in his address to the nation on 17 March 2003, before the commencement of hostilities in Iraq: "In this century, when evil men plot chemical, biological and nuclear terror, a policy of appeasement could bring destruction of a kind never before seen on this earth. Terrorists and terrorist states do not reveal these threats with fair notice, in formal declarations—and responding to such enemies only after they have struck first is not self-defense, it is suicide."[8] In the current national security environment, the US Air Force will continue to rely on long-range bombardment aviation in order to meet the requirements of the *NSS*.



President Bush addresses military personnel regarding Iraq and Afghanistan.

Beginning with Operation Desert Storm, the B-52G force—the proud Strategic Air Command shield still adorning the bombers' fuselages—deployed to Diego Garcia; Jeddah, Saudi Arabia; Moron Air Base, Spain; and RAF Fairford. The venerable "B-52s flew 1,624 missions, dropped 72,000 weapons (totaling more than 25,700 tons) on targets in Kuwait and southern Iraq, and on airfields,

industrial targets and storage areas in Iraq. B-52s dropped 29 percent of all US bombs and 38 percent of all Air Force bombs during the war."[9] However, the B-52's inability to deliver precision munitions significantly diminished the effect of the bombing. Combined with the B-1B's no-show and concerns about collateral damage/friendly fire, the Air Force began to work toward obtaining a true precision capability.

Despite challenges to the bomber force (standup of Air Combat Command, retirement of the B-52G, and funding shortages), the 1990s saw the beginnings of a concerted effort to enhance the bomber's conventional capabilities. The B-1B Block-D improvement program and introduction of the Joint Direct Attack Munition (JDAM) for both the B-52H and B-1B, as well as the fielding of the B-2 Spirit, bolstered a bomber force dramatically reduced in numbers but now strengthened in conventional capabilities and tested during Operation Allied Force. Commencing 23 March 1999, air operations in Allied Force attempted to stop Slobodan Milosevic's ethnic cleansing in Kosovo: "Of some 700 U.S. combat aircraft committed to the operation altogether, a mere 21 heavy bombers (10 B-52s, 5 B-1s, and 6 B-2s) delivered 11,000 out of the more than 23,000 U.S. air-to-ground munitions that were expended over the operation's 78-day course."[10]

Combat operations in Afghanistan, though brief, highlighted the strengthened capabilities of America's bomber force and applicability in executing the Bush Doctrine. Limited by political concerns, overflight clearances, forward-basing locations, and long distances, the majority of Air Force airpower (fighter platforms) then in Southwest Asia did participate in direct combat operations in Afghanistan, though executing only "six percent of total sorties."[11] Bomber aircraft, with their long range, had no problems conducting missions from as far away as Whiteman AFB, Missouri. Equipped with JDAMs and inflight reprogramming capabilities, "B-1 and B-52 bombers flew 10 percent of the strike sorties, but delivered 11,500 of the 17,500 total munitions expended (7 October through 23 December 2001)."[12] The B-1B, derided for not participating in Desert Storm, dropped more bombs on Afghanistan than any other aircraft, earning recognition as a vital workhorse in the conflict. The ability to deliver long-range precision munitions, regardless of location, loiter on station for follow-on taskings, and carry a significant payload equal to that of multiple small platforms marked the bomber as a crucial component in this military campaign.

Mirroring Operation Enduring Freedom, Operation Iraqi Freedom reinforced the growing relevance of airpower—specifically America's bomber force: "Deploying 11 B-1Bs, four B-2s and 28 B-52s, these 43 aircraft flew a

An Air Force B-52 bomber from the 28th Air Expeditionary Wing takes off from Diego Garcia for a combat mission on 22 October 2001 in support of Operation Enduring Freedom.

total of 505 sorties between March 20 and April 18 [2003] and struck a third of all aim points in Iraq."[13] Especially noteworthy was the attack on a restaurant in the Al Monsoor district in Baghdad on 7 April. In just 45 minutes, an on-call B-1B delivered four retargeted JDAM munitions against a suspected meeting place of Saddam Hussein and his top leadership. Although the mission failed to decapitate the Baathist regime and eliminate Saddam, this almost "real-time" target change did display what a long-range bomber with PGMs could accomplish.

The bomber force continues to serve in Southwest Asia, flying missions from Diego Garcia that support ongoing operations in Afghanistan. In his address to the Center for Strategic and International Studies on 21 January 2004, Dr. James G. Roche, then the secretary of the Air Force, reemphasized the renewed importance of bombers, specifically the B-1B: "With intercontinental range, duration over a target area measured in hours, and the new tactic of stacking aircraft in benign areas for execution of time sensitive or emerging targets, the B-1 is now a theater weapon of choice."[14] In addition, rotating bomber air-expeditionary forces are now forward-deployed to Andersen AFB, Guam, providing a reassuring presence to our Pacific Rim allies as well as communicating US resolve in the global war on terror.

Combining improvements in information technology, munitions, and organization, the Air Force can provide global reach and precision engagement against strategic, operational, and tactical targets. In addition, the bomber force's precision has reduced or eliminated most negative effects, such as the collateral damage and fratricide associated with their use. No longer delivering large numbers of nonprecision munitions, as they did during Vietnam-era Arc Light missions, bombers now execute long-range missions against a myriad of vital centers/targets with modern PGMs. The combined force air component commander/joint force air component commander has a robust delivery capability against terrorist training camps, leadership safe houses, cave complexes, or more traditional targets such as command and control, leadership, and fielded forces in the modern battlespace.

A Viable Bomber Force for the Twenty-first Century

The bomber's unique strengths of payload, range, and responsiveness coupled with precision attack are the cornerstone of America's airpower and force projection.

—*Air Force White Paper on Long Range Bombers*, March 1999

When terrorists are located, we must be able to react rapidly, before intelligence on their whereabouts is compromised or becomes dated. This requires forces that can strike quickly, over long distances, and without warning. . . . Our best bet is to use long-range aircraft such as the B-2 bombers, carrier based aircraft, or cruise missiles.

—Andrew Krepinevich Jr., 2002

Noted historian Williamson Murray identified the lack of spending on a new bomber as the most glaring challenge currently impeding the present and future capabilities of bombardment aviation: "For fiscal years 1998 and 1999, the investment ratio favors fighters by slightly less than 5 to 1."[15] The Long-Range Air Power Panel chaired by Gen Larry D. Welch, former Air Force chief of staff, suggested that "the Air Force needs to 'begin major [research and development] work on a follow-on bomber immediately.' "[16] The *Air Force White Paper on Long Range Bombers* of March 1999 asserted a similar conclusion: "Although the economic service life and mishap rates indicate a replacement timeline beginning in 2013, future pressures on the timeline may cause a change to this date."[17] A key planning factor called for maintaining a fleet of 170 aircraft in order to support 130 combat-coded bombers. With continued investment in heavy fighters ("$300 billion over the next 30 years on 4,000 tactical aircraft"),[18]

the Air Force will rely on limited modernization and PGMs to enhance the capabilities of the shrinking bomber force. Disagreeing with this approach, congressional members have added funds to begin reactivating 23 of the 30 mothballed B-1Bs (tail no. 86-0097 returned to service in early September 2004). In addition Congress has authorized $100 million to begin work on a new bomber, believing that the "USAF must have a fast stealthy replacement for the aging B-52 sooner rather than later."[19] Even the recently released *U.S. Air Force Transformation Flight Plan, 2004* reiterates the importance of global attack (albeit possibly diminishing the capabilities of the current bomber force):

> Currently, striking targets conventionally across the globe from the United States requires employing long-range bombers, which takes many hours and enables mobile targets to hide before the strike force arrives. In addition, legacy bombers [B-1B, B-2, and B-52H] can only operate in permissive and moderate threat environments. One of the keys to achieving DoD's current transformational objective of denying sanctuary to adversaries is the following transformational capability: . . . *Rapid and precise attack of any target on the globe with persistent effects*. . . . The Air Force is conducting a Long Range Strike Analysis of Alternatives to determine the most effective way to develop this capability.[20] (emphasis in original)

Results of the current Long Range Strike Analysis will not be made public for some time. In view of the ongoing costs in Afghanistan and Iraq as well as the shifting of funds to pay for Army transformation, however, the Air Force will find it difficult to pay for a new bomber. Consequently, the introduction of new precision and next-generation munitions may have to serve as a stopgap measure until additional funds become available.

Operations in Kosovo, Afghanistan, and Iraq demonstrated the dilemma facing US forces today—employing overwhelming force but causing minimal collateral damage to civilians. Allied Force unveiled munitions designed to short-circuit electrical systems without destroying the entire electrical grid, ensuring rapid reconstitution after the conclusion of hostilities. However, operations in Afghanistan reinforced the requirement for destroying bunkers and cave complexes with large penetrator warheads and explosive yield. Future planners will face this same dilemma; fortunately, however, investment in new and improved weapons remains healthy. For example, the AGM-154 Joint Standoff Weapon (JSOW) and AGM-158 Joint Air-to-Surface Standoff Missile (JASSM) bestow additional standoff capability that complements the more publicized JDAM. Two recently publicized munitions—the Massive Ordnance Air Blast (MOAB) weapon and electromagnetic bomb (E-bomb)—represent efforts to pursue kinetic and effects-based ordnance capabilities against current and potential adversaries. In addition to the JSOW, JASSM, JDAM, MOAB, and E-bomb, other next-generation munitions are in development.

The Federation of American Scientists reports that "an object striking a target at Mach 8 will generate 64 times the force of an object of the same mass striking the target at Mach 1. This phenomenon makes hypersonic weapons well suited to attacking hardened or deeply buried targets such as command bunkers or biological-weapon storage facilities."[21] Despite programs now under development, such as the Fast Reaction Standoff Weapon and the Department of the Army Research and Program Agency's Affordable Rapid Response Missile Demonstrator (both designed for fighter and bomber platforms), we still need a capability to strike at deeply buried targets that these two weapons cannot penetrate. Ongoing efforts such as the Hard and/or Deeply Buried Target Defeat Capability (HDBTDC) Program seek to improve penetrators (Advanced Unitary Penetrator) and fusing technologies (Hard-Target Smart Fuse) to enhance penetration and damage. Even a 20,000-pound penetrator using the HDBTDC's smart fuse has been suggested. Carried only on the B-2B and B-52H and using existing JDAM technology, this "superpenetrator" will provide a significant nonnuclear kinetic punch against deeply buried storage bunkers for weapons of mass destruction, command and control facilities, and leadership targets. Reintroduced funding in the defense budget

for fiscal year 2006 will facilitate research of the viability of a small-yield nuclear penetrator. Combined with additional improvements in future munitions, such programs mean that America's bombardment forces will possess both the necessary accuracy and kinetic force to execute long-range precision strikes in lieu of a new airframe.

Conclusion

A military force is not properly balanced against itself. It should be weighted against the enemy. It should be designed and proportioned to evade an enemy's strength and to exploit his weakness.

—Gen Hoyt S. Vandenberg

In looking back at the war [World War I] *and all its lessons we must not overlook the most important lesson of all: all wars produce new methods and fresh problems. The last war was full of surprises—the next one is likely to be no less prolific in unexpected developments. Hence we must study the past in the light of the probabilities of the future, which is what really matters.*

—Lt Gen Sir Arthur Edward McNamara

The United States now faces external threats that bear little similarity to those posed by the old Soviet Union. General Vandenberg's comment reflected an Air Force tasked as the primary deterrent force to contain the Russian bear. The Soviet Union is gone, but his observation still has relevance as the Air Force and its sister services transform to fight a dramatically different enemy. Some people seek to meet this challenge by purchasing more weapons systems, but continuing deficits, transformation priorities, and defense spending that hovers close to 4 percent of the gross domestic product may undermine their proposal. The president has laid out an *NSS* of preemptive action and the elimination of those who would harm our country. For the foreseeable future, the Air Force bomber fleet will continue as our first line of defense, able to reach globally and deliver precision weapons rapidly by using a combination of stealth and standoff capabilities. The current bomber force stands ready to engage a variety of adversaries; however, the battlespace will continue to evolve, and requirements for global attack will not diminish. The Air Force must maintain a viable, long-range bombardment force armed with the latest munitions to meet both effects- and kinetic-based targeting needs until it develops and fields a next-generation long-range capability. □

Notes

1. Donna Miles, "Bush Begins Second Term Vowing to Protect Nation," Armed Forces Press Service, 20 January 2005, http://www.pentagon.mil/news/Jan2005/n01202005_2005012006.html.

2. George W. Bush (campaign address, the Citadel, 23 September 1999), http://www.ransac.org/Official%20Documents/U.S.%20Government/White%20House/bush-092399.html.

3. *The National Security Strategy of the United States of America* (Washington, DC: The White House, September 2002), i, http://www.whitehouse.gov/nsc/nss.pdf.

4. Ibid., 1.

5. Ibid.

6. Bill Sammon, *Fighting Back: The War on Terrorism—From inside the Bush White House* (Washington, DC: Regnery Publishing, 2002), 212.

7. *National Security Strategy*, 6.

8. Pres. George W. Bush (address to the nation—ultimatum to Saddam Hussein, 17 March 2003), http://www.americanrhetoric.com/speeches/wariniraq/gwbushiraq31703.htm.

9. Department of Defense, *White Paper: Air Force Performance in Desert Storm* (Washington, DC: Office of the Secretary of the Air Force, April 1991). See also "Air Force Performance in Operation Desert Storm," http://www.pbs.org/wgbh/pages/frontline/gulf/appendix/whitepaper.html.

10. Benjamin S. Lambeth, *NATO's Air War for Kosovo: A Strategic and Operational Assessment*, Project Air Force MR-1365-AF (Santa Monica, CA: RAND, 2001), 87, http://www.rand.org/publications/MR/MR1365.

11. Christopher J. Bowie, Robert P. Haffa Jr., and Robert E. Mullens, *Future War: What Trends in America's Post Cold-War Military Conflicts Tell Us about Early 21st Century*

Warfare, Analysis Center Paper (Arlington, VA: Northrop Grumman Corporation, January 2003), 6.

12. "Operation Enduring Freedom: The Air Campaign," *Efreedomnews.com*, 12 January 2003, http://www.efreedomnews.com/News%20Archive/Afghanistan/Air%20War.htm.

13. Adam J. Hebert, "The Long Reach of the Heavy Bombers," *Air Force Magazine* 86, no. 11 (November 2003): 24–29.

14. Dr. James G. Roche, secretary of the Air Force (address to the Center for Strategic and International Studies, Washington, DC, 21 January 2004).

15. Williamson Murray, "The United States Should Begin Work on a New Bomber Now," *Policy Analysis*, no. 368 (16 March 2000): 1.

16. Ibid., 12.

17. Department of Defense, *Air Force White Paper on Long Range Bombers* (Washington, DC: Office of the Secretary of the Air Force, March 1999), 24.

18. *Tactical Aircraft: Modernization Plans Will Not Reduce Average Age of Aircraft*, GAO-01-163 (Washington, DC: General Accounting Office, February 2001), 26.

19. John A. Tirpak, "Washington Watch," *Air Force Magazine* 87, no. 1 (January 2004): 8.

20. Department of Defense, *The U.S. Air Force Transformation Flight Plan, 2004* (Washington, DC: Headquarters US Air Force, Future Concepts and Transformation Division, December 2004), 62–63, http://www.af.mil/library/posture/AF_TRANS_FLIGHT_PLAN-2004.pdf.

21. "Smart Weapons," *Federation of American Scientists*, 3 January 2002, http://www.fas.org/man/dod-101/sys/smart/index.html (accessed 11 January 2003).

Revised Air Force Doctrine Document 2-5, *Information Operations*

CAPT RANDY MIZE, USAF

THE NEW AIR FORCE Doctrine Document (AFDD) 2-5, *Information Operations*, 11 January 2005, reflects the changing nature of information-warfare theory and its applications. The substantially revised document illustrates the general concept of information operations (IO) capabilities as they pertain to war fighting. Changes include a focus on achieving effects at the operational level by identifying and refining IO capabilities.

Gone are the terms *information-in-warfare* and *information warfare* as they relate to the pillars of IO. Replacing them are three distinct groups of capabilities that form the foundation of the new doctrinal definition of IO and, when linked, can achieve operationally significant effects: "Information operations . . . are the integrated employment of the capabilities of influence operations, electronic warfare [EW] operations, and network warfare operations, in concert with specified integrated control enablers, to influence, disrupt, corrupt, or usurp adversarial human and automated decision making while protecting our own" (1).

IO focuses on affecting the perceptions and behavior of leaders, groups, or entire populations. It includes capabilities to protect our operations, communicate the commander's intent, and project accurate information to achieve effects in the cognitive domain. The military capabilities of IO entail psychological operations, military deception, operations security, counterintelligence operations, counterpropaganda operations, and public affairs operations. In addition to shaping perceptions, a commander can secure critical friendly information, defend against sabotage, protect against espionage, gather intelligence, and communicate information about military activities to a global audience.

EW operations involve the integrated planning, employment, and assessment of military capabilities to achieve effects across the electromagnetic spectrum in support of operational objectives. EW is not new, but the increased use of lasers as a source of directed energy has dramatically changed the battlefield. The military capabilities of EW operations include electronic attack, electronic protection, and EW support. As we continue to increase our utilization of the electromagnetic spectrum, we must note that coordinating and deconflicting its friendly employment are just as important as denying and attacking the enemy's use of the spectrum.

Network warfare operations, formerly known as computer network operations, produce effects across the interconnected analog- and digital-network portions of the battlespace. In this context, we can define network as any collection of systems that transmits information, including radio nets, satellite links, telecommunications, and wireless-communications networks and systems. Network warfare operations encompass such military capabilities as network attack, network defense, and network warfare support. Furthermore, the new doctrine includes human interaction as well as the combination of hardware, software, and data.

IO depends upon integrated control enablers to gain, exploit, and disseminate capabilities that commanders need to make decisions. The enablers do not fall neatly into one of the three main capabilities of IO but are necessary for all of them to work effectively. These activities include intelligence, surveillance, and reconnaissance; network operations; predictive battlespace awareness; and precision navigation and timing. Such capabilities allow commanders to monitor, command, control, and defend friendly forces and assets under their purview.

Ultimately, IO seeks to produce specific effects on adversaries' decision-making abilities while protecting our own. We can attain information superiority only by gaining, exploiting, disseminating, deciding, attacking, and defending information faster and better than the enemy can. In warfare, information is power, now more than ever. Those who control it have a distinct advantage at the strategic, operational, and tactical levels of war. The new version of AFDD 2-5 reflects this attitude and will give us a competitive edge for years to come.

To Learn More . . .

College of Aerospace Doctrine, Research and Education. Information Warfare Applications Course, http://www.cadre.maxwell.af.mil/warfarestudies/iwac/iwacpage.html.

Let me be perfectly clear—in our Air Force, every Airman is expeditionary.

—Gen John Jumper, USAF, Chief of Staff

Train While You Fight

A New Mind-Set for Airpower Operations in Low Intensity Conflict

LT COL PHIL HAUN, USAF*

MOST AIRMEN ACKNOWLEDGE the adage "train the way you fight" with an intuitive understanding of the necessity of combat forces properly preparing for battle. Fortunately, the US Air Force does a fine job of readying its forces for combat. Annual squadron-training plans based on realistic aircrew proficiency (RAP) requirements, along with major exercises such as Red Flag, Cope Thunder, and Air Warrior as well as air and space expeditionary force (AEF) ground-training requirements, provide deployed Air Force commanders with the world's most capable and prepared air force.[1] Once these forces reach a theater, however, focus shifts to ongoing combat operations with reduced emphasis on training and maintaining proficiency. For conventional wars or short-duration deployments, such a shift away from continuation training makes sense. However, the recent extension of AEF rotations from 90 to 120 days and the nature of low intensity conflicts in Operations Iraqi Freedom and Enduring Freedom have increased the need for conducting training to maintain required levels of combat proficiency. Unexercised combat skills atrophy, and current operations in Iraqi Freedom and Enduring Freedom have not adapted to provide sufficient employment opportunities for aircrews to maintain core skills. The Air Force must continue to shift from a mind-set that sees continuation training in combat zones as a luxury to one that accepts the responsibility for ensuring that deployed combat forces receive such training. The motto "train while you fight" conveys a more appropriate way of viewing the relationship between preparing for and conducting combat operations. This article draws on the challenges

*Colonel Haun is the commanding officer of the 355th Fighter Squadron, Eielson AFB, Alaska.

experienced by Airmen in Afghanistan as they "kept sharp the point of the spear," analyzes joint-doctrine training requirements, addresses the risks associated with continuation training in a combat environment, and makes recommendations for theater-training requirements.

A-10 Air Operations in Afghanistan

Current A-10 operations in Afghanistan present a perfect example of the importance of routine training required to hone skills. The limited number of A-10 squadrons and the high demand for their capabilities in-theater have forced the Air Force to deploy A-10 units on four- to six-month rotations since 2002. A-10 operations there, conducted around-the-clock, provide dedicated close air support (CAS) for Army, Marine, and special operations forces throughout Afghanistan. Routine missions vary from convoy escort to support for infiltration/exfiltration helicopter operations, armed reconnaissance, show-of-presence missions for voter registration, route reconnaissance, traditional CAS for ground forces, and airborne and ground-alert CAS for emergency situations. In light of the hit-and-run guerilla tactics used by the Taliban and al-Qaeda terrorists and the strict rules of engagement in place to limit collateral damage to Afghanistan's already scant infrastructure, we rarely call upon A-10s to employ ordnance. On average, my pilots employed air-to-surface weapons twice on 85 missions during our squadron's 24-week deployment. Those particular employment missions, however, were intense troops-in-contact situations with friendly and enemy forces engaged within 1,000 meters of each other—the most demanding of CAS missions, whose success requires exceptional pilot skill. We expect A-10 pilots to perform perfectly in such critical situations more than three months after they last dropped a bomb, shot a rocket, or fired the aircraft's GAU-8 30 mm gun. In such situations, degraded performance could result in fratricide and could have very negative strategic-level consequences. In contrast, if these same pilots had not performed a weapons delivery for three months at their home station, we would not consider them combat-mission ready or even qualified to deploy to the theater.

The Relationship of Training and Combat Operations in Joint Doctrine

Afghanistan is the most recent of many low intensity conflicts in which Airmen have performed CAS. Lessons learned from previous experiences, now recorded in doctrine, emphasize the importance of training during limited combat operations. Joint Publication (JP) 3-09.3, *Joint Tactics, Techniques, and Procedures for Close Air Support (CAS)*, 3 September 2003, the bible for conducting CAS operations, references training as a requisite for

successful operations in relation to four separate areas. It cites realistic training and mission rehearsal as methods of significantly reducing the likelihood of fratricide, which has "usually been the result of confusion on the battlefield." It also notes that in "limited visibility and adverse weather CAS demands a higher level of proficiency that can only come about through dedicated, realistic, CAS training." Furthermore, the publication states that the commander's tactical-risk assessments involve processing all available information to ascertain the level of acceptable risk to friendly forces and noncombatants.[2] Commanders must have confidence in their aircrews' ability to perform, which, in turn, comes from the level of training that their units have received. Finally, effective CAS assumes not only the proficiency of CAS aircrews and the capabilities of their aircraft but also their ability to integrate all maneuver and fire-support elements. In reality, pilots can practice and gain proficiency in the integration of multiservice units only after they have deployed to the theater.

Cost-Benefit Analysis: Why the Air Force Should Better Integrate Training

Before Air Force commanders accept the argument for continuation training within combat operations, they must perform their own cost-benefit calculus. Some costs are straightforward, such as the time, money, and political clout required to develop suitable air-to-surface ranges, carve out military operating areas, and provide and allocate training munitions and sorties. Other costs are indirect and associated with training risks, such as the chance of a midair collision, losses from enemy surface-to-air fire, collateral damage from an inadvertent off-range release of live ordnance, or a live-ordnance training accident (e.g., the F-18 bombing of Air Force and Army personnel at Udari Range, Kuwait, in 2001). The possibility also exists that any of those events, should they occur, could cause negative international relations and domestic political fallout. Similarly, allowing the use of combat aircrews and aircraft for training could create a shortage of airpower available to fill unexpected combat taskings. There is little doubt that combat-zone training exacts a cost in terms of dollars, time, and additional risks.

In contrast, we cannot calculate the benefits of training as easily as we can the cost of munitions, flying hours, and range maintenance. Rather, we can best measure them in terms of avoiding combat failures and their negative strategic-level ramifications. One of the most obvious benefits is the increase in aircrew proficiency, which will reduce an operator's weapon-employment mistakes, such as aiming-point and switch errors. Misguided or unguided precision munitions can lead to significant collateral damage and fratricide. Continuation training can also increase the reliability of aircraft and weapons systems by allowing aircrews to exercise these systems and identify potential problems under a controlled

environment. In Enduring Freedom, for example, members of my A-10 squadron deployed without having had the opportunity to boresight their aircraft's guns.[3] Our employment of the guns in-theater on a training range helped identify several gun-system malfunctions, avoiding the possibility of those problems occurring during an actual troops-in-contact mission. A final benefit of increased aircrew proficiency and aircraft reliability that comes from training lies in a more effective combat force that reduces the number of lost opportunities to attack enemy forces. More than likely, aircrews with lower proficiency in flying less reliable aircraft will experience "dry" attack passes caused by switch errors, failure to obtain required weapons-release parameters, and previously undetected weapons-system problems. A dry pass squanders a rare opportunity to attack the enemy, who can then survive, flee, and position himself to attack our forces again.

Types of Training during Combat Operations

The types of continuation training that may be integrated with combat operations run the gamut from limited, partial-task training to large-force mission rehearsals. The most familiar training resembles that conducted at home base, using military operating areas and air-to-surface ranges to perform such missions as basic surface attack with inert and/or live ordnance and dry surface-attack tactics with scenarios that include simulated threats. To the cost of training munitions and range maintenance we must add the opportunity cost associated with training lines otherwise used for operational missions, such as airborne CAS alert or pipeline surveillance. These lines will not likely make the cut on the floor of the master air attack plan unless we recognize the war-fighting value of training and put hard requirements in place.[4] One practical solution calls for using the existing yearly RAP requirements and tailoring the required number and types of events to the length of deployment. We could further adapt these requirements to the particular theater. It may not be necessary to require low-altitude tactical navigation or air-combat training for the low-threat, medium-altitude environment of Iraqi Freedom and Enduring Freedom, but training for high-altitude-release bombs is essential.

Given the varied deployment schedules of the other services, Air Force units will probably enter the area of operation and integrate with units with which they have never previously trained. Mission rehearsal can ensure the effective performance of composite-force missions, such as a joint air attack team, which combine Air Force fixed-wing and Army rotary-wing attack aircraft. Successful completion of a mission rehearsal must occur prior to accepting an on-call tasking for special-operations missions. Conventional Air Force units that fly in support of such missions also participate in the rehearsal, which serves to validate tactics as well as identify problems and shortfalls prior to engaging the enemy. Even after

these forces have prepared themselves for this type of mission, additional rehearsals—such as live-fire operations—continue to refine tactics and sharpen skills.[5]

In addition to dedicated training missions, partial-task training can be incorporated into existing combat-mission taskings. Missions such as airborne CAS alert require extended holding over low-threat areas for a vulnerability period specified by the air tasking order. Aircraft can perform dry deliveries of laser-guided bombs or dry roll-ins during this time, provided the special instructions (SPINS) include such safeguards as restrictions on weapons' switch positions, altitude, and targets to guard against inadvertent releases of live munitions.[6] Extended periods of operations within surface-to-air threats must also be avoided. Partial-task training has the added benefit of reducing boredom during otherwise tedious missions, keepings aircrews mentally alert and ready to respond to any surprise or short-notice tasking.

Conclusion

This article has focused on the legitimate Air Force challenge of maintaining combat skills during extended low-intensity combat operations. CAS operations by A-10s in Afghanistan well illustrate the challenges Airmen face in maintaining combat proficiency in-theater. JP 3-09.3 recognizes the importance of realistic training in conducting CAS; moreover, the addition of RAP requirements, a focus on mission rehearsals, and controlled partial-task training now strengthen combat skills in-theater. Although this training in a combat theater comes at a cost expressed in both dollars and risks, that expense is offset by increases in aircrews' combat proficiency and the reliability of weapons systems, which reduce "bad" incidents and maximize available employment opportunities. Continuation training during combat is not a luxury but a requirement. "Train while you fight" must become the new mind-set for today's Airmen.[7] □

Eielson AFB, Alaska

Notes

1. Although the Air Force makes an effort to match up similarly tasked AEF units in major exercises, in Enduring Freedom and Iraqi Freedom, Air Force units find themselves working with Army, Navy, and Marine units that they have never met or trained with prior to deployment. To improve AEF spin-up, we should make an effort to integrate predeployment training across the services—a difficult task but one exceedingly worthwhile in establishing both standard operating procedures and mutual trust.

2. Joint Publication 3-09.3, *Joint Tactics, Techniques, and Procedures for Close Air Support (CAS)*, 3 September 2003, I-4, V-40, and V-13.

3. During upgrades of Litening targeting pods just prior to deployment, analysis of targeting-pod strafe video showed that the jets were not boresighted for high-altitude strafe. (Before the acquisition of targeting pods, jets were boresighted for long-range strafe, a low-angle delivery.)

4. In Enduring Freedom, joint tactical attack controller (JTAC) training missions increased after planners realized that airborne training missions can be easily rerolled to troops-in-contact situations, as can airborne CAS missions holding in dedicated kill boxes.

5. Recent missions in Fallujah and Baghdad, Iraq, have included live rehearsals.

6. In Enduring Freedom, SPINS-specific switch positions for A-10s carrying live munitions allowed for dry roll-ins, greatly facilitating weapons-employment training.

7. Special thanks to Lt Gen Walter Buchanan, commander of Ninth Air Force and of the combined forces air component, for inputs to this article. As he rightly pointed out,

> I suggest we need to consider . . . that what we describe may not be compatible with an economy of force mission where I have "just enough" assets to do the mission. If so, then maybe an economy-of-force mission is not compatible with an extended 120-day deployment. To pull jets out of the line and dedicate them to training means I have two (or more) not available to support the ground fight. That's OK as long as I have excess mission capacity. While I know I can do this on the margins easily enough even with today's force, I worry that I may not be able to commit to the dedicated training sorties per pilot or crew that you suggest. But I agree that any is better than none.

Our job is to deploy and deal with terrorists wherever they are in the world so we never again have to deal with them on our own soil.

—Gen John Jumper, USAF, Chief of Staff

Beyond Blue Four

The Past and Future Transformation of Red Flag

MAJ ALEXANDER BERGER, USAF

Editorial Abstract: Since its inception, Red Flag has trained aircrews to survive their first 10 combat missions. As the complexity of air operations has increased, however, so has the pressure to expand the exercise's training focus. This article reviews the historical origins of Red Flag, highlights recent changes to the exercise, and provides recommendations on how to guide its future transformation.

FOR ALMOST 30 years, the Red Flag exercise has trained Blue Four—lieutenants and captains competent in their aircraft but without flying experience in a composite strike force—to survive in combat. Red Flag has also given more experienced pilots the opportunity to serve as mission and package commanders in order to learn the best way of employing an integrated, large-force package to achieve a tactical mission objective. However, as the complexity of air operations has increased with the advent of network-centric warfare, precision-guided munitions, and stealth technology, and as special opera-

tions, space, and information warfare have integrated with combat air forces, so has the pressure increased to change Red Flag to include more platforms and expand its training focus.

Because realistic training at Red Flag has not kept pace with the changing nature of warfare, the exercise is wrought with "Red Flagisms" that limit its value. Today's aircrews, trained to think operationally, are directed to focus on the tactical problem of the day at Red Flag. They fly over air-defense sites to hit individual targets although their experience tells them to first roll back enemy ground threats with stealth and electronic-warfare aircraft as well as precision-guided bombs. This article considers the changes Red Flag has undergone since its inception, evaluates their impact, and recommends ways of managing the transformation of this exercise.

History of Red Flag

The genesis of Red Flag traces back to the Vietnam era, when the air-combat effectiveness of the US Air Force dropped dramatically. Specifically, the Air Force enjoyed a 10-to-one kill ratio during the Korean War but only a two-to-one advantage during the latter part of the Vietnam War. Disturbed by this trend, the service set out to identify the root cause of its loss in proficiency, tasking its Tactical Fighter Weapons Center at Nellis AFB, Nevada, to conduct a series of studies called Project Red Baron to analyze all air-to-air engagements during the war in Southeast Asia. An interim report released in 1972 identified three significant trends. First, it found that multirole fighter units were expected to perform such a broad range of missions that pilots lacked proficiency across the board. Second, most pilots who were shot down never saw their attackers and did not even know that the enemy had engaged them. The report concluded that since pilots routinely trained against US aircraft from their own squadrons, they were unaccustomed to looking for the smaller, more agile aircraft flown by the North Vietnamese. Finally, Air Force pilots not only lacked familiarity with the enemy's fighter tactics and aircraft capabilities but also did not develop or train with tactics intended to exploit the adversary's weaknesses. As a result, they could not adapt to the fast maneuvering by North Vietnamese fighters during dogfights.[1]

Other studies at the time found that aircrew training and proficiency problems extended beyond the Vietnam War. The Litton Corporation, for example, studied air-combat trends in every conflict from World War I through the Vietnam War, concluding that a pilot's first 10 combat missions were the most critical.[2] If aircrew members survived those missions, their chances for victory and survival increased dramatically.

Graduated, Realistic Training

The lessons of these studies quickly spread throughout the Air Force, and senior leaders directed dramatic changes in aircrew training. In response to the observation that multirole fighter units could not effectively train in all missions, the Air Force specified a primary and secondary "designed operational capability" for each squadron, allowing pilots to specialize in specific mission areas such as air-to-air or ground attack.[3]

In order to address the problems of visually identifying enemy fighters and developing tactics to exploit enemy weaknesses, Tactical Air Command (TAC) started an initiative called "Readiness through Realism," which made combat training more intense and realistic than in the past. One key recommendation from the Red Baron report stated that "realistic training can only be gained through study of, and actual engagements with, possessed enemy aircraft or realistic substitutes."[4] Therefore, dissimilar air combat training (DACT) became a mandatory part of a pilot's mission-qualification and continuation-training program. Between 1972 and 1976, the Air Force created four aggressor squadrons—flying T-38 and then F-5 trainer jets with Soviet-style paint schemes—specifically to provide DACT to fighter pilots. Rather than flying these jets

like American pilots, aggressor pilots learned and adopted Soviet fighters' maneuvers and tactics.

Not content to limit training improvements to air combat, in 1975 TAC initiated the Coronet Real program to improve ground-attack training by upgrading Air Force ranges with realistic target displays, ground-threat simulators, and assessment equipment.[5] Previously, training ranges provided generic range targets such as painted bull's-eyes or stacked oil drums that did not resemble realistic enemy targets. Under Coronet Real, US training ranges were upgraded with improved target complexes, often using excess military equipment that included tank concentrations as well as mock-ups of enemy surface-to-air missiles (SAM), antiaircraft artillery (AAA), and even large industrial complexes. The program also created electronic-warfare ranges at both Nellis and Eglin AFB, Florida, using ground-threat simulators to mimic a Soviet-style Integrated Air Defense System (IADS). These manned SAM and AAA radar simulators not only emitted signals similar to the threats they replicated, but also tracked targeted aircraft and recorded miss distances on a computer to assess the effectiveness of aircrew countermeasures.

Finally, Coronet Real included several initiatives to instrument training ranges in order to collect and present detailed information for aircrew training. Video cameras slaved to SAM-tracking radars captured images of a pilot's reaction to being targeted, providing valuable feedback on the success (or failure) of evasive tactics. Optical scoring equipment accurately measured the impact point of live or inert ordnance dropped from attack aircraft. Finally, the project added a tracking system called Air Combat Maneuvering Instrumentation to monitor aircraft flying on the ranges and to reconstruct air-to-air training engagements. In 1975 TAC appropriated over $200 million for range improvements—most of which went to the Nellis Range Complex.[6]

Birth of Red Flag

With the Air Force's increased emphasis on specialized and realistic aircrew training in the mid-1970s, the timing was ideal for a group of fighter pilots working in the Directorate of Operations, Headquarters Air Force, to propose taking training to the next level. Armed with the results of the earlier studies, they suggested creating an exercise in which junior pilots could experience the rigors of air combat and try out new tactics in a realistic but safe training environment. A briefing entitled "Red Flag: Employment Readiness Training" presented the Red Flag concept of operations (CONOPS) at TAC's Fighter Weapons Symposium in April 1975. It identified the opportunity to use existing resources—particularly Nellis's two aggressor squadrons and the targets, threats, and instrumentation on that base's range complex—to create a two-week exercise designed to season inexperienced pilots. The CONOPS envisioned using a Red Flag central manager called White Force to oversee realistic combat training for the tactical air forces, direct Red Force aggressor employment, and run Red Flag debriefs to identify mistakes and recommend improved tactics.

Under the Red Flag concept, operational flying units called Blue Force would rotate through Nellis for month-long deployments, and individual crews would rotate after two weeks. Red Flag training events, or "scenarios," would conform to a unit's specific designed-operational-capability requirements, with 75 percent of the sorties dedicated to the unit's primary mission. The CONOPS also envisioned Red Flag training employing a graduated approach, focusing first on individual aircrew training and eventually progressing to composite strike missions in the latter part of each Red Flag period.

Finally, the CONOPS saw Red Flag as a tailor-made training exercise, providing specialized scenarios for mobility aircrews, Strategic Air Command's nuclear bombers, special operations forces, and even joint participants from the Army, Navy, and Marine Corps. Although it identified the Nellis range

as the primary area for Red Flag training, the CONOPS also recommended using additional ranges throughout the southwest United States to expand the scope and size of Red Flag.[7] Despite facing some initial high-level resistance to the proposal, Maj Richard "Moody" Suter—who reportedly conceived the idea for Red Flag on the back of a cocktail napkin one night at the Nellis Officers' Club—persisted with the idea. On 15 July 1975, Major Suter briefed the concept to TAC commander Gen Robert Dixon, who approved it on the spot for implementation. The first Red Flag exercise commenced on 27 November 1975.

Early Evolution of Flag Exercises

The initial feedback from aircrews participating in the first Red Flag exercises was overwhelmingly positive. The first year included nine exercises that trained 2,500 aircrews from all Air Force commands, the Air Force Reserve, Air National Guard, Marine Corps, Navy, and Army. It also saw several milestones, including large-scale joint training with the Army at Fort Irwin, California, and the integration of operational test and evaluation of the F-15 and A-10 aircraft into the exercise.[8] Virtually every postexercise report during that first year also lauded the opportunity for units to develop and evaluate new tactics against a realistic and adaptive adversary. Although aircraft accident rates during the first four years of Red Flag were four times higher than the TAC average, forward-looking senior Air Force leaders remained committed to pursuing realistic training.[9]

The huge success of Red Flag led the Air Force to consider additional ways of improving combat training. In 1976 TAC created the Blue Flag exercise to provide realistic training to numbered-air-force personnel working in command and control (C2) facilities and airborne platforms. Following TAC's lead, Pacific Air Forces created a realistic training exercise called Cope Thunder, using its aggressor squadron and training ranges in the Philippines. US allies also realized the value of realistic training, and in 1978 Canada hosted the first Maple Flag exercise, which featured Red Flag–like training in terrain more closely resembling that of Eastern Europe. In 1981, when the Army created the National Training Center at Fort Irwin, the Air Force removed close air support training from Red Flag and created the Air Warrior exercise.

The next significant leap in realistic training came when Gen Wilbur L. "Bill" Creech, TAC commander from 1978 to 1984, instituted the Green Flag exercise at Nellis. Initially held twice a year, it resembled Red Flag but added new Blue Force players, including intelligence-gathering platforms, electronic-warfare aircraft, and numbered-air-force planning staffs. Green Flag's focus on electronic warfare was specifically designed to counter the prevailing attitude in TAC that aircrews had to fly at low altitude to avoid medium-altitude SAM threats. Since flying low put aircraft within range of AAA guns, General Creech considered this logic flawed.[10] At his direction, Blue Force players first had to employ electronic-combat systems to roll back enemy air defenses and gain air superiority at medium altitudes before attacking other targets. Aircrews quickly developed new tactics and integrated those systems to address the challenge of operating at the higher altitude. During his tenure, the general also expanded the size of Red Flag and Blue Flag and continued range-improvement programs by investing over $600 million in new targets and threat systems.[11]

TAC's numerous realistic training initiatives completely transformed the culture of Air Force training. Prior to 1975, "flying safety is paramount" served as the Air Force's catchphrase for peacetime training. With the advent of Red Flag and the other initiatives, the new slogan "train the way we are going to fight" became firmly entrenched in the vernacular of aircrews everywhere.

Recent Red Flag Initiatives

From its inception, Red Flag training mirrored contemporary Air Force, joint, and coalition war-fighting capabilities and doctrine.

So it comes as no surprise that today's Red Flag is more complex and dynamic than ever before. Current exercises, between eight and 10 two-week periods each year, train over 13,000 aircrews, intelligence analysts, and support personnel. Red Flags typically include a variety of US and allied combat-air-force, mobility, and special-operations aircraft performing missions such as air superiority; interdiction; electronic warfare; airlift support; search and rescue; and command, control, intelligence, surveillance, and reconnaissance (C2ISR). As in the past, today's exercise tests Blue Force's ability to confront an advanced enemy force employing a robust threat using increasingly complex adversary tactics. However, new initiatives introduced over the past five years have increased the scope and complexity of today's Red Flag exercises—possibly to the detriment of realistic aircrew training.

The Nellis Combined Air and Space Operations Center

Perhaps the single most significant change to the Red Flag structure over the past decade was the establishment of a combined air and space operations center (CAOC) at Nellis. In July 2000, the Air Force chief of staff released a message outlining his vision for realistic training at the operational level, just as the Air Force had done with tactical training over the previous 20 years. The message specified that "all USAF assets/capabilities will now plan and execute together in a 'live fly' training environment, to include realtime command and control."[12] This directive drove the creation of a CAOC tasked to incorporate operational-level play into all of Nellis's training, testing, and exercises—including Red Flag.

With a core staff of AOC experts to facilitate training, the Nellis CAOC provides a battle-ready facility for deployed AOC personnel from air operations groups (AOG) to conduct operational-level training during Red Flag exercises. Ideally, a full CAOC staff will deploy to a Red Flag exercise in order to meet specific AOG training objectives. In order to increase the complexity of AOC play, the Nellis CAOC also integrated into a simulation-based training exercise called Desert Pivot, run by the 505th Distributed Warfare Group at Kirtland AFB, New Mexico. Now called "Virtual Flags," these operational-level exercises align with Red Flags to give Blue Force players in the CAOC combined live-fly, constructive training (networked simulators) and virtual training (computer war games) in development and execution of the air tasking order with an emphasis on time-sensitive targeting. Even without a Blue Force AOC, the White Force CAOC staff can provide tactical aircrews with training in time-sensitive targeting during Red Flag by passing updated target coordinates to airborne C2 aircraft during mission execution.

US-Only Red Flag

In 2000 Air Combat Command (ACC) designated two Red Flag periods each year as "US-only" exercises in order to integrate selected special-access programs.[13] This special exercise would expose tactical-level participants to operational capabilities previously not discussed at Red Flag and would ensure that these future AOC planners understood the scope of those capabilities before deploying in response to a crisis. With the freedom to plan and debrief at a higher classification level, US-only Red Flags add a number of atypical elements, including B-2 and F-117 stealth aircraft, C2ISR platforms (including Compass Call, Rivet Joint, Joint Surveillance Target Attack Radar System, U-2, and Predator), and space and information-warfare capabilities. US-only Red Flags have been instrumental in bringing previously stovepiped communities together with combat air forces in a live-fly environment.

Greening-Up Red Flag

Red Flag also shifted its training focus, "greening up" to compensate for the Air Force's elimination of Green Flag exercises. This change acknowledged the fact that our air forces will never operate in a hostile air environment without the protection afforded by suppression of enemy air defenses (SEAD)

and electronic-combat aircraft. Navy and Marine Corps EA-6Bs and Air Force F-16CJs participate in virtually every Red Flag to jam or target enemy radars. The proliferation of munitions guided by the global positioning system (GPS) has also led to an increased emphasis on bombing enemy SAM and AAA systems, a mission known as destruction of enemy air defenses (DEAD). Additionally, US-only Red Flag exercises incorporate a vast array of systems capable of targeting enemy air defense networks—both kinetically and nonkinetically.

Air Expeditionary Force Grouping

Another recent initiative entailed grouping units deploying to Red Flag into their respective air and space expeditionary force (AEF) rotation. In 2000 ACC decided to use Red Flag as the capstone training event in a unit's "spin-up" to an AEF deployment. By deploying to Red Flag by AEF, units could learn how to employ together and work out any coordination issues prior to actual deployment. The AEF lead wing became the "core wing" for the exercise, and its commander would use Red Flag to set the tone and direction of the deployment.

Joint Red Flag Exercises

In 2002 Joint Forces Command directed that one Red Flag period every two years be designated a "Category 2 Joint Interoperability Training Exercise" that would evaluate integration in a number of joint interoperability tasks, including close air support, personnel recovery, fires, and SEAD.[14] Although Red Flag has always included joint participation, this specialized exercise required participants to integrate capabilities rather than simply deconflict operations, as in the past. In Red Flag 03-2, the first of the new joint exercises, scheduled for January 2003, the Army's 101st Airborne Division would deploy 24 AH-64/Apache attack helicopters to conduct deep-strike missions with Air Force SEAD and fighter support. Additionally, the National Training Center (hosting the Army's III Corps) and Air Warrior exercises would take place concurrently with Red Flag. All three, having adopted a common-threat scenario, would execute and be evaluated with joint integration in mind. Preparations for Operation Iraqi Freedom, however, necessitated the cancellation of Joint Red Flag several weeks prior to execution of the exercise. Joint Red Flag 05, held in March and April 2005, attempted an even greater level of joint integration.

Challenges to Realistic Training

Air Force operations in every conflict since Operation Desert Storm have proven the value of Red Flag training. However, recent changes in the structure and focus of Red Flag have also increased the difficulty of creating a realistic and coherent exercise. Red Flag training has expanded beyond simply training Blue Four to experience their first 10 combat missions; it now provides the opportunity to conduct realistic training at the operational level of warfare. However, some significant challenges still limit the value of realistic training at Red Flag.

Outdated Range and Assessment Tools

An assessment of the first Red Flag exercise noted that "threat locations did not provide harassment within target area[s]" and that "threat density is insufficient and does not include the latest threat equipment . . . to insure training accomplished and tactics employed are realistic."[15] In the early exercises, strike packages had to go through one of the electronic-warfare training ranges on their way to designated targets, just to get experience flying in a high-threat environment.[16] Similar range challenges persist today. Although Red Flag exercises now integrate an even wider mix of strike, stealth, electronic-warfare, C2ISR, special-operations, space, and information-warfare capabilities, Nellis lacks an equivalent full-spectrum Red Force against which Blue Force participants can plan and operate.

The Nevada Test and Training Range (NTTR) has changed little in the past three

decades, with the majority of its targets still resembling Soviet-style formations of tanks, convoys, and SAM batteries. Ground-threat simulators can imitate only older-generation threats such as the SA-2, SA-3, SA-6, SA-8, Roland, and AAA fire-control radars—systems similar to those found in Iraq during Desert Storm. Additionally, contractor manpower shortfalls limit the number and duration of threat emitters supporting the multitude of range activities.[17] More significantly, range threats can only emit a signal that will trigger a fighter aircraft's radar-warning receiver. They do not provide useful training for C2ISR, stealth, or electronic-warfare participants who normally monitor or target the associated communication systems and links and nodes of a true enemy IADS. Consequently, because many Red Flag participants do not employ their systems as they would in actual conflict, they fail to receive the same level of realistic training that the exercise provides tactical aircrews.

The lack of threat simulators that replicate the latest generation of "double digit" SAMs (the SA-10, SA-11, SA-12, and SA-20) means that Red Flag participants train against a threat less capable than one they would likely face in combat. No pilot flying in a nonstealth aircraft would willingly go up against these extremely capable systems alone. However, by not training in a realistic, robust threat environment, participants gain a false sense of security when they return from Red Flag having successfully survived their first 10 combat missions against only limited threats on the NTTR. This problem will increase exponentially when the F/A-22 and Joint Strike Fighter—systems designed to counter the very latest air and ground threats—become operational.

Neither does the NTTR offer a realistic low-altitude threat. During the opening days of Desert Storm, the United States quickly learned that fighters operating below 10,000 feet placed themselves in grave danger. Yet the NTTR does not have systems designed to simulate or assess nonguided AAA—one of the most significant threats aircrews face in any potential conflict area. As a result, Red Flag participants focus more on surviving the mission than on following realistic tactics and routinely operate at low levels in order to evade detection by Red air and radar systems. Similarly, "smoky SAMs," which provide a visual cue of a shoulder-fired SAM launch, do not trigger infrared jammers or missile-launch detectors found on most modern helicopters and tactical-airlift aircraft. Furthermore, because we have no way of assessing these missile simulators to determine if a missile "killed" the aircraft, a targeted aircrew will never know if its countermeasures and evasive tactics were effective in defeating the SAM.

Finally, assessment tools have also not kept pace with evolving Air Force and joint capabilities. Just as the focus of Red Flag training has expanded, so has the need for the exercise's mass debrief to show the integrated and operational-level effects of all players' actions. The various assessment tools available to the White Force staff for capturing data, though sufficient for reconstructing an attrition-based war (e.g., number of airplanes shot down and proximity of bomb hits to intended targets), do not measure the effectiveness of Blue Force's effects-based operations. For example, the range's threat operators must manually record the effectiveness of electronic jamming against their threat system and then call the results back to Nellis, where data is compiled for the mass debrief—a process both time consuming and inherently difficult to quantify when providing feedback to Red Flag participants.

Jack-of-All-Trades, Master of None

As Red Flag has integrated more and more specialized training events (e.g., time-sensitive targeting, combat search and rescue, airlift, special operations, and IADS rollback with stealth, space, and information-operations tools), it has diluted its focus on training Blue Four. Each new training event often comes at the expense of another.

Consider the concept of rolling back the enemy IADS through execution of an integrated campaign using electronic warfare,

SEAD, information operations, and precision-guided munitions. Some senior Air Force leaders, including the Air Force chief of staff, have stated that Red Flag should emphasize integrating combat power to negate a robust adversary threat (by means of a "global strike task force") rather than trying to train fighter and bomber crews to operate in a robust, but perhaps overly challenging, threat environment. Red Flag 03-1 integrated this vision with an IADS rollback campaign using permanent removal of destroyed SAMs at the beginning of the exercise. Although it is hard to argue that participants should not "train the way they will fight," using simulated weapons that do not require tactical employment on the training range (such as information-operations tools or bombers employing dozens of simulated, GPS-guided munitions from standoff ranges) to preemptively destroy ground threats at Red Flag denies valuable training in surface-to-air threats that tactical aircrews can get only at this exercise. Additionally, operators employing the wide range of electronic-warfare aircraft, space, and information-operations capabilities often literally fight over who gets first shot at the limited number and types of threat simulators on the training ranges; indeed, few threats may remain when strike aircraft enter the threat area. Consequently, aircrews participating in Red Flags may be learning the wrong lesson: that a handful of electronic-warfare aircraft, bombers with precision-guided munitions, and various non-kinetic capabilities will effectively negate a modern enemy's IADS in a single mission.

Finally, it remains unclear how to balance the operational training requirements of numbered-air-force personnel deploying to the Nellis CAOC against the valuable tactical training that aircrews receive flying their first 10 combat missions in Red Flag exercises. The more Red Flag focuses on executing real-time C2 during live-fly missions, the less training tactical aircrews get in decentralized mission planning and execution. For example, the opportunity to retask actual strike aircraft against time-critical targets during a live-fly, large-force execution mission provides outstanding training for Blue Force AOC and airborne C2 personnel. However, this same training detracts from Red Flag's traditional format of planning a mission, flying it as planned, and then analyzing the results to determine if failures came from flawed planning or flawed execution. There are clear benefits to testing AOC operations during live-fly exercises, including having an integrated mass debriefing during which AOC personnel can receive pointed feedback directly from tactical aircrews. However, this change will undoubtedly have some impact on tactical-level training.

Inconsistent Training for AEFs

As mentioned earlier, not all of today's Red Flags are created equally. The US-only version brings together a robust mix of strike, stealth, C2ISR, electronic-warfare, space, and information-warfare platforms and capabilities in an exercise that truly reflects the way joint air forces will fight in future conflicts. Its participants practice large-force employment in a high-threat environment with robust C2ISR feeds and a fully manned AOC. Compare this with the traditional Red Flag, which lacks stealth platforms, space and information-warfare capabilities, and a Blue Force AOC staff. Two other air-combat exercises, Pacific Air Forces' Cope Thunder and Canada's Maple Flag, offer a training focus similar to Red Flag's but typically include an even less diverse mix of participants with a less robust aggressor threat. Even fewer participants will take part in the expanded Joint Red Flag exercises, scheduled to occur once every two years.

Despite the significant differences among today's Red Flag, US-only Red Flag, Joint Red Flag, Cope Thunder, and Maple Flag, the Air Force views all of them as equivalent realistic-training exercises. Air Force squadrons are scheduled to attend only one major training event during a 20-month AEF cycle. Clearly, all units will not receive the same level of training unless we make an effort to better manage their training events.

Recommendations for Training Transformation

Although Red Flag has undergone many changes since its inception, we have neither coordinated nor integrated them to create a true transformation in realistic training. In April 2003, the Department of Defense's (DOD) *Transformation Planning Guidance* directed transformation in military training to reflect the changes in post–Cold War capabilities and techniques: "The rigorous and realistic training regimen which our military conducts provides our forces with extraordinary battlefield advantages. . . . For this advantage to persist into the future, we must transform our training in the same way we transform the rest of the force."[18]

In some ways, the transformation of Red Flag began shortly after its birth in 1975. The combination of new participants (particularly in US-only exercises) and an expanded training focus has resulted in a dramatically new exercise that mirrors the transformation in joint-force capability. Today's Red Flags go beyond Blue Four. Whereas the original Red Flag culminated in a large-force employment mission, today's exercises start at this point. Instead of training Blue Four to survive the first 10 missions through tactical employment, today's Red Flag trains a joint/combined air and space team to survive 10 combat missions through the tactical and operational integration of escort, strike, C2ISR, and nonkinetic capabilities in order to neutralize an enemy's combat capability. Individual aircrew training certainly remains important, and Red Flag still provides it. But recent initiatives such as the IADS rollback campaign directed by the chief of staff suggest that leaders and participants are willing to sacrifice some level of tactical training in order to teach the more important lesson of realistic mission execution. Red Flag now provides Air Force, joint, and allied participants the opportunity to train as they *will fight*—as an integrated joint and combined team.

However, the transformation of Red Flag proceeds piecemeal, without senior-level oversight or debate at the action-officer level over how best to transform realistic training in the Air Force. More importantly, if the exercise is to be beneficial to a full spectrum of participants, we must overcome some significant obstacles that prevent a true transformation of realistic training at Red Flag. The following recommendations address such a transformation.

Large-Scale Range Upgrades

More than any other factor, the state of the NTTR will determine the quality of realistic training at Red Flag. The dramatic shift in Blue Force capabilities and expanded training focus have not inspired an equivalent effort to update range capabilities or assessment tools. In order to address this significant shortfall, the Air Force must undertake a range-improvement initiative, similar to Coronet Real, to increase the fidelity of the NTTR for training and exercises. It must create a realistic IADS that can simulate the latest-generation SAM systems and present targetable links and nodes that connect these systems to a realistic C2 facility. The range should also incorporate a robust mix of assessable low-altitude SAM and AAA simulators. Sufficient manning must exist to support around-the-clock range operations—with equal priority given to operational-training requirements as regards test activities. Red Flag training scenarios must change to reflect the most dangerous threat anticipated, such as a modern adversary employing an advanced and overlapping IADS, rather than the easiest threat to replicate or even the most likely expected threat. Finally, range upgrades should also include replicating modern target sets such as underground and hardened facilities, urban target complexes, and mobile targets such as convoys and Scud launchers. Such plans have been discussed but have faltered for lack of adequate funding.

Effects-Based Assessment Tools and Procedures

With the addition of an operational-level component to Red Flag, participants must better understand the operational effects of

their integrated missions. We need to develop new assessment tools that provide real-time, recordable feeds that show the effectiveness of electronic-warfare and other effects-based operations on the NTTR—just as the Nellis Air Combat Training System captures and reconstructs the air-to-air war over the range today. In October 2002, the Red Flag staff began demonstrating the impact of electronic warfare, SEAD, and DEAD missions in the mass debriefing by showing slides with time slices depicting the expanding and contracting SAM rings on a range map. Although this is a step in the right direction, these slides are only an arbitrary representation of Blue Force's effect on the IADS rather than a true analysis of the impact of coordinated counter-IADS operations against a living, thinking adversary.

New procedures overseen by White Force assessors can also aid in filling gaps in realistic threat replication. For example, it may not be possible to simulate and assess the effect of unguided AAA on the range. However, the assessors could use Red's ground order of battle to determine high-threat areas where AAA would engage aircraft and then use statistical methods (e.g., rolling the dice) to determine if low-flying aircraft transitioning these areas were damaged or destroyed.

New Flag Exercises

As previously discussed, not all Red Flags are created equal. In particular, the US-only exercises are unique in their force makeup and training focus; thus, they cannot compare with their standard counterparts. In order to ensure the proper mix of units for the two annual US-only exercises, the Air Force should redesignate them as Green Flags, which would also help facilitate unit scheduling (by concentrating low-density/high-demand assets into two exercise periods each year) and help the White Force staff prioritize numerous unique unit-training and range requirements. All Red Flags will still retain some degree of electronic-warfare play, as do today's "greened up" exercises. But the US-only Red Flags more closely resemble the old Green Flag exercises in their force makeup (with additional C2ISR and electronic-combat participants) and operational focus (with the return of numbered-air-force play in the Nellis CAOC). More importantly, the new Green Flag would give Air Force and joint participants a unique opportunity to conduct effects-based operations in a live-fly environment using integrated kinetic and nonkinetic capabilities. In addition to bringing back Green Flags, the Air Force should consider designating Joint Red Flag a new type of "flag" exercise. Using different names for distinctive types of training would help everyone understand the unique focus of these varied exercises.

Modular Training Blocks

Not all specialized training events will necessitate creating new Flag designators. We can still incorporate some unique training into a standard Red Flag without significantly changing the focus of the entire exercise. In order to prioritize and deconflict the increasingly complex range of training in Red Flag, its staff should use modular training blocks similar to the specialized scenarios developed for the original exercise. Currently, ACC is considering extending the length of Red Flag to three-week periods to accommodate the expanded focus. Doing so will not ensure the optimization of unit training without going further to adopt a modular training syllabus to allow the Red Flag staff to build a customized exercise schedule that balances unit-training objectives and optimizes the use of scarce range time and threat support. Mutually beneficial modules, such as strike and reconnaissance, could be employed simultaneously and might not require additional range time for mission execution. Other modules with conflicting goals (e.g., DEAD vs. SEAD vs. ground-threat training) will require coordination and close monitoring. Some training could be staggered (e.g., adding time-sensitive-targeting training to the end of a Red Flag mission) or might even occur over several days (e.g., a dedicated IADS rollback campaign) but may not require participation by all units.

Modular training at Red Flag would also allow White Force to prioritize daily training

events and would clearly identify each mission's primary training audience and objectives—something not currently done. Prioritizing would allow White Force to ensure that training unique to Red Flag takes priority over that available elsewhere. For example, Red Flag is one of the few exercises in which tactical aircrews can practice large-force employment in a high-threat environment. Most CAOC training, however, can also occur in virtual and constructive exercises such as Blue Flag or a number of other operational-level offerings. Creating modules will allow Red Flag planners to integrate the increasing number of specialized events without detracting from Blue Four training.

A modular approach can even accommodate unique training requirements for joint and coalition participants. Joint training at Red Flag will become increasingly important as Secretary of Defense Donald Rumsfeld's Joint National Training Center (JNTC) initiative—part of his transformation planning guidance—takes shape. The JNTC seeks to do for the joint force what Readiness through Realism did for the Air Force in the post-Vietnam era. It aims to integrate training ranges, create more joint exercises, and leverage technology to integrate live-fly, constructive, and virtual training.[19] Modularizing training events for Red Flag would offer an ideal way to schedule, track, and manage the multitude of Air Force, joint, and coalition training requirements currently taking place in the exercise.

Tiger Team for Guiding Red Flag Transformation

None of these recommendations will result in the transformation of realistic training without the support of senior Air Force and DOD leaders. Many of the recent changes to the exercise have come from the individual initiative of the Red Flag and Nellis CAOC staffs. However, senior Air Force leaders who either opposed or simply had no knowledge of these initiatives often undermined this approach. As a result, the piecemeal nature of Red Flag's transformation has decreased the exercise's realism and diluted its training focus. For example, decisions to include the Nellis CAOC and C2ISR, space, and information-warfare capabilities in Red Flags did not come with additional staff authorizations or increased funding to pursue much-needed range improvements that would provide these new participants a realistic training environment. The other simple truth is that the Red Flag staff has neither the training nor the resources to conduct a comprehensive review of the exercise's training transformation.

In order to guarantee correct management of the Red Flag transformation, the Air Staff and ACC should send a tiger team to Nellis to review the exercise and recommend ways of improving realistic training. The team should understand Secretary Rumsfeld's vision for training transformation and should have the support of both the ACC commander and the Air Force chief of staff. It must help the Red Flag staff identify new training objectives, document resource requirements, and guide the transformation into a realistic and truly integrated joint air-combat exercise. Only by formalizing requirements and having them validated by senior Air Force and DOD leaders can we institutionalize future initiatives and obtain resources to sustain an improved exercise. More importantly, planners must be willing to abandon initiatives if leadership decides not to invest the resources to make them work.

Conclusion

As with the original exercise, today's Red Flag continues to give inexperienced Airmen their first 10 combat missions in a challenging and realistic training environment. The exercises go even further by affording senior aircrews—package and mission commanders—a chance to employ a large-force execution mission synergistically against a diverse mix of threats and targets. Red Flag has even succeeded in incorporating a variety of joint and coalition participants, just as envisioned by its originators. From the start, Red Flag was designed to be modular, scalable, and joint.

But it is also clear that the current changes in Red Flag, if not properly managed, will detract from its realism and training value. Without additional resources and better prioritization of training objectives, Red Flag will provide *either* limited training to all participants *or* outstanding training to a limited number of participants. To take realistic training to the next level, the Air Force must invest time, money, and thought into fixing the significant challenges that currently hamper realistic training at Red Flag.

Through Red Flag and other training initiatives, the Air Force has an opportunity to foster a new era of realistic training that focuses on integrating joint war-fighting capabilities, conducting networkcentric warfare, and properly incorporating the new generation of kinetic and nonkinetic capabilities that the Air Force presents the joint force commander. But taking Red Flag to this new level of training will not come cheaply, as did the original exercise, which simply combined preexisting aggressor capabilities and training ranges. The transformation of Red Flag will not occur without the active involvement of the operational community and the unwavering support of senior Air Force and DOD leaders. If it is to succeed, such transformation needs planning and guidance. The measure of success will come only when the next generation of aircrews returns safely from their first combat missions praising Red Flag for preparing them for air combat. □

Notes

1. Michael Skinner, *Red Flag: Air Combat for the '80's* (Novato, CA: Presidio Press, 1984), 23–25; and Walter J. Boyne, "Red Flag," *Air Force Magazine*, November 2000, 47.
2. Concept briefing, subject: Red Flag Employment, 15 July 1975, US Air Force Historical Research Agency (hereafter AFHRA), Maxwell AFB, AL.
3. Benjamin S. Lambeth, *The Transformation of American Air Power* (Ithaca, NY: Cornell University Press, 2000), 65.
4. *Project Red Baron II: Air to Air Encounters in Southeast Asia*, vol. 1 (Nellis AFB, NV: USAF Tactical Fighter Weapons Center, January 1973), 21.
5. Message, 101600ZJUL75, vice-commander, Tactical Air Command, to Tactical Air Command units, 10 July 1975.
6. History, Tactical Air Command, 1975, vol. 1, 107, AFHRA, K417.01—75/12/31.
7. Concept briefing.
8. Message, 151310ZDEC76, commander, Tactical Air Command, to chief of staff of the Air Force, 15 December 1976.
9. C. R. Anderegg, *Sierra Hotel: Flying Air Force Fighters in the Decade after Vietnam* (Washington, DC: Air Force History and Museums Program, 2001), 100.
10. Gen Wilbur L. Creech, interview by Hugh Ahmann, June 1992, transcript, 192, AFHRA, K239.0512-2050.
11. Ibid., 212.
12. Message, 061200ZJUL00, chief of staff of the Air Force to commander, Air Combat Command, 6 July 2000.
13. Headquarters Air Combat Command, *Tenets of Red Flag*, https://do.acc.af.mil/doj/flags/tenets of rf.doc.
14. Briefing, Joint Forces Command, subject: Should Red Flag Be a Joint Exercise? 6 June 2001.
15. Message, 271700ZDEC75, commander, 4440th Tactical Training Group (Red Flag), to deputy director of operations, Tactical Air Command, 27 December 1975.
16. Briefing, Tactical Air Command, subject: Red Flag—Its Purpose, n.d.
17. House Subcommittee on Military Readiness, *Statement by Maj Gen L. D. Johnston, Commander, Air Warfare Center*, 107th Cong., 2nd sess., 8 March 2002, http://armedservices.house.gov/openingstatementsandpressreleases/107thcongress/02-03-08johnston.html.
18. Department of Defense, *Transformation Planning Guidance*, April 2003, 20–21, http://www.defenselink.mil/brac/docs/transformationplanningapr03.pdf.
19. Deputy Secretary of Defense, *Department of Defense Training Transformation Implementation Plan*, 10 June 2003, 10, http://www.oft.osd.mil/library/library_files/document_214_Training%20Transformation%20Implementation%20Plan.pdf.

Stabilizing Critical Continuity of the Air and Space Expeditionary Force

DOUGLAS E. LEE
CAPT JOSEPH T. MORGAN, USAF

ALTHOUGH THE TOUR length of the air and space expeditionary force (AEF) works well for most personnel who support a deployment, in some specific areas it proves more detrimental than beneficial. For that reason, we should consider alternatives in order to ensure seamless transitions. The Air Force Scientific Advisory Board defines the AEF as an adaptable and rapidly employable set of air and space assets that provide the president, secretary of defense, and combatant commanders with options for missions ranging from humanitarian airlift to combat operations.[1] As originally conceived, the AEF concept included 10 prepackaged combat units (using Airmen assigned to a regular unit) that rotated every three months over a 15-month period.[2] Beginning with AEF Cycle Five in September 2004, baseline deployment extended to 120 days, changing the rotation cycle to 20 months.[3] However, some Airmen serve in critical locations (operations centers and unified or subunified commands) and key positions (directorate and division chiefs) beyond the normal 120-day cycle, with tour lengths up to a year. Recently, several 120-day AEF positions at Multinational Force Iraq (MNF-I) were extended to a year.

As AEF units rotate, key functions—such as US Central Command's (USCENTCOM) combined air and space operations center (CAOC) located on Al Udeid Air Base, Qatar—lose expertise vital to long-term US goals. Assignment lengths at this CAOC vary—normally one year for senior leadership and 120 days for staff. The center supports the combined force commander's objectives for three disparate geographical areas—Iraq, Afghanistan, and the Horn of Africa. Although personnel receive training prior to assuming their duties at the CAOC, several issues extend their "spin-up" time:

- Understanding and establishing relationships with other organizations (e.g., USCENTCOM, MNF-I, Multinational Corps-Iraq, components, and coalition partners). This process becomes more complicated when an AOC supports more than one operation.
- Learning issues unique to an area of responsibility (AOR) not normally supported by an AEF unit. For example, Ninth Air Force understands issues associated with Southwest Asia, but Twelfth Air Force's AOR is normally US Southern Command, the two areas having little in common.
- Understanding the personality-driven nature of filtering information during a tour. Based on individual expertise, incumbents will categorize what is important during their tours and pass that information on to their successors, potentially overlooking other areas considered low priority. On longer tours, replacement personnel have an opportunity to learn all aspects of their jobs; for short tours, however, the changeover brief is more critical.

Extending the AEF cycle to four months has the obvious benefit of one less changeover during the year, effectively adding 90 more days of benefits associated with deployed, fully trained personnel. But one must still contend with the training time associated with the three cycles that change during the rest of the year. Although extending deployments to a year will mitigate changeovers, other challenges can surface. In Operation Iraqi Freedom, for example, long-term units bring institutional processes with them rather than use those in place in the AOR. Something as minor as chang-

ing a database format can have lasting effects when established procedures in the AOR are tailored to the original database. Also, productivity may decline during longer tours as individuals "wear out" from the high operations tempo and perhaps negatively affect morale and welfare, both for those deployed and those "left behind."

Several possible courses of action come to mind. First, whenever feasible, we should split each AEF, rotating half the personnel midway through its cycle. For example, all AEF personnel in the CAOC now rotate at the same time. This complete changeover reduces overall effectiveness during the weeks it takes new staff to come up to speed. If the staff split and rotated every two months, half of the personnel would be fully trained at any given time. This concept would ensure continuity while newly arriving personnel learn their responsibilities. Furthermore, this option would reduce the number of personnel that an organization in the "AEF bucket" must deploy, allowing that unit to better meet its "normal" workload. However, potential drawbacks with a longer deployment—six months overall rather than the current four months—include decreased unit cohesion and strain on home units.

Second, we should perform a personnel review to identify potential billets we can fill at the home-station AOC in a "virtual" mode. Shifting those responsibilities reduces both the AEF manning requirements and the associated spin-up required during each rotation cycle.

Third, we should establish a virtual environment where individuals slated to rotate could gain hands-on experience working with current operational data, processes, and tools. Familiarization courses play a critical role in training personnel but do not fill the void between theoretical scenarios and actual operations. Refresher or capstone courses, based on applications developed by using real-world data, would allow individuals awaiting deployment to learn in a low-threat environment.

Fourth, as with Air Force positions at MNF-I, we could extend tours for all personnel who support critical mission requirements to one year, using a quarterly or biannual rotation cycle. Doing so would reduce acclimation time by at least 75 percent. Assuming it takes four to six weeks to establish a learning curve, we can convert three to four months from learning to production time during a yearlong tour. If we initiated remote tours, we could also establish a feeder system in which Airmen would spend at least a year in the numbered air force that supports the AOR, thus reducing the learning curve.

Fifth, we should develop a personnel plan that identifies Airmen for a primary combatant command and either a secondary combatant command or functional unified command. Given the diverse nature of each theater, a deliberate development plan that exposes Airmen to an AOR's unique conditions for multiple tours would produce subject-matter experts in all fields—from support to operations. Following the path of a secondary combatant command would help ease manpower requirements associated with a long-term presence in a given theater. Cross-pollination with the functional commands ensures maintenance of a contemporary war-fighting focus in that command.

Last, we should create a phased approach for emerging areas that will require a long-term US presence. Expanding missions from an expeditionary to a permanent commitment significantly disrupts the AEF process. By developing a phased plan, we would provide a road map that allows the performance of personnel actions in a timely manner while preserving the flexibility inherent in the AEF for truly expeditionary contingencies:

- Phase Zero (expeditionary force presence): AEF deployment-cycle assets during combat and stabilization operations.
- Phase One (up to three years): Transition to one-year tours as the commitment expands, thus preventing the degradation of continuity and proficiency.
- Phase Two (three to five years): Initiation of command-sponsored permanent change of station (PCS) and unaccompanied tours as the infrastructure expands.
- Phase Three (five years plus): Conversion of all billets to PCS status.

Notes

1. United States Air Force Scientific Advisory Board, *Report on United States Air Expeditionary Forces*, vol. 1, *Summary*, SAB-TR-07-01 (Washington, DC: USAF Scientific Advisory Board, November 1997), vii.

2. John T. Correll, "The EAF in Peace and War," *Air Force Magazine* 85, no. 7 (July 2002), http://www.afa.org/magazine/July2002/0702eaf.asp.

3. Gen John P. Jumper, "Chief's Sight Picture: Adapting the AEF—Longer Deployment, More Forces," 6 July 2004, http://www.af.mil/media/viewpoints/adapting_aef.html.

The View from the Tower of Babel

Air Force Foreign Language Posture for Global Engagement

COL JOHN L. CONWAY III, USAF, RETIRED

Editorial Abstract: The United States Air Force projects power globally, but it cannot communicate in the native language of the countries where it flies and fights. The absence of a central language program, an outdated database, and uncertain requirements force it to recall reservists, hire contractors, and create "just-in-time" training to meet each need. The Air Force must have a language champion and several new initiatives to become self-sufficient.

Editor's Note: The call for foreign-language proficiency and cultural awareness in the Air Force continues to grow. As we go to press, the Air Force chief of staff has issued a Chief's Sight Picture titled "Officer Force Development: International Affairs Specialists," which notes that foreign area officers will be replaced by international affairs specialists, who will follow one of two tracks: regional affairs strategists or political-military affairs strategists.

Therefore is the name of it called Ba-bel; because the LORD did there confound the language of all the earth.

—Genesis 11:9

ONCE UPON A TIME, everybody spoke the same language. Then the boys in Babel, just south of a town now called Baghdad, concocted a scheme to build a huge tower to the heavens. After some early successes, their project failed. So much for one language throughout the world. Linguistic scholars put the number of languages spoken throughout the world at approximately 4,000, not including many more dialects and regional accents. With the continued emergence of regional and ethnic identification—one has only to think of the remnants of Yugoslavia—nations with only one official language a decade ago now form separate states with a polyglot of languages. This is the world in which the Air Force must operate and succeed.

The United States Air Force is an air and space expeditionary force, capable of global power projection whenever and wherever it is needed. Yet, with no central language program or overarching language plan, it remains essentially unable to communicate in the native tongues of many countries where it must operate. In order to effect a radical departure from this course, the Air Force must review its language needs, catalogue its assets, and plan for meeting its shortfalls in the quickest and most economical manner. It must also recognize language as a distinctive capability within its air and space expeditionary force. Institutionalizing the processes by which the Air Force recruits, trains, sustains, and manages its language professionals is key to shaping our service's future effectiveness.

Calls for greater emphasis on language skills in the Air Force and subsequent recommendations to achieve them are nearly as old as the service itself and usually come on the heels of language shortfalls experienced during a contingency. Many forums have proposed solutions to language gaps, but no substantive change from "business as usual" has occurred. Operations Enduring Freedom and Iraqi Freedom stand as constant reminders that sometimes America does not choose its place to fight and that the global war on terrorism requires us to think and act globally. To succeed, we must have the ability to communicate with our allies and understand our enemies—we must master these global tasks for every part of the world.

New impetus for change has emerged from the top down. In August 2002, a "Chief's Sight Picture" from the Air Force chief of staff emphasized the global nature of America's security: "Our expeditionary force requires airmen with international insight, foreign language capability, and cultural understanding."[1] In 2004 the Department of Defense's (DOD) Language Transformation Initiative resulted in *The Defense Language Transformation Roadmap*, a broad guideline for transformational change throughout the DOD.[2] Both of these top-down imperatives have focused decision-maker-level attention on a decades-old problem.

The Language Legacy of Pearl Harbor

America's shortage of linguists has remained an issue since World War II, and many pundits compare the failure to translate key documents prior to 11 September 2001 to a similar situation on the eve of 7 December 1941.[3] Debate over the accuracy or even the fairness of such a comparison lies far beyond the scope of this article. Suffice it to say that language skills, or the lack thereof, played a part in both tragedies.

In the ensuing decades, short-fuse contingencies (Haiti, Somalia, and Bosnia) requiring the use of "exotic" or "low flow" languages (Haitian Creole, Somali, and Serbo-Croatian) confounded the personnel process.[4] The Air Force language community deemed many of these exotics too difficult to maintain in sufficient numbers as career fields and opted for more traditional language fare: Russian, German, and French, for example. As a result, few of the exotics were either identified or available to meet contingencies. Because deploying units had little access to translators and/or culturally savvy personnel with language skills, the Air Force had to scramble to meet its language needs.[5]

Notable language-support shortfalls have occurred in the Middle East as well. An after-action report from Operation Desert Storm specifically stated that the "USAF had an inadequate number of Arabic speakers throughout the . . . [area of operations]."[6] The Downing Commission's investigation of the Khobar Towers attack of 1996 cited the lack of Arabic translators as a contributing factor, clearly highlighting translator limitations: "At Khobar Towers, the 4404th Wing (Provisional) had only one interpreter, on duty or on-call 24-hours a day. When the Security Police needed to talk to their Saudi civilian police counterparts, they first had to contact the interpreter, brief him on the situation, and request that he contact the Saudi police."[7] During regular force-protection meetings, Saudi officials provided letters to US personnel that discussed ongoing security issues. However, the commission found that these letters were never translated, observing that "this made it difficult, and in some instances impossible, to ascertain what happened and what concerns were raised at these meetings."[8]

Upon Further Review. . . .

It would be unfair and inaccurate to say that we have ignored these and other shortfalls in language support. During the past two decades, numerous articles, reports, and audits have appeared that reported these same problems and recommended a wide range of solutions.[9] Of particular note is the Officer Foreign Language Skills Process Action Team of December 1994. Chartered by Air Education and Training Command (AETC) and the Office of the Deputy Chief of Staff for Personnel, Headquarters USAF, its goal was to "examine enhanced language skills as improvements to USAF global operations."[10] The team reviewed field reports, IG inspections, and Government Accountability Office (GAO) evaluations, finding them routinely critical of the shortage of language-trained Air Force personnel at major air commands and during operations. The GAO bluntly stated that the "USAF lacks a command language program"; furthermore, according to the Air Force inspector general, "USAF personnel with regional knowledge and or foreign language proficiency [are] not being identified or effectively utilized."[11] Among other things, the team recommended that the Air Force (1) establish a single office for language advocacy in the Office of the Deputy Under Secretary of the Air Force for International Affairs, (2) increase foreign language proficiency pay (FLPP), (3) capture "self reported" language data and enter it into the personnel data system, (4) establish an Air Force goal that at least 10 percent of officers develop and maintain minimum language skills, (5) include language-proficiency data on officer career briefs for promotion boards, and (6) concentrate on precommissioning programs to find (or train) officers with language skills.[12] To date, however, none of these recommendations has come to fruition.

Why were these problems—thoroughly reviewed, well articulated, and the object of numerous recommendations—not yet resolved? Col Gunther A. Mueller, chairman of the Department of Foreign Languages at the United States Air Force Academy, observes, "With English as the primary language of diplomacy, economics, and military operations, it was easy to get by. The USAF reflected national trends of declined interest in foreign languages."[13] A US Department of Education report of 2000 put it another way: "America is both the most global and the least global nation in the world. We have a problem that no one else has: we can pretend the rest of the world doesn't exist."[14] In other words, wherever *we* go, *they* should all learn English. That might work in Europe, where English is a second language, but in the desert or the urban environs of Baghdad or Tikrit, English does not come easily to those who populate the disputed barricades there.

Another reason lies in the intelligence-centric perception of language in the Air Force. Because so many language-training dollars go to support intelligence requirements, language appears solely an intelligence issue and disappears from the radar of

other career fields. Current numbers seem to bear this out. The DOD's primary source of foreign-language education, the Defense Language Institute Foreign Language Center (DLIFLC) at the Presidio of Monterey, California, trained 870 Air Force personnel (830 enlisted members and 40 officers) in academic year 2003–4, over 90 percent of whom were slated for intelligence billets.[15]

One final explanation: the Air Force has successfully met each language challenge in the past three decades—but just barely. Implementation of "just-in-time" language training, the hiring of scores of contract linguists, and—most recently—the two-year mobilization of reserve linguists have all helped meet active-force shortfalls with varying degrees of success.

Until now the Air Force has muddled through each of its successive language crises, a practice that begs for a more accurate corollary to the old axiom "If it ain't broke, don't fix it"—specifically, "If it ain't *hard broke*, why worry about a permanent fix?" If the Air Force can sustain an acceptable level of language support to its overseas missions without making hard choices for more money and more active duty language billets, then why not continue as it has? If it can mobilize reservists and guardsmen to bring their skills on board to meet contingency requirements and also pay for contract support for the rest, why would a consolidated language program be necessary?

The answer is that we cannot afford the luxury of a fragmented, late-to-the-dance language program in today's environment of coalition warfare and expeditionary air forces. Not only do we have to understand our enemies and the way they think and act, but also we must understand, cooperate with, and coordinate with our allies. And we must do this in real time. To assume that each coalition partner will defer to English as the lingua franca for war fighting is to doom an international partnership before it begins. To be effective in the international arena, we must employ our collective cultural heritage—as a nation of immigrants composed of native and multicultural speakers—and our brightest people to discourse, think, and act globally.

Even Managing Language Requires a Special Language

The Air Force has "language-inherent" positions filled by personnel whose career specialty is directly tied to a specific language skill (e.g., cryptolinguist). "Language-designated positions" require a specific language skill (e.g., a Spanish-speaking pilot). A key difference between the two is that most enlisted positions are language inherent (language as a career) while all officer positions are language designated (language as an additional/special duty).[16] Most of the Air Force's 3,700 language-inherent billets reside in the intelligence career field, while the 900 language-designated positions are spread across the spectrum of its officers' Air Force specialty codes (AFSC).[17] No officers have "linguist" as a primary AFSC.

The Defense Language Proficiency Test (DLPT) measures three categories—reading, listening, and speaking—and expresses results from "0" (lowest) to "5" (highest), plus intervening gradations indicated by plus signs (a system devised by the International Language Roundtable). The DLIFLC graduates most of its students—over 78 percent—with a tested proficiency level of "2/2/1."[18] Put another way, an individual with 1/1/1 scores in Arabic possesses "survival skills," while one with 4/4/4 could debate the US Middle East policy on al-Jazeera television. Speaking, which is rarely emphasized, often proves the most difficult skill to test because of the need for interaction with a trained speaker. Interestingly, although the DLPT scale runs from one to five, military members receive ratings only through three.

Crunching the Numbers

DOD testimony before the House Permanent Select Committee on Intelligence indicated that the military has about 25,000

military and civilian personnel with "some capability" in about 70 languages. However, present worldwide operations bring US forces into contact with about 140 languages.[19] The Air Force has about 6,000 officers (around 6 percent of the total force) with tested capability in 54 languages. This figure includes all officers who have taken the DLPT since 2000 but represents only tested language skills, not the sum of the Air Force's potential capability. Enlisted numbers are higher—around 9,000 who have tested since 2000.[20] The problem stems from the state of the Air Force's linguist database itself, which does not comprehensively account for all Air Force language skills; moreover, the service does not require its members to provide data to populate it.[21] This holds true of all of the total force's language databases, each of which is maintained separately.

In an attempt to gain a clearer picture of its capability, the Air Force conducted a servicewide foreign-language self-assessment in 1996: over 41,000 Air Force personnel reported foreign-language skills.[22] However, because data for the survey did not require validation via the DLPT, someone could claim fluency in a language, say French, without proving it. In current practice, all Air Force members are "encouraged" to "self-assess" via the Virtual Military Personnel Flight and to take the DLPT to validate their language skills on their own.[23]

However, many have chosen not to do so because it is not mandatory.[24] Anecdotal evidence suggests that some personnel decline to identify their capabilities to avoid assignments to contingency areas. Some native speakers decline to take the DLPT to avoid being returned to homelands from which they had originally fled. Others report that their commanders did not allow them to take the DLPT because of reluctance to have their people identified with language skills, leaving them vulnerable to deployment away from their primary duties.[25] Still others indicated that their base education offices had neither the staff nor equipment to administer the DLPT for certain languages and could not administer parts of others, particularly the speaking examination.

Air Force Language Programs: More Than Just One

Besides the intelligence community, the Air Force has several other consumers of language and language stakeholders, each operating with various degrees of autonomy and achieving different levels of success.[26] Two of the largest are the foreign area officer (FAO) program, under the secretary of the Air Force's Office of International Affairs (SAF/IA), and the Air Force Medical Service's international health specialist (IHS) program, under the Air Force's Office of the Surgeon General.

The FAO office (SAF/IA), which recruits officers from all operational career fields, is not, as commonly perceived, an intelligence program. It is, however, one of only a few programs in the Air Force in which officers need language skills for entry and can actually use them daily. The hallmark of the FAO program is the additional language training available through its Language and Area Studies Immersion program—an intensive in-country language and cultural immersion lasting one month.[27] Since fiscal year (FY) 1997, over 1,100 Air Force personnel have participated in the program, offered in 40 different languages at 39 separate locations. The fact that it has increased DLPT test scores for 99 percent of the people who participated provides a telling measure of its effectiveness.[28]

The Air Force Medical Service's IHS program combines medical and linguistic skills, as well as cultural expertise in a second language. As of April 2004, its 233 members represent 34 languages and hold an IHS special-experience identifier in addition to their medical AFSC.[29] The program is organized into teams aligned with major theaters of operation and designed to optimize military-military and military-civilian partnerships within the medical community. Like members of the FAO office, the IHS staff tracks and qualifies its own linguist/medical community.

Language Training—Just in Time?

The DLIFLC's courses of instruction, generally lasting a year, vary by language; Arabic, one of the most difficult, takes 18 months. The typical DLIFLC graduate needs much more training and experience to become effective in the field.[30] Cryptolinguists need another 73 training days at the Intelligence School at Goodfellow AFB, Texas, just to master the technical terms of the business.[31] Similarly, Air Force interrogators must attend the Army's interrogation course at Fort Huachuca, Arizona, before they report for their first duty. With its shortest in-residence language course taking seven months, the DLIFLC obviously provides no quick language fixes. However, in the scramble to find linguists after 9/11, the DLIFLC provided just-in-time language training to deploying troops and created "turbo" courses to retrain linguists from other Middle Eastern languages in critically needed skills.[32] When this effort did not satisfy the growing language need, Guard and Reserve personnel on two-year mobilizations filled another part of the language surge, aided by other reservists on voluntary short tours of active duty.

Contract linguists, many of them native speakers, were quickly hired as well, but problems with them persist. Today, we have filled only 4,000 of the approximately 6,000 required contract-linguist positions.[33] Moreover, contractors have come under closer scrutiny after highly publicized problems at Guantanamo Bay and Abu Ghraib prison. Additionally, some were rushed into service without proper evaluation for security clearances. When asked about this security gap, spokesmen for the contracting firm involved indicated that the government was responsible for obtaining clearances for their employees.[34] Huge costs for contract linguists have accrued during Iraqi Freedom and Enduring Freedom: an estimated $2 billion in 2004.[35] This total does not include a language bill for another $97 million for contractor operations in the Balkans through FY 2006.[36]

The global war on terror drove an unanticipated language need that demanded immediate support. The military's supply tail simply could not catch up—and has yet to catch up. Until it does, we will have to pay enormous contract-linguist bills and continue mobilizations of reservists. Compounding the problem of military retention is the lure of pay in the civilian sector: median pay for a contract linguist with a Secret clearance comes to $40,000, compared to the base pay of $22,532.40 for an E-4 linguist with over four years of service.[37] This disparity has created a vicious cycle whereby the lack of military linguists drives up the price for contractors, and the high price for contract linguists lures military personnel into civilian ranks.

The nation's colleges represent a potential source of individuals with the requisite language qualifications, although, according to the DLIFLC, a 2/2 graduate of Monterey has capabilities equal to or better than those of most four-year language graduates.[38] A recent survey by the Modern Language Association (MLA) indicates that over one million college students enrolled in foreign language studies in academic year 2002–3, up 3.8 percent from 1998. Another 350,000 studied at two-year colleges—a huge jump of over 36 percent in the previous four years. However, over 75 percent (graduate and undergraduate) concentrated on Spanish, French, and German studies. Total numbers reveal an interesting statistic: although 8,725 undergraduates enrolled in the study of Arabic, that figure amounted to less than one-third of the total undergraduates enrolled in American Sign Language (21,734)—and even less than those enrolled in Latin (28,740). Two-year colleges reflect a similar trend.[39]

Equal Pay for Equal Work

The disparity in FLPP between active and reserve components serves as an irritant to the retention of linguists in the Guard/Reserve. Reservists often see partial FLPP—calculated as one-thirtieth the rate of FLPP authorized per month for active duty compensation for each period of training—as a disincentive. In dollar terms, an active duty member in a language-

designated position or in a career language AFSC receives $100 per month in FLPP for maintaining a tested level of 2/2 in one language, while a reservist or guardsman maintaining the same proficiency receives only $13.33 per month—not enough to buy a tank of gas at today's prices to drive to weekend training 100 miles from home.[40] In May 2002, the *Ninth Quadrennial Review of Military Compensation (QRMC)* acknowledged this pay disparity and recommended authorizing the service secretaries to pay "RC (Reserve Component) members not serving on active duty the same amount of monthly pay as AC (Active Component) members for maintaining proficiency in designated critical languages."[41]

A DOD initiative of 2004 to pay all linguists (including Guard and Reserve) an FLPP bonus has borne fruit in the Ronald W. Reagan National Defense Authorization Act for Fiscal Year 2005. Under its provisions, the individual service secretaries may authorize up to $12,000 a year as a foreign-language-proficiency bonus to active duty members and up to $6,000 to members of the Guard and Reserve.[42] However, Congress appropriated no funds to effect such a change, and it remains to be seen if Air Force money will be available to make this proposal a reality.

Man versus Machine

We continue to see much commentary on machine translations and handheld translators. Headlines such as "IM, Machine Translation on the Front Lines of Iraq" and articles on devices such as "The Phraselator" conjure up images from *Star Trek*.[43] It appears from much press reporting that a major breakthrough has occurred in machine-translation technology. However, according to the DOD's testimony to Congress, current state-of-the-art technologies "cannot replace skilled human translators, interpreters, and interrogators in providing actionable information." Automated translations equate to a "1+" DLPT score.[44] We use today's machine-translation systems for document triage and for filtering written materials for further study by human translators. Current cross-language communicators appear useful only in carefully scripted scenarios.[45] Machines—an awkward substitute in contemporary field situations—will not replace humans in the foreseeable future.

Solving the Air Force's Language "Problem"

There is a new urgency to solve the language dilemma in the Air Force and, indeed, in all of the DOD. The latter's *Defense Language Transformation Roadmap* proposes numerous DOD programs and new initiatives that will affect the Air Force and its sister services.[46] However, such a trickle-down approach will take time; meanwhile, the Air Force can launch many initiatives on its own. Although a number of solutions have been suggested before, none of them managed to change the Air Force's institutional culture. Our service cannot project power globally and communicate as if it were at home. We cannot acquire language skills at the last minute on the plane to who-knows-where. A number of suggestions that address this dilemma come to mind.

The Secretary of the Air Force: Chairman of the Board

The secretary of the Air Force must anoint a language champion within his or her senior staff as the language program manager throughout the service. That person would become the "chairman of the board for language," allowing various disciplines to maintain some control over their own unique needs. This champion would institutionalize the Air Force's language program, provide downward-directed policy and funding to various Air Staff offices with language requirements (intelligence, security forces, IHS programs, special operations, Office of Special Investigations, etc.), represent the Air Force to the DOD-level language program manager, and serve as the senior language authority.

Who Needs What in a Future-Focused Air Force?

It's well past time to conduct a comprehensive assessment of language needs throughout the Air Force. We must do this on several levels to assure completeness; we cannot allow it to become just another survey lest it suffer from lip service. Moreover, we cannot limit the assessment to a reflection of current crises but must include future-focused Air Force and DOD thinking. Requirements must be gleaned by discipline (security forces, medical personnel, cryptolinguists, etc.), by major command (Air Combat Command, Pacific Air Forces, etc.), and by combatant command to assure its completeness. This approach will require some effort to eliminate redundancy caused by the inevitable reporting of overlapping requirements, but it will also illuminate areas of need that might escape a cursory, "square-filling" look.

Guidance should state the desired overall effects, both for the Air Force and for its contribution to joint operations, so that thoughtful and appropriate decisions can be made. A combined air operations center, for example, might require an FAO to advise on the second- or third-order cultural effects of a particular operation; it may also require a linguist to bridge the language gap between coalition partners in strategy sessions or in negotiations for basing, airspace, or a dozen other issues. This same linguist, or another, might also provide translations of native newscasts (think al-Jazeera in real time) to report on popular opinion or the perception of coalition operations.

To ensure visibility, we must codify these requirements in existing operation plans. Chairman of the Joint Chiefs of Staff Manual 3141.01A, *Procedures for the Review of Operation Plans*, includes a checklist item for identifying requirements for linguist support and addressing shortfalls.[47] This should be impetus enough to compel Air Force planners to pay attention to language support, but what about contingencies?

Creation of a language unit type code (UTC) would facilitate language support to contingencies by providing planners a building block to grab instead of reinventing language requirements for each new crisis. The results of the surveys previously discussed can shape its size and content, but it should stand alone as a template for planning. The UTC should be self-contained, with cryptolinguist, translator, interrogator, and foreign-area-specialist AFSCs in sufficient quantities, grades, and ranks to support the combined force air component commander's mission. We can add specific languages as required, but the principle of language support will already be in place. Moreover, a language UTC's statement of designed operational capability should outline its functions in enough detail to allow its attachment to any other required contingency force. This UTC should remain flexible enough to plug into the required language skill set for a specific geographic region and/or roll it into planning for the air and space expeditionary force.

Who Knows What Today?

The Air Force should conduct a *mandatory* rather than voluntary language survey of all its personnel—active, reserve, guard, civilian, and all individuals in its various accession programs. It should also extend a volunteer survey program to Air Force retirees through *The Afterburner* newsletter, tied to the National Security Education Program's Civilian Linguist Reserve Corps initiative.[48]

Current Air Force databases reflect outdated (some pre-2000) language-proficiency information and require manual manipulation to determine the service's actual language capability. Reserve databases reflect even older data, rendering them practically useless as planning tools. The Foreign Language Self Assessment, a vehicle that already exists via the Air Force's Virtual Military Personnel Flight, could be made available to all targeted groups by granting them access to the data-collection system via the Internet.[49] Making this self-assessment mandatory, however, will not prevent individuals from providing less-than-factual data if they so choose (a nod to human nature), but it will increase the database beyond what is currently available

through voluntary reporting. A bigger net will catch more, if not bigger, fish.

We must delete existing, unreliable databases and create a comprehensive one that lists languages, perceived fluency (foreign-language self-assessment), tested fluency (the DLPT), and method of obtaining the proficiency (the DLIFLC, college, or native speaker)—and update it annually. This labor-intensive task could involve literally contacting each individual via telephone to obtain current data, but the Air Force for the first time would have an accurate picture of its language capabilities.

Pay the Force, Not the Contractors

Focusing on recruiting and retaining skilled language personnel can significantly reduce current translation costs. In addition to the foreign-language self-assessment, all accessions to the Air Force should be screened for language aptitude via the Defense Language Aptitude Battery, as well as anyone else desiring to take the test. Although this battery "evaluates potential ability to complete formal language training," it's given only to candidates for foreign-language training, those headed for special-duty requirements, and—interestingly—line colonel-selects within 120 days of their notification of selection for promotion.[50] Let's see who else has the aptitude for language in the Air Force.

In addition, FLPP should be increased and made available to everyone who qualifies for it. The average civilian contract linguist with a Top Secret clearance receives $62,000 per year while FLPP currently amounts to about $3,600 a year.[51] Thus, the cost of one contract linguist would pay FLPP for about 17 linguists. Retaining even half that number on active duty or in a reserve component makes this incentive cost-effective.

The good news of a large FLPP bonus in the FY 2005 National Defense Authorization Act is tempered by the bad news that it included no additional funds to pay for the bonus. The Air Force must either seek DOD help to pay this bill or find the funds itself. Oddly, the Air Force self-imposes a restriction to FLPP by requiring a Secret clearance—something that no other service does.[52] The logic of requiring such a clearance continues the trend of intelligence-centric language management. With roughly 90 percent of all language requirements falling into the unclassified pile—think TV broadcasts, newspapers, and the Internet—it is past time to do away with this artificial barrier. It is also time to allow anyone to take the DLPT without a "Mother, may I?" from their commander—another self-imposed Air Force restriction.[53]

Guard and Reserve personnel also have a limited number of training days available (in most cases, 24 inactive-duty days, plus an annual tour of 12–15 days) to maintain the same language proficiency standards as their active duty counterparts. We should amend Air Force Manual 36-8001, *Reserve Personnel Participation and Training Procedures*, to authorize additional ground-training periods for language training, similar to additional flying-training periods currently used by Guard and Reserve pilots for flying-training proficiency.[54]

Other than monetary incentives, we do not recognize the considerable achievement of obtaining (and maintaining) 3/3/3 language proficiency in the Air Force. Thus, we should amend Air Force Instruction (AFI) 36-2803, *Air Force Awards and Decorations Program*, 15 June 2001, to award an Oak Leaf Cluster to the Air Force Training Ribbon for obtaining a DLPT score of 3/3/3 in a targeted language. This ribbon currently recognizes only completion of initial skills training. Since a 3/3/3 DLPT is fast becoming the benchmark for all language professionals, recognizing it via an Oak Leaf Cluster isn't a stretch. In conjunction with the cluster, we should further amend AFI 36-2803 to award one Weighted Airman Promotion System point to enlisted personnel for obtaining this level of language expertise. This translates into a tangible, promotion-related benefit for increased skills and adds another incentive to excel. Costs are negligible, but their impact could prove significant for enlisted linguists.

Find Them Already Trained

Given the long lead time to train a new linguist at the DLIFLC, few quick fixes exist for the difficult languages we need. However, recruiting individuals with existing language capabilities would considerably shorten the training turnaround time. If the Air Force is indeed serious about solving the language dilemma, it's high time to revisit this issue.

A good place to start is at home. What about targeting language-inherent groups (i.e., native speakers) for recruiting? Although the Air Force has attempted to do so, unsuccessfully, in the past, it is time to try again. Our service should closely study the Army's initiative in the Muslim communities of Detroit to recruit them for the Army Individual Ready Reserve.[55] In the meantime, the Air Force should study other ethnic enclaves throughout the country for future recruiting in target languages. This may provide a "surge" capability, particularly for translation/liaison work that does not require a security clearance. A startup tool, the MLA Language Map uses data from the 2000 census and sorts 30 languages and three groups of less commonly taught languages by zip code.[56]

Although we could profitably recruit college foreign-language majors—particularly in "investment" languages identified by the DOD—one only has to recall that the Air Force does not have a linguist AFSC for officers.[57] Therefore, any college graduate would have to enlist in order to use his or her language skills or be accepted for a commission in another specialty with the hope of using these skills down the road—provided they don't atrophy in the interim. We might more productively recruit students in two-year colleges who have studied DOD investment languages for enlisted billets. Presumably, these students will have mastered the basics of grammar and pronunciation, so that they would spend considerably less time at the DLIFLC than would someone with no background. We should vigorously explore this avenue, with emphasis on identifying those junior-college programs that teach languages on the DOD's target-language list.

SAF/IA should expand its Language and Area Studies Immersion program as a proven method to increase language proficiency in a relatively short period of time. In addition, we should consider stateside immersion courses, using native speakers as instructors in a controlled environment. These immersion alternatives are particularly critical to the development of speaking skills and cultural awareness.[58]

Another immersion opportunity exists via the Inter-American Air Forces Academy at Lackland AFB, Texas. Funded by AETC, the academy conducts over 46 technical, professional, and management courses in Spanish and trains almost 1,000 students a year from the armed forces of 17 Latin American countries. Many of the courses offered are similar to those throughout AETC; the academy's curriculum also includes traditional classroom and leadership instruction. Air Force attendees could acquire credits for technical and professional education—under the auspices of AETC—in addition to increased language proficiency. In addition, friendships and contacts made within the academy would foster better professional relationships within the hemisphere.

Heighten Language Awareness in the Air Force

In order to bring about the vast majority of these initiatives, the Air Force must raise its language-awareness level. Simply talking about it will not be enough to create a climate for change. For example, the Air Force Special Operations School offers a five-day Middle East Orientation Course that contains no language block. This deficiency needs immediate attention.

We must publicize language issues, language-support shortfalls, and language successes, perhaps by creating a *Language Crosstalk* newsletter. Similarly, injecting language problems into Red Flag and Blue Flag scenarios would serve to heighten awareness for aircrews and decision makers; furthermore, adding language problems into escape-and-evasion training events would provide personal emphasis to trainees.

Many heritage observances occur at the base level throughout the year. Adding language-awareness events at the same time would be a natural tie-in, especially if base education centers made attendees aware of DLPT testing and FLPP opportunities. The Air Force's professional military education courses should add language issues to their curricula, particularly in the study of coalition warfare and nation building.

Operational readiness inspections provide an excellent opportunity to test language readiness and to highlight the need for language support at deployed locations. Scenarios would require security forces to coordinate with local non-English-speaking security personnel to determine local threats. Mock hostage situations requiring translators and negotiators would test language and cultural awareness for commanders and security personnel. Pop-up security arrangements for visiting foreign dignitaries and coalition operations using the base command and control facilities would further test the capability of an Air Force unit to operate globally. Finally, in a Draconian sense, failure to complete any of these challenges successfully during an inspection could result in write-ups in the final IG report and drive documented corrective actions.

Cultural Change = Operational Change

A cultural change within the Air Force regarding foreign languages and the use of language-capable personnel can bring about a positive operational change to its global mission. To bring about such a cultural change, we must educate senior leadership on the need for language support in coalition warfare, from both allied and adversary perspectives. We must remove institutional barriers to language reporting. Similarly, compensation for a unique and perishable skill has to meet market demands, lest we lose the best and brightest to the contractor's Siren call. All of this requires that the Air Force think globally and act internationally within its own organization. To do otherwise will leave us speechless and unknowing in the world of tomorrow. Our chief of staff has already articulated his vision for this change: "It's that old joke you hear in Europe all the time. What do you call somebody that speaks three languages? Trilingual. Two languages? Bilingual. One language? American. That still applies today."[59] Now is the time to turn his vision into reality. □

Notes

1. Gen John P. Jumper, "Chief's Sight Picture," Headquarters USAF, 26 August 2002.

2. Briefing, Gail H. McGinn, deputy under secretary of defense for plans, subject: Defense Language Transformation Roadmap, n.d., http://www.DOD.mil/prhome/docs/Trans_Roadmap_Final.ppt.

3. Dennis Wagner, "Linguists Are Needed for the War on Terror," *The Arizona Republic Online Print Edition*, 7 November 2003; and Michael Erard, "Translation Technology in the Age of Terror," *MIT Technology Review*, February 2004, http://msnbc.com/id/4352578. On 3 December 1941, an intercepted, decrypted, and translated message gave what some historians believe was a clear warning of war. However, it did not undergo review until 8 December because of more pressing intercepts—specifically, the 14-part Japanese diplomatic message that was to be delivered to Secretary of State Cordell Hull on 7 December 1941. Moreover, the 14-part message was encrypted in the so-called Purple code—Japan's highest and most important. The 3 December message, in a simpler code (PA-K2), was considered less important at the time. *Hearings before the Joint Committee on the Investigation of the Pearl Harbor Attack*, 79th Cong., 1st sess., 20 July 1946, sec. 230.

4. *Exotic* and *low flow* are two of several sobriquets used to describe foreign languages not commonly used or taught in the United States. One finds two other terms—*wild card* and the more politically correct *less commonly taught languages*—in reviews of the literature.

5. Maj Stephen J. Moree, "USAF Security Forces and Foreign Language Skills in the Global Environment: Are We Prepared?" research paper (Maxwell AFB, AL: Air Command and Staff College, April 1999), 7, 16–17. Major Moree reports that intelligence personnel on loan to security forces generally perform well. However, on-loan translators from local intelligence resources made for unpredictable planning for security-force deployments.

6. Joint Chiefs of Staff, Joint Universal Lessons Learned, quoted in "Executive Summary," *Officer Foreign Language Skill Process Actions Team Report and Recommendations* (Colorado Springs, CO: USAF Academy, December 1995), 5. During the US peacekeeping mission to Mogadishu in 1993, the press gleefully reported that only one US serviceman spoke Somali—a US marine who was, in fact, the Somali warlord's son. Operation Uphold Democracy in Haiti in 1994 revealed a serious lack of Haitian Creole speakers in all of the services. The on-station arrival of those few who were located occurred just as US forces were withdrawing. In another example, the Defense Language Institute ceased teaching Serbo-Croatian just as a crisis broke out in the Balkans.

7. Gen Wayne A. Downing, USA, retired, *Report on the Khobar Towers Bombing* (Washington, DC: Government Printing Office, 1996), 32.

8. Ibid., 49.

9. For a fairly exhaustive list of other reports and recommendations, see Col Gunther A. Mueller and Lt Col Carl Daubach, "Global Skills: Vital Components of Global Engagement," *Airpower Journal* 13, no. 2 (Summer 1998): 64–70.

10. "Executive Summary," *Officer Foreign Language Skills Process Action Team Report and Recommendations*, 1.

11. *Functional Management Inspection of the Air Force Foreign Area Studies Program*, PN 89-623 (Washington, DC: USAF IG Report, 1991), 3–4; and *Review of DOD Training of Linguists Engaged in Intelligence Related Activities* (Washington, DC: GAO Report, July 1994), 11.

12. "Executive Summary," *Officer Foreign Language Skills Process Action Team Report and Recommendations*, 2.

13. Gunther A. Mueller, "Beyond the 'Linguist'—Global Engagement Skills," *Applied Language Learning* 11, no. 1 (2000): 18.

14. *Learning without Limits: An Agenda for the Office of Postsecondary Education* (Washington, DC: US Department of Education, November 2000), 47, http://www.ed.gov/offices/OPE/AgenProj/report/AgendaProjectReport.pdf.

15. Overview briefing, subject: DLIFLC, Fort Huachuca, AZ, 13 January 2004; and Ann Scott Tyson, "Uzbek or Dari? Military Learns New Tongues," *Christian Science Monitor*, 2 January 2004. As of 1 June 2004, 940 Air Force personnel were enrolled at the DLIFLC.

16. Lt Col Thomas Nolta, SAF/IAPA, point paper, subject: Air Force Foreign Language Management Issues, 11 July 2003.

17. Briefing, Lt Col Scott Biever, Headquarters USAF/XOOIF, subject: Air Force Foreign Language Program Office, 30 March 2004.

18. Overview briefing, subject: DLIFLC.

19. House, *Statement of Letitia A. Long, Deputy Under Secretary of Defense for Policy, Requirements and Resources, Office of the Under Secretary of Defense (Intelligence) before the Subcommittee on Intelligence Policy and National Security of the Permanent Select Committee on Intelligence, U.S. House of Representatives Hearing on Intelligence Community Language Capabilities*, 108th Cong., 2d sess., 26 February 2004, 3.

20. Maj Cara Aghajanian, SAF/IA, e-mail, 30 March 2004. The number of people who have reported language skills but may have not tested is much higher: over 41,000—roughly 7.5 percent of the total force of 554,000 men and women.

21. For a frank assessment of the Air Force's methods for assessing and tracking language skills, see James E. Kinser and Marybeth Peterson Ulrich, *Political-Military Affairs Officers and the Air Force: Continued Turbulence in a Vital Career Specialty*, USAF Institute for National Security Studies (INSS) Occasional Paper 13 (Colorado Springs, CO: US Air Force Academy, April 1997), 9–12.

22. DOD briefing, Maj B. J. Sanchez, subject: Our Language Capability, 8 April 2004.

23. Headquarters USAF/DP, e-mail, 9 March 2004.

24. This is true except for Air Force accessions (i.e., Officer Training School, Basic Military Training School, Air Force Reserve Officer Training Corps, and the Air Force Academy). Air Force Instruction (AFI) 36-2605, *Air Force Military Personnel Testing Procedures*, 14 November 2003, IC 2003-1, attachment 12 (*Foreign Language Proficiency Pay*), par. A12.3.

25. Col Donna Fore, Policy and Requirements, Under Secretary of Defense, Intelligence (OSD-USDI), interview, e-mail, 11 February 2004. In accordance with AFI 36-2605, a member must have the unit commander's written permission to take the DLPT. Buried within the text of the sample letter is an acknowledgement that should the testee pass the DLPT, he or she is subject to deployment.

26. Others include the Office of Special Investigations and the Human Intelligence (HUMINT) program, the latter subsumed as part of the Defense HUMINT Service under the Defense Intelligence Agency.

27. Overview briefing, subject: DLIFLC.

28. Lt Col Mike Nolta, SAF/IAPA, "Current State of the Air Force Foreign Area Officer (FAO) Program," talking paper, n.d., 2. The DLIFLC agrees that immersion training is valuable to upgrade a linguist's abilities (see DLIFLC briefing above). See also Nancy L. Ruther, "The International and Foreign Language Human Capital Challenge of the U.S. Federal Government" (paper presented at Duke University, Durham, NC, 23 January 2003), 9.

29. Lt Col Lisa Smith, USAFSAM/IES, Brooks City-Base, TX, to author, e-mail, 1 June 2004. For a detailed account of the IHS program, see Col Jane B. Ward, USAF, retired, et al., "A Global Engagement Enhancer: The International Health Specialist," *Air and Space Power Journal* 16, no. 3 (Fall 2002): 93–99.

30. Overview briefing, subject: DLIFLC.

31. SMSgt Jeffery S. Martin, USAF, cryptolinguist career-field manager, Headquarters USAF/XOIIFM, Pentagon, Washington, DC, interview by the author, 2 March 2004.

32. Turbo language training is defined as an accelerated language-training program involving linguists who are already proficient in a language similar to the target language. In the case of Dari and Pashto turbo courses, the students were drawn from the ranks of Arabic Standard linguists. Although short-fuse turbo courses were effective gap-fillers, one must remember that turbo participants

leave their assigned language billets to fill an unanticipated requirement, creating another gap in the process.

33. *Statement of Letitia A. Long*, 6. According to Ms. Long, most of these 6,000 positions are for "nonintelligence" purposes. See also Gus Taylor, "GITMO Suspect Denied Bail," *Washington Times*, 23 January 2004, 11; and "Firm Tied to Abu Ghraib Scandal Still under Contract in Iraq," *WorldTribune.Com*, 11 August 2004, http://216.26.163.62/2004/ss_military_08_11.html.

34. A *New York Times* article reported that all contractor-company officials interviewed felt it was not their company's responsibility to research the backgrounds of the people it hires for government contracts. In an interview, J. P. London, chief executive of CACI Inc., said, "No, we're not in the background investigation business." "Contractors in Sensitive Roles, Unchecked," *New York Times*, 7 May 2004.

35. Fore interview.

36. News release, Northrup Grumman, 29 March 2004. In contrast, the total bill for services by contract linguists in all military operations from 1990 to 1996, including Operations Desert Storm and Desert Shield, came to only $43.2 million. *Defense Reserve Language Plan Proposal* (Washington, DC: Deputy Assistant Secretary of Defense [Intelligence and Surveillance], 23 April 1997), 8.

37. For active duty pay tables, see http://www.dfas.mio/money/milpay. For a survey of contract-linguist pay, see http://www.intelligencecareers.com/surveys/2004_1Q/survey_2003_4Q_sling.cfm.

38. Overview briefing, subject: DLIFLC.

39. Elizabeth B. Welles, "Foreign Language Enrollments in United States Institutions of Higher Education, Fall, 2002," *Association of Departments of Foreign Languages Bulletin* 15, no. 2 (Winter 2004): 4.

40. AFI 36-2605, *Air Force Military Personnel Testing Procedures*, IC 2003-1, att. 11, par. A11.3.2.2; and DOD Instruction 7280.3, *Special Pay for Foreign Language Proficiency*, 23 February 2000, par. 5.1.2.1.2. See also 37 *United States Code* 316.

41. See "Special and Incentive Pay for the Reserve Component," chap. 3 of the *Ninth Quadrennial Review of Military Compensation* (Washington, DC: Department of Defense, May 2002), 144–45. The chapter makes a clear distinction between FLPP compensation and other applications of the one-thirtieth rule for other incentive-pay categories (say, jump pay); it argues only for a change to the FLPP. Interestingly, previous reviews have rejected any change in this rule, and their pronouncements have been used as justification *not* to change FLPP compensation.

42. See "Revision of Authority to Provide Foreign Language Proficiency Pay," sec. 620 of the Ronald W. Reagan National Defense Authorization Act for Fiscal Year 2005.

43. Office of Naval Research, " 'Chatting' in Iraq," http://www.scienceblog.com/community/article2408.html; and Patrick Chisholm, "Technology That Speaks Tongues," *Military Information Technology*, online ed., http://www.mit-kmi.com/print_article.cfm?docID=424.

44. *Statement of Letitia A. Long*, 10.

45. Ibid.

46. Office of the Deputy Secretary of Defense, memorandum, 14 February 2005. The DOD convened a national language conference in June 2004 to propose a national language agenda. For the complete listing of all presentations from the conference, see http://www.nlconference.org. Additonally, a bill entitled The National Security Language Act (HR 3676) was introduced in the House of Representatives in 2003, languished in committee, and was reintroduced in the 109th Congress on 4 January 2005 as HR 115. It has been referred to five separate committees for review.

47. Chairman of the Joint Chiefs of Staff Manual 3141.01A, *Procedures for the Review of Operation Plans*, 15 September 1998, encl. A, "CJCS Plan Review Guide," par. 1.b. (10). Nevertheless, this requirement appears to be more honored in the breach than in the observance. Few, if any, operation plans pay more than lip service to this.

48. For an extensive treatment of this subject, see *Civilian Linguist Reserve Corps Feasibility Study* (Washington, DC: National Defense University, 2004); and *Civilian Linguist Reserve Corps (CLRC) Pilot CLRC Strategic Plan* (Washington, DC: National Defense University, National Security Education Program, April 2004).

49. Headquarters USAF/DP, e-mail.

50. AFI 36-2605, *Air Force Military Personnel Testing Procedures*, pars. A7.1 and A7.3.

51. See "Salary Survey Results," *Intelligence Careers.com*, http://www.intelligencecareers.com/surveys/2004_1Q/survey_2003_4Q_sling.cfm. Curiously, the median salary for a linguist with a Top Secret clearance and access to Sensitive Compartmented Information—a more restrictive and exclusive access to classified information—is only $45,000 per year.

52. AFI 36-2605, *Air Force Military Personnel Testing Procedures*, par. A11.3.1.4.

53. Ibid., par. A11.4.6.

54. Par. 4.11 of Air Force Manual (AFM) 36-8001, *Reserve Personnel Participation and Training Procedures*, 22 January 2004, limits additional ground-training periods to aircrew members only.

55. Bruce Kauffman, "Palomar Students Drumming Up Interest in Army of Linguists," *North County Times*, 14 February 2004, http://www.nctimes.com/articles/2004/02/15/news/inland/san_marcos/2_14_0421_26_57.txt. See also *Statement of Letitia A. Long*, 7–8.

56. See *MLA: Modern Language Association*, http://www.mla.org/resourvces/census_main.

57. The DOD's Office of the Under Secretary of Defense for Personnel and Readiness publishes its list of investment languages—those of particular interest for training dollars, based on the needs of the war fighter. The current list includes Arabic, Chinese, Farsi, and nine others, plus two regional language groupings (Central Asia and sub-Saharan Africa).

58. Ruther, "International and Foreign Language Human Capital," 9.

59. Gen John P. Jumper, "Cultural Awareness for an Expeditionary Military" (remarks before the National Language Conference, Adelphi, MD, 23 June 2004).

Contingency Response Group

Time to Expand the Box and Think "Coalition"

ALEXANDER M. WATHEN

THE AIR FORCE chief of staff's contingency response group (CRG) concept envisions a unique subset of capabilities designed specifically to respond rapidly to contingencies as well as secure and protect airfields, rapidly assess and open air bases, and perform initial airfield/air base operations to ensure a smooth transition to subsequent operations. Missing from the CRG concept of operations (CONOPS) and training plans is the construct of joining with our coalition partners throughout the globe. It is time to start thinking beyond "jointness" and begin moving into the realm of "coalition," since recent history shows that unilateral US action is becoming politically less viable. Additionally, by addressing this shortfall, CRGs could become part of a programmatic solution to apparently unconnected problems no one yet seems to recognize:

- A reduced Department of Defense (DOD) force structure oriented toward the continental United States (CONUS) will decrease the number of flying hours for training in strategic airlift.
- A reduced and CONUS-oriented DOD force structure also drives up the requirement for strategic-airlift aircrews, further exacerbating the problem with flying hours for future training.
- Air traffic control has lost its focus on producing a worldwide, deployable capability.
- Combatant commands are not adequately leveraging CRGs in preparing for future military operations.

The DOD now operates in an age of ever-decreasing overseas military posture that is "permanent" in nature. This situation significantly lessens the number of users of the Transportation Working Capital Fund (TWCF), who previously required their troops and supplies to be flown back and forth to their permanent locations overseas. It allows or requires (depending on one's point of view) a reduction in the channel and special-assignment airlift missions that make up a significant portion of the training flying-hour program that kept Air Mobility Command's (AMC) strategic-airlift crews current and qualified. TWCF flying hours also "age" those pilots to make the leap from copilot to aircraft commander. At the same time, the Army's requirements for airlift deployment to respond to contingencies are increasing, since that service must be able to deploy credible forces from the CONUS rather than overseas locations. The DOD will need a more robust capability to take those same troops to the fight anywhere in the world, on a much more stringent timeline. In other words, AMC needs more airlift capability. To meet that demand, Gen John Handy, commander of both US Transportation Command and AMC, is lobbying for more C-17s (current programmed end strength: 180; his target minimum: 222).[1] At the present five-to-one ratio of crew to aircraft, that would mean a minimum of 210 more airlift crew members who need flying hours. Looking into the future, we see that without a ready-made flying-hour program provided by actual combat operations (today's Operation Iraqi Freedom), AMC will need to

generate significant overseas flying opportunities for its airlift crews.

Meanwhile, in response to Secretary of Defense Donald Rumsfeld's desire for a lighter, faster, more deployable force, the Army Transformation Campaign Plan has as its goal by 2005 the deployment of a combat-capable brigade anywhere in the world in 96 hours. According to a February 2002 study by the Logistics Management Institute of the Army's ability to marshal troops and the Air Force's ability to provide lift, the DOD isn't even close. Based on a scenario that includes 244 C-17s (even more than General Handy's 222), additional aircraft alone may not solve the problem since maximum aircraft on the ground at several points of departures and transit points choked the flow. The DOD will need significant practice to maximize the efficiency and execution of the lift flow.

In October 2001, the chief of staff of the Air Force stood up Task Force Enduring Look to implement "Air Force–wide data collection, exploitation, documentation, and reporting" for the service's efforts in Operations Noble Eagle and Enduring Freedom.[2] The task force's "Quick Look no. 9" identified air traffic control and airfield operations as areas that require improvement. The textbook answer calls for including those capabilities in the CRGs—no argument here. The Air Force Contingency Response Group Operational Concept, version 1.0, April 2004, charged AMC's Air Mobility Warfare Center with the responsibility of leading the development of a formal training curriculum for the CRGs, "which may include participation in exercises like EAGLE FLAG at Fort Dix, NJ, Large Package Week at Fort Bragg, NC, and Joint Readiness Training Center (JRTC) exercises at Fort Polk, LA."[3] Separate studies indicate that such training is not enough. First, the controllers who eventually arrived in-theater to relieve the special-tactics teams (during Iraqi Freedom) were inadequately trained in the International Civil Aeronautical Organization's rules of air traffic control and had trouble providing seamless interface with the Australian controllers who occupied the tower at Baghdad International Airport. Second, the problems with air traffic controllers appear systemic, not simply a problem of how to distribute limited positions. The Air Force hires, trains, and seasons them, and just when they reach seven-level qualification status, they go to the Federal Aviation Administration. Rearranging the billets will not fix the problem by itself. Joint training is great, but we need to stop allowing ourselves to think that we've done our job because we got to the joint level. Jointness must become not only the conduit to large-scale, multiforce coalition training exercises throughout the various operational commands, but also the envisioned criterion for mission readiness.

Central Command Air Forces (CENTAF) has recently embarked upon the process of base support and expeditionary site planning for numerous bases throughout its area of operations. CENTAF's teams do not include the assessment-team portions of the CRGs or air mobility operations groups (which will become CRGs in the future). We must connect CRGs to this process at the earliest stage.

The Air Mobility Warfare Center should use its charter to develop the training curriculum for CRGs to become advocates of large-scale, multinational exercises that will give all force modules the opportunity to deploy and train in coalition scenarios throughout our various operational commands. We must envision this process now for the program objective memorandum (POM) cycle for fiscal year 2008 (FY 08) since we are already too late for the FY 06 POM. As an out-of-cycle POM, the FY 07 version would require offsets to fund. We must bring operational commands (such as the CENTAF example) into the various planning cycles early because they must serve as advocates with our potential coalition partners, enlisting their participation in exercises within their operational areas. Additionally, we need to include Joint Forces Command (J-9) in the coordination process to ensure appropriate focus and integration with the chairman of the Joint Chiefs of Staff's vision for the joint force.

By helping replace the TWCF flying hours lost to the ever-shrinking permanent overseas

military structure, this vision serves the best interests of AMC. The Army should become an advocate because doing so will help that service achieve the objectives of its Transformation Campaign Plan. The same applies to all of the other services. At the tactical level, the vision is an absolute necessity for air traffic controllers because it offers the best mechanism for training under International Civil Aeronautical Organization scenarios. The same goes for airspace managers, operators of air and space operations centers, and others.

Our coalition partners possess unique capabilities and skill sets that we must integrate into the CRG construct because doing so (1) gives our war-fighting forces additional capability (e.g., through the Australian controller example, mentioned above) and (2) allows our coalition partners to invest in the process. Admittedly, in many cases, US forces can go it alone, but we must allow our partners an avenue to contribute and exercise that avenue through training. We must establish and codify identifiable, selectable capabilities similar to unit type codes the Air Force uses and then integrate those capabilities into our scheme for training. Working in this direction is the Asian Pacific Area Network's Multinational Planning Augmentation Team (MPAT), a cadre of military planners from nations with Asia-Pacific interests capable of rapidly augmenting a multinational-force headquarters established to plan and execute coalition operations in response to military operations other than war and/or small-scale contingencies.[4] At least 31 participatory nations (including the United States) have committed themselves to developing synergistic, rapid-response capabilities. The MPAT seeks to increase the speed of the multinational force's initial response, interoperability, and overall mission effectiveness through unity of effort. This model warrants review by the people responsible for developing the CRG's CONOPS.[5]

Although this Quick-Look has emphasized CRG training, it is time to realize that the changing face of our military basing presents challenges that will prove difficult to overcome. Supported combatant commands must become real supporters in the process of training and equipping the supporting forces. The DOD must focus on the challenges of training in a peacetime, steady-state military force (for peace is our ultimate goal) charged with the responsibility of deploying from the CONUS to anywhere in the world. We must program for that goal now. We cannot allow the current operations tempo to drive the budgetary process four years out. After all, if all our real-world conflicts were resolved, it would be much easier to cancel funded, large-scale, multinational coalition exercises (if the operations tempo so required) than create unfunded training exercises.

Notes

1. Alexander M. Wathen, "Mobility Forces Aircraft Fleet Mix: A Critical Junction," CADRE Quick-Look 04-21, https://research.au.af.mil/papers/ay2004/ari/QL2004-21.pdf.

2. Richard F. Bird, "Task Force Enduring Look, Food for Feedback: An Operations Analysts' Reference on Wartime Data Collection" (Washington, DC: Headquarters US Air Force, 2003), 5, http://www.mors.org/meetings/combat_analyst/ca_pres/Bird.pdf.

3. Barbara Lee, "Air Force Contingency Response Group Operational Concept, Version 1.0" (Washington, DC: Headquarters US Air Force, 2004), 13–14.

4. US Pacific Command Training Readiness and Transformation Directorate (J-7), *Multinational Planning Augmentation Team (MPAT)*, 28 October 2004, http://www2.apan-info.net/mpat/main-files/What%20is%20MPAT_files/frame.htm.

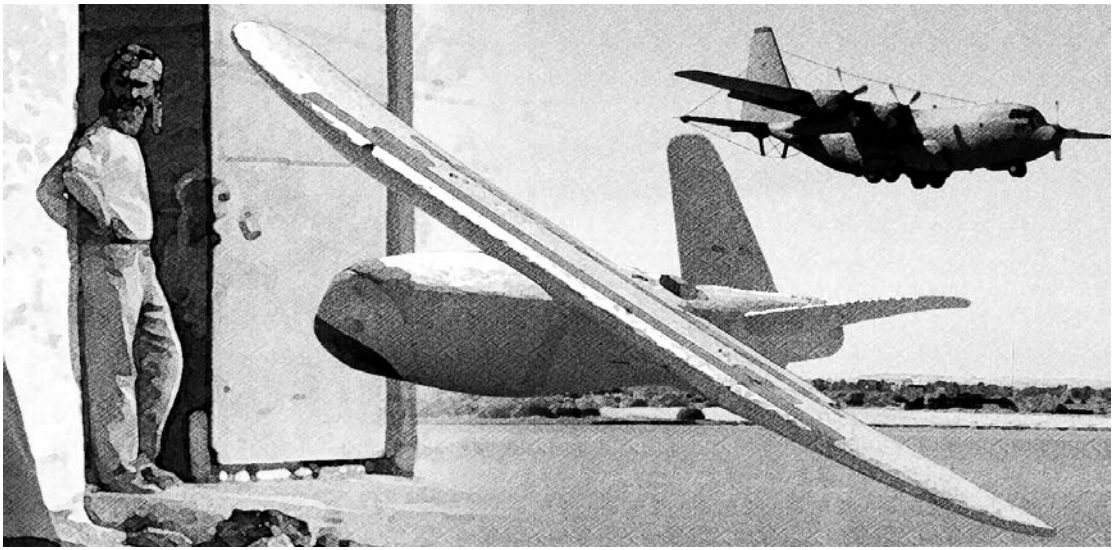
5. For more information about the Asian Pacific Area Network and MPAT, see http://www.apan-info.net.

Aggressive ISR in the War on Terrorism

Breaking the Cold War Paradigm

LT COL WILLIAM B. DANSKINE, USAF

Editorial Abstract: This article proposes a strategy to disrupt global terrorist groups by employing airborne intelligence, surveillance, and reconnaissance missions to deny them sanctuary in weak states. The author argues against placing too much attention upon network-centric warfare and too little upon traditional strategic reconnaissance. Intelligence projection may prove more important than force projection in a global counterterrorism strategy.



Due to the imbalance of power between our armed forces and the enemy forces, a suitable means of fighting must be adopted i.e. using fast moving light forces that work under complete secrecy. In other word[s] to initiate a guerrilla warfare, were [sic] *the sons of the nation, and not the military forces, take part in it.*

—Osama bin Laden

FOLLOWING THE ATTACKS of 11 September 2001, the United States found itself in a new type of war, one for which existing military doctrine was ill suited. It now faces a dispersed, loosely organized, nonstate threat. No longer afforded safety by the oceans and no longer able to employ the logic of deterrence that proved useful against traditional state actors, the United States is searching for a proactive strategy for countering threats before they arrive upon its own shores. The *US National Security Strategy* of

2002 outlines such a strategy—a global war on terrorism: "We will disrupt and destroy terrorist organizations by: denying further sponsorship, support, and sanctuary to terrorists by convincing or compelling states to accept their sovereign responsibilities."[1]

This approach proposes two different strategies, depending upon an assessment of a state's (designated here as either "capable" or "weak") ability to counter terrorist groups within its own borders. The first strategy takes a traditional, statecentric approach against capable states, to which we may add the employment of military force to other instruments of national power, thereby coercing a state to cease support of terrorist groups. US decision makers will find this perspective familiar. The second strategy is tailored for weak states that, because of their inability either to detect or counter terrorist groups, may unwillingly provide them sanctuary. According to the *National Security Strategy*, "where governments find the fight against terrorism beyond their capacities, we will match their willpower and their resources with whatever help we and our allies can provide."[2]

The second strategy seeks to deny sanctuary to terrorist groups desiring safe haven (which would allow them to plan, recruit, train, and recoup) in states unable to control their own territory. The United States intends to deny such refuge by implementing programs to assist these weak "host nations." Known as foreign internal defense (FID), such programs primarily take the form of diplomatic efforts led by the US State Department to strengthen local governments.[3] Overall responsibility for all US military and economic security assistance to a particular country belongs to the chief of mission (the US ambassador to that country). Regional combatant commanders of the US Department of Defense (DOD) have instructions to support these chiefs in FID missions. This article seeks to alert State Department officials to the benefits of employing one of the combatant commander's most valuable military tools—airborne intelligence, surveillance, and reconnaissance (ISR) systems—in cooperation with a weak host nation to deny sanctuary to terrorist groups and thus support the effort against global terrorism.

This study has no intention of downgrading other sources of intelligence (such as collections from satellites or human intelligence [HUMINT]); rather, it proposes supplementing these sources with airborne ISR, whose sensors, now predominantly employed for tactical support, can instead play a greater role in counterterrorism. Further, it recommends that the chiefs of mission increase the use of airborne ISR sensors in their FID programs and offers suggestions to the regional combatant commanders and the US Air Force (as the primary provider of airborne ISR sensors) for improving the availability and usefulness of this capability in a global counterterrorism strategy.

Airborne ISR and Intelligence

What we have seen [in Afghanistan and Iraq] *is a change in doctrine from overwhelming force to overwhelming ISR.*

—David Stafford
Northrop Grumman
Integrated Systems

The Role of Intelligence

According to security-studies expert Barry Posen, success or failure in countering terrorism will depend upon our ability to know the enemy—so intelligence collection and analysis will play a central role.[4] However, according to Air Force doctrine, weak states typically have unsophisticated intelligence-collection agencies; moreover, their lack of resources and inability to collect and fuse various types of intelligence limit the information they can gather.[5] Current US military doctrine, therefore, recognizes intelligence sharing across US government agencies with the host nation and other coalition partners as a key component of successful cooperation.[6] We have as our objective an independent intelligence capability for the host nation—preferably one interoperable with that of the US intelligence

community. Airborne ISR sensors present a means of attaining this end.

Advantages of Airborne ISR

For the host nation, employing US airborne ISR within its borders offers many advantages. First, it demonstrates cooperative intent with the United States in the war on terrorism—a stance that could lead to diplomatic rewards.[7] Second, it addresses the shortfalls of that nation's intelligence infrastructure, such as unsophisticated collection and dissemination of data. Airborne ISR not only provides intelligence that the country may not otherwise have on its own region (thus enabling counterterrorism operations by its own forces), but also establishes a forum for increased US-provided training in techniques for the exploitation of intelligence collection. Third, the presence of these assets represents a less intrusive (compared to US ground forces), relatively benign method by which third-party countries can participate in the counterterrorism effort. Finally, it can offer the host nation economic benefits (e.g., local firms would receive compensation for goods and services supplied to US personnel and equipment).

Conducting airborne ISR missions in cooperation with a host nation also provides numerous benefits for US counterterrorism strategy. For example, additional access for collecting intelligence on terrorist groups—especially in nations with large, desolate regions not controlled by the central regime—complements other sources, such as HUMINT, making available alternate or corroborating information.[8] Airborne ISR also boasts very capable intelligence-collection sensors, adaptable even as an adversary employs new technology and flexible enough to support a wide range of counterterrorism operations. Furthermore, using these assets to collect additional intelligence minimizes the size of the US "footprint" or military presence in the host nation. Additionally, airborne ISR can enhance efforts to share intelligence insofar as coalition partners occasionally fly on airborne ISR aircraft, and intelligence derived from these sensors is more readily shared with agencies of other countries than intelligence from other sources (which may be attributed to the airborne sensors, thus serving as cover or "plausible deniability" for more sensitive intelligence sources). Finally, once trained, members of the host nation's intelligence community become part of a larger resource pool from which US agencies may draw (e.g., HUMINT operatives, linguists conversant in local dialects, imagery analysts, and experts in local terrorist-group movements and activities).[9]

Airborne ISR contributes to the US counterterrorism strategy even when its sensors do not collect by providing plausible deniability, as mentioned above. For example, aircraft flown as "trigger missions" over areas suspected of containing terrorist groups might elicit a reaction from them detectable to other sensors (even if the aircraft cannot detect the response), thus generating further intelligence-collection opportunities. Airpower can also play a role in psychological operations.[10] Other aspects of modern technology, such as the ability to operate at night, add to the psychological impact of US airborne forces on terrorist groups. Shows of force demonstrate US resolve: "Aerospace forces can . . . use Air Force ISR assets to achieve 'virtual presence' as a means of globally projecting power."[11] If portrayed correctly, airborne ISR operations may also project a strong US commitment to strengthening the local regime.[12] Chiefs of mission must determine if a visible US presence will assist their local efforts; if so, airborne ISR fulfills this role.[13]

In many respects, airborne ISR compares favorably to other methods of intelligence collection. Much HUMINT—perhaps the most valuable collection method in the war on terrorism—is covert, highly sensitive, and not easily shared with other countries. Although not always as precise in terms of collection, airborne ISR, unlike HUMINT, offers the advantage of perspective—the vantage point of the third dimension. It also reacts more quickly in a rapidly changing environment than does ground-based collection. We can also adapt existing platforms to new missions (e.g., the suggestion that the Joint Sur-

veillance Target Attack Radar System [JSTARS] E-8B aircraft adapt to a wide-area-search intelligence mission in Iraq and Afghanistan to plot smuggling routes).[14] Airborne ISR can also leave a smaller footprint than other methods if we base the aircraft outside the host nation.[15] Neither HUMINT nor space-based sensors demonstrate an obvious presence; in certain circumstances, visibility may prove desirable. In some cases, we can achieve the effect we want merely by flying overhead.

Operation Iraqi Freedom demonstrated the value of airborne ISR as opposed to space-based systems. Air-breathing systems generated much of the critical intelligence collection during the spring campaign in Iraq. Space-based collection systems, although indispensable, still experienced "severe limitations in collecting signal intelligence and imagery."[16] Analysts noted that space-based signals-intelligence collectors lost ground as the adversary evolved and acquired newer technology (such as terrestrial fiber, packet-switching, and encryption software). Furthermore, orbital collectors still capture open emitters (such as radar, radio, and satellite phones), but upgrading the technology on orbital platforms is much more difficult than updating terrestrial or aerial platforms.[17] Space may offer the optimum vantage point for an early warning system (against statecentric threats such as missiles), but it must contend with severe limitations in collecting signals intelligence and imagery on nonstate actors who adapt to advancing commercial technology.[18] Increased reliance on air-breathing and surface collectors seems inevitable.

Unmanned aerial vehicles (UAV) proved increasingly valuable to military operations during the second war in Iraq. Although they offer more endurance and less risk than manned aircraft, in many respects UAVs are inferior to manned aircraft because they are less adaptable to a changing environment. Because we have relatively few of them, they are only marginally useful to noncombat support missions; their small payload constrains the number of sensors on board; and their vulnerability limits operations to a relatively benign environment (unless losses are acceptable to the military commanders). At their current level of development, it is unclear whether they offer a cost advantage because of their high attrition rate.[19] Further advancements in UAV technology may rapidly increase the capabilities of these aircraft, and increased numbers may make them more available for employment. For now, however, manned platforms still hold advantages in intelligence collection and dissemination for counterinsurgency and counterterrorist operations. Yet, we can exploit the advantages of airborne ISR only by employing these assets properly in the counterterrorism effort.

Although using airborne ISR to support host nations offers many benefits, the US Air Force does not currently employ this asset for that purpose. Instead, it emphasizes "tactical" networkcentric warfare at the expense of traditional "strategic" reconnaissance against terrorist threats. The ISR community focuses on near-real-time support of the trigger-puller. For the secretary and the chief of staff of the Air Force, as well as leading advocates of Air Force ISR, the emphasis remains on quickly locating and identifying potential targets and passing this information rapidly to a weapons system for engagement.[20] This procedure amounts to effects-based targeting (determining the desired effect on a system or an infrastructure by using force and then selecting the appropriate weapon to produce that effect) as opposed to the more preferable effects-based operation (which includes all the national instruments of power). The current focus on rapid targeting, although appropriate for most military operations, leaves critical gaps in any effort against nonstate threats.

The Cold War Legacy

The U.S. intelligence community is essentially a Cold War–era artifice.

—Bruce Hoffman

A Cold War Paradigm

Unfortunately, US military doctrine for counterterrorism does not receive the attention it

deserves. Although mentioned in the *National Security Strategy* and based on a significant amount of historical experience in counterinsurgency warfare, this doctrine does not enjoy full acceptance in terms of its practical application.[21] An aggressive counterinsurgency (and counterterrorism) strategy implies a level of activity and involvement in a host nation's internal struggles that makes many senior military leaders uncomfortable.[22] The US military establishment seems trapped in the Cold War paradigm.

Counterinsurgency does not represent the type of conflict the Air Force prefers to fight. Based on a state-versus-state conflict paradigm, our doctrine assumes the adversary has a static, hierarchical organizational structure and prescribes applying force to key nodes to disrupt enemy functions. Similarly, it assumes that the threat of overwhelming force will deter potential state adversaries.[23] As noted earlier, the Air Force emphasizes the employment of ISR for near-real-time support of military strikes on infrastructure targets rather than for support of the multidimensional effects-based operations that an effective counterterrorism strategy requires.

Unfortunately, the global war on terrorism includes very few statecentric enemies. Terrorist groups "present little in the way of infrastructure that could be targeted by a retaliatory strike."[24] Without knowing what the enemy wants and how he functions, we will have difficulty with effects-based targeting.

A New Mind-Set

We will resolve this conflict only by applying overwhelming intelligence, not overwhelming force. The adversary employs a distributed network organization, deliberately nodeless and thus less vulnerable to attack. If we eliminate the leaders (assuming we can find them), the organization simply replaces them. Many terrorist groups are grafted onto or hidden within legitimate state infrastructures, making it difficult to target them with military force. It is operationally ineffective (as well as politically inadvisable) to blow up bridges in Colombia or Iran, for example, as a means of attacking drug cartels or terrorist groups when the likely collateral damage would undermine any legitimacy a strategist hopes to maintain with the local population. We must find some method of distinguishing the terrorist group (and the targets inherent in its organization) from the surrounding civilian populace. Therefore, intelligence collection and dissemination as well as the effective employment of ISR must become one of the major components of the war on terrorism.[25]

Current employment of ISR in a counterterrorist campaign suffers from three conditions held over from its Cold War mind-set: a centralized control of ISR assets, a reluctance to employ those assets in politically sensitive areas, and an institutional resistance to sharing heavily compartmented intelligence. Centralized control of limited assets is almost an article of faith for airpower advocates, dating back to the quest for an independent Air Force. Our service has made tremendous strides in making centralized control responsive to combatant commanders (through reachback and advanced communications) during significant combat. However, centralized control is not reactive enough for numerous intelligence-collection efforts occurring simultaneously throughout the world. Such control is efficient, especially with a limited number of assets, but may not be optimally effective. We need a more reactive, horizontally integrated structure for national ISR assets to coordinate directly with US intelligence, law enforcement, and host-nation agencies operating in forward areas.

The political sensitivity of ISR missions has also remained a concern since the Cold War. Senior military and political leaders during that era were conscious of the political implications of ISR missions.[26] We have employed ISR assets primarily against adversary state actors, monitoring state infrastructure and military orders of battle. Typically, missions are restricted to international airspace outside national boundaries. Although they protect the sensors and crews, these standoff distances limit collection capability. The belief that US ISR assets might be employed in cooperation

with host-nation governments, flying them over sovereign territory, has not fully entered the mainstream military mind-set. It is precisely this reluctance to employ airborne ISR systems in this manner that makes their use a more powerful statement.

Finally, we confront a pervasive resistance to intelligence sharing, especially with nontraditional partners such as foreign militaries, foreign law-enforcement agencies, and even other US government agencies. One relic of the Cold War mind-set holds that technology inevitably diffuses—a friend today may become an enemy tomorrow and will employ whatever intelligence-collection capabilities we share against us.[27] However, today's advances in the defense arena are exponential, and the gap in military technology between the United States and its closest allies is increasing.[28] Providing access to classified collection systems and facilities will not necessarily result in the compromise of US technological superiority, especially when a significant part of the US military advantage lies in the tactics of networkcentric operations. The US advantage resides not so much in the black boxes as in the training and integration of separate nodes and sensors—and in the personnel who make this system work.

The DOD is making some effort to increase the sharing of intelligence with other countries. Dr. Stephen Cambone, US undersecretary of defense for intelligence, predicts that "the Pentagon will make U.S. intelligence available to allies and friendly nations currently blocked from receiving classified data."[29] The Office of the Secretary of Defense's intelligence directorate is currently drafting guidelines to permit the release of information by the DOD and US intelligence agencies to coalition partners in the war on terrorism. According to Cambone, "we will not be constrained . . . by all the things that currently complicate our ability to make that information available. That is a huge revolution in security."[30] The further evolution of employing airborne ISR may help.

Examples of the Political Role of Airborne ISR

In recent years, some nations have unexpectedly cooperated with the United States by allowing US airborne ISR assets to fly in their airspace to gather intelligence on terrorist groups. In April 2003, the United States and Georgian governments concluded a bilateral security pact allowing US troops into Georgia to train local units in counterterrorism tactics.[31] Earlier, in March, we flew several U-2 missions in Georgian airspace, along the Russian-Georgian border (provoking a reaction by the Russians, who scrambled two fighter jets to fly parallel to the U-2 along the border).[32] These missions were part of an attempt to bolster Georgia's own counterterrorist effort.[33] Similar cooperative missions have occurred in Algeria, the Philippines, Yemen, Pakistan, Somalia, Iraq, and Afghanistan.[34] Additionally, "both Libya and Sudan have offered to share intelligence information on Al Qaeda's activities with U.S. authorities."[35] Whether this spirit of cooperation translates into overflight rights for ISR assets remains to be seen. But these post-9/11 efforts exemplify the approach that the United States must follow in the future if its counterterrorism strategy is to prove effective. Many improvements can enhance this strategy.

Recommendations

The Air Force in particular should expect high levels of demand for surveillance platforms and for analysis of the "take" of these platforms for the indefinite future.

—David A. Ochmanek

A successful counterterrorism strategy must disrupt global terrorist groups by denying them sanctuary in weak or failing states. Collecting intelligence about the adversary remains key to any successful application of this strategy—and airborne ISR assets provide a means of doing so. Key US actors will affect how the United States employs airborne ISR in this counterterrorism strategy.

What the US State Department Must Do

Because ISR missions can make host nations unattractive to global terrorist groups, the US State Department's chiefs of mission should know how to make these assets an integral part of an "internal defense and development" counterterrorism program. They must aggressively request that airborne ISR sensors support their local counterterrorism efforts and actively negotiate cooperative ISR missions, overflight permissions, and intelligence-sharing agreements with host nations. We could use the intelligence collected on such missions to target terrorist groups with US forces, or we could share it with the host nation, thereby allowing its forces to engage the adversary. Strengthening weak regimes enhances their ability to counter other illegal activities as well.[36] Sharing intelligence from airborne sensors and training the locals to collect and analyze it can bolster a host nation's ability to police and defend itself.

The visible presence of airborne ISR also deters terrorist activity. The monitoring of porous borders and smuggling routes can reduce the ease with which terrorist groups and criminal elements take advantage of weak regimes. The presence of ISR makes these groups less effective (e.g., by forcing them to relocate their camps or operate with less efficient communications). Airborne ISR assets also send signals of commitment to allies and foes alike that may become part of engagement and psychological operations. Visibly increased US attention would thus produce a deterrent effect on states that hope to avoid detection of their sponsorship.

What Combatant Commanders Must Do

Anticipating an increased role in airborne ISR sensors in local counterterrorism efforts, regional combatant commanders must prepare themselves to allocate more ISR assets to these missions. Doing so will demand devoting more assets to collecting intelligence on terrorist groups (rather than state adversaries) or supporting near-real-time targeting. Combatant commanders must also task their military planners to devise counterterrorism strategies that do not include force as the primary military instrument. Toward that end, planners must move away from a counterstate, Cold War mind-set. Nonstate terrorist groups (and their associated networks from which they draw support, legitimacy, weapons, personnel, and funding) are the adversary in this conflict—not states.

What the US Air Force Must Do

As the leading provider of airborne ISR sensors, the Air Force should expect to play a leading part in this effort. But we have room for improvement, especially in collecting and using intelligence: "The fight against terrorist groups with global reach . . . will call for capabilities that have not, by and large, been at the forefront of U.S. planning and resource allocation for large-scale combat operations."[37] Three areas of concern dominate: intelligence collection, intelligence processing and analysis, and intelligence sharing.

Intelligence Collection. The Air Force needs to enhance its intelligence-collection capability, especially by acquiring more aircrews and airborne ISR assets to meet the current demand—not to mention the increased demand proposed by this article.[38] Our service also has too few linguists, cultural experts, imagery analysts, and HUMINT personnel.[39] Furthermore, rather than monitoring vast armies arrayed across a battlefield, future ISR sensors must be able to identify individuals and small groups in two very different environments: urban areas and uncontrolled regions. Terrorist groups often escape detection from government forces by hiding amongst a city's civilian population and use commercial means for communication, such as mobile phones and the Internet, rather than military communications—the focus of many Cold War sensors. Terrorist groups also seek safe haven by hiding in vast, uncontrolled regions (often inherent in weak states). Wide-field-of-view sensors capable of efficiently searching these areas (such as deserts and oceans) for human activity are required to focus existing imaging sensors that have a smaller field of view but

greater resolution.[40] Intelligence officials must also employ sensors that exploit the close link between criminal elements and terrorist groups by detecting materials for weapons of mass destruction, illegal drugs and arms trafficking, or smuggling routes.

Intelligence Processing and Analysis. The Air Force must upgrade its methods of intelligence processing and analysis. Automated intelligence-analysis software sifts through collected data and focuses on important information, reducing the workload on analysts.[41] Automated database-mining software filters through communications and documents, searching for key words or phrases and then alerting analysts for human exploitation. Imagery software capable of quickly scanning large digital images and highlighting man-made objects relieves the imagery analyst from manually examining the entire image.[42] Unattended sensors under development can be placed at key transit points (such as watering holes or mountain passes) and alert analysts to activity. Historical studies of data in remote regions may reveal smuggling routes through mountain passes or across desert spaces. Such long-term analysis of wide-field-of-view sensors allows for efficient collection efforts using other sensors with greater resolution but a smaller range or field of view.[43] Across the board, the Air Force must increase its ability to search haystacks in the quest for elusive needles.

Intelligence Sharing. The United States must also address the Cold War resistance to intelligence sharing that would enhance a weak regime's ability to address its own security needs. Our FID programs are designed to strengthen indigenous security (to include building up the law-enforcement, intelligence, and self-defense infrastructure). As noted earlier, the US undersecretary of defense for intelligence claims to be moving in this direction, although such a change will require government consensus reaching beyond the DOD. However, the military might implement several techniques for intelligence sharing—specifically with airborne ISR assets—to enable FID and the counterterrorism strategy proposed in this article.

Intelligence data collected from airborne ISR is often easier to disseminate to host nations than other forms of intelligence. Many current bilateral agreements permit the sharing of data (sometimes even finished intelligence products) with other nations. The fact that airborne ISR sensors can adapt themselves to new collection requirements diminishes the negative implications of compromising their capabilities. Similarly, from a logistical standpoint, flying host-nation representatives on airborne ISR aircraft in their home country is much easier than stationing them in satellite or UAV ground stations based predominantly in the United States. Host-nation riders, who add a sense of legitimacy to the cooperative effort, actively participate in assuring their own country's security by monitoring US ISR operators to make sure they "look where they're supposed to look," thus providing a means of addressing concerns about undesired American surveillance.

We can also take steps to correct a critical US military shortfall by tapping host-nation intelligence experts to exploit the data collected with airborne ISR. Trained members of an increasingly capable host-nation intelligence community become part of a larger resource pool from which US agencies may draw (examples include HUMINT operatives, linguists proficient in local dialects, imagery analysts, and experts in local terrorist-group movements and activities.) We must develop the means to disseminate this intelligence to the host nation (ranging from handing over paper reports to installing downlink video stations). Subsequently, we may tap much of this developed infrastructure when counterterrorism activities progress to new regions (e.g., by integrating linguists or UAV imagery analysts into future intelligence-heavy operations). Doing so would allow more rapid adjustment if the global war on terrorism moves to new regions in which the United States lacks sufficient expertise. The employment of airborne ISR systems enables all such benefits produced by an increased sharing of intelligence.

Summary and Conclusions

The proposed counterterrorism strategy calls for disrupting global terrorist groups by making weak or failing states unattractive to them, thereby denying those groups sanctuary. Employing airborne ISR systems is a means to this end, all the better if host nations invite US assets into their airspace. Such missions greatly increase the reach of US intelligence-collection capabilities. Airborne ISR provides intelligence that we may share with the host nation and may even use to develop that nation's intelligence infrastructure. Such cooperative engagement enhances a local regime's ability to conduct its own counterterrorism campaign (which will subsequently free US assets to refocus elsewhere). Employing a visible means of collection sends messages to the terrorist groups and local population: that the United States and the host nation are committed to a counterterrorism campaign and that sanctuary for terrorist groups and their supporters will surely vanish. Airborne ISR collection and analysis offer a relatively inexpensive means of demonstrating this support, perhaps making this method attractive to third parties (such as the North Atlantic Treaty Organization or the European Union). It also represents a less intrusive means of cooperating (compared to a large US ground presence) and thus may provide an opportunity for engagement with previously uncooperative regimes (e.g., Libya or Sudan). These operations deny sanctuary to terrorist groups and disrupt their operations by forcing them into less efficient means of operating, training, and communicating. The presence of such overt intelligence missions also creates plausible cover stories for the sharing of other intelligence from more sensitive sources.

Although the US Air Force recognizes the importance of airborne ISR, senior leaders seem obsessed with the integration of a network of sensors to produce accurate and timely intelligence for force application (and the accompanying vast array of weapons-carrying platforms). Such a mind-set limits the use of airborne ISR assets in countering terrorism. In a global counterterrorism strategy, the Air Force may learn that force projection is not as important as "intelligence projection." Airborne ISR can play a lead role in this new struggle. □

Notes

1. *The National Security Strategy of the United States of America* (Washington, DC: The White House, September 2002), 6, http://www.whitehouse.gov/nsc/nss.pdf.

2. Ibid., 7.

3. Joint Publication (JP) 3-07.1, *Joint Tactics, Techniques and Procedures for Foreign Internal Defense (FID)*, 30 April 2004, I-1. See also Air Force Doctrine Document (AFDD) 2-3.1, *Foreign Internal Defense*, 10 May 2004, 1.

4. Barry R. Posen, "The Struggle against Terrorism: Grand Strategy, Strategy, and Tactics," *International Security* 26, no. 3 (Winter 2001/2002): 46.

5. AFDD 2-3.1, *Foreign Internal Defense*, 13.

6. JP 3-07.1, *Joint Tactics, Techniques and Procedures*, I-13, IV-3, IV-20.

7. The author admits the very real possibility that the overt presence of US forces may undermine the legitimacy of a weak host-nation government in the eyes of the local population, thus strengthening a local insurgency's base. In these cases, we would prefer less visible assistance. However, in many cases the United States intends to make its involvement known to all, or some, of the players.

8. AFDD 2-3.1, *Foreign Internal Defense*, 19.

9. This assumes, perhaps optimistically, that the weak host-nation government remains in power and that military/intelligence experts remain loyal. A moral dilemma arises when supporting one side over others in local power struggles, often inherent in weak host governments. The United States will likely be judged by the actions of the host nation that employs US-provided intelligence or training. An additional "practical" dilemma exists: weak host-nation governments often have problems with corruption, and the leaking of internal—and, by extension, US—intelligence is common.

10. AFDD 2-3.1, *Foreign Internal Defense*, 19–20; and James S. Corum and Wray R. Johnson, *Airpower in Small Wars: Fighting Insurgents and Terrorists* (Lawrence, KS: University Press of Kansas, 2003), 434.

11. AFDD 2-3, *Military Operations other than War*, 3 July 2000, 28.

12. JP 3-07.1, *Joint Tactics, Techniques and Procedures*, I-5, fig. 1-2, "The FID Framework."

13. A visible US presence may undermine the legitimacy of the weak host-nation government with respect to the local population. US involvement will almost certainly be used by the insurgent propaganda efforts. In such cases, visible airborne ISR may not be the preferred method.

14. Glenn C. Buchan, *Future Directions in Warfare: Good and Bad Analysis, Dubious Rhetoric, and the "Fog of Peace,"* RAND Report P-8079 (prepared for Conference on Analyzing Conflict: Insights from the Natural and Social Sciences, UCLA, 24–26 April 2003), 24, http://fac.cgu.edu/~zakp/conferences/AC/papers/Buchan.pdf.

15. David Ochmanek, *Military Operations against Terrorist Groups Abroad: Implications for the United States Air Force*, RAND Report MR-1738 (Santa Monica, CA: RAND, 2003), 31–32, http://www.rand.org/publications/MR/MR1738/MR1738.pdf.

16. Specifically, the JSTARS and Airborne Warning and Control System aircraft; the Global Hawk and U-2 imagery platforms; and the RC-135 and EP-3E signals-intelligence aircraft. Briefing, Dr. Loren B. Thompson, chief operating officer, Lexington Institute, Defense News Media Group's "ISR Integration 2003: The Net-Centric Vision," Arlington, VA, subject: ISR Lessons of Iraq, 18 November 2003.

17. Robert Wall, "U.S. Signals Intelligence in Flux," *Aviation Week and Space Technology*, 14 July 2003, 26. See also Thompson briefing.

18. "There is widespread doubt within the intelligence community about the future of space-based signals intelligence. As enemies become more diverse and unconventional, they are able to utilize a wide range of technologies and techniques remote spacecraft are poorly positioned to intercept." Loren B. Thompson, "Satellites over Iraq: A Report Card on Space-Based ISR during Operation Iraqi Freedom," *Intelligence, Surveillance and Reconnaissance Journal*, March 2004, 20.

19. Thompson briefing.

20. We have named our conference ISR Integration, because that's been the main thrust of the U.S. military's efforts in the ISR arena. . . .

> The major focus within the military services and in the joint-services arena today is on ISR integration—rapidly fusing and exploiting the sensor data from different ISR systems to speed the flow of correlated intelligence information to tactical war fighters, both for situational awareness and targeting.
>
> Network-centric operations are a key goal in all of the services' transformation plans, and ISR integration is viewed as an essential step toward network-centric operations.

Glenn Goodman, editor of *ISR Journal* (introductory remarks to Defense News Media Group's "ISR Integration 2003: The Net-Centric Vision," Arlington, VA, 17 November 2003). Dr. James G. Roche, secretary of the Air Force, warns that "all the information in the world is useless unless it can inform timely decisions. We must preserve and enhance our ability to get and use quality, timely, actionable information to shorten the kill chain—and put steel on target." Secretary Roche (remarks to the Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance [C4ISR] Summit, Danvers, MA, 21 August 2003), http://www.af.mil/news/speech/current/sph2003_27.html (accessed 6 October 2003). Similarly, Gen John Jumper, Air Force chief of staff, asserts that "the day is coming when prompt global strike will be a reality, when the kill chain will be reliably and consistently compressed to minutes instead of hours or days, and when the sum of all our sensor, command and control, and information capabilities will be a cursor on the target and steel on the enemy." "Technology-to-Warfighter: Delivering Advantages to Airmen," Chief's Sight Picture, 17 July 2003, http://www.af.mil/viewpoint (accessed 24 March 2004).

21. Steven Metz, *Counterinsurgency: Strategy and the Phoenix of American Capability* (Carlisle Barracks, PA: Army War College Strategic Studies Institute, 28 February 1995), 26.

22. For a discussion of the initial caution (or reluctance) demonstrated by Gen Charles Holland, US special operations commander, to take on the mission of running a global counterterrorism strategy and the friction this caused with Secretary of Defense Donald Rumsfeld, see Rowan Scarborough, "Rumsfeld's War: Excerpt 1," *Washington Times*, 23 February 2004, http://washingtontimes.com/national/20040223-012306-4708.htm (accessed 1 March 2004). The article quotes Stephen Cambone: "Holland was given the keys to the kingdom and he didn't want to pick them up."

23. Raphael Perl, *Terrorism, the Future, and U.S. Foreign Policy*, Issue Brief for Congress, CRS Report IB95112 (Washington, DC: Library of Congress, Congressional Research Division, 11 April 2003), CRS-12, http://www.fas.org/irp/crs/IB95112.pdf.

24. Ochmanek, *Military Operations against Terrorist Groups*, 20.

25. Corum and Johnson, *Airpower in Small Wars*, 434. "What we have seen [in Afghanistan and Iraq] is a change in doctrine from overwhelming force to overwhelming ISR, which was made possible by speed and agility paired with persistence of coverage." David Stafford, vice president of Northrop Grumman Integrated Systems, quoted in David A. Fulghum, "Intel, Not Bombs," *Aviation Week and Space Technology*, 15 September 2003, 59.

26. For example, Pres. Dwight D. Eisenhower expressed serious concerns about initiating early U-2 sorties over the Soviet Union at the beginning of the Cold War. See Frederick J. Ferrer, *The Impact of U.S. Aerial Reconnaissance during the Early Cold War (1947–1962): Service and Sacrifice of the Cold Warriors*, http://www.rb-29.net/HTML/77ColdWarStory/00.25cwscvr.htm (accessed 24 March 2004). Pres. George W. Bush recently expressed similar concern about EP-3 missions off the China coast, follow-

ing the midair collision with a Chinese fighter on 1 April 2001, and the intercept in March 2003 of an RC-135S Cobra Ball aircraft by North Korean fighters.

27. Stephen Peter Rosen, *Winning The Next War: Innovation and the Modern Military* (Ithaca, NY: Cornell University Press, 1991), 45. See also Samuel P. Huntington, "Arms Races: Prerequisites and Results," in *The Use of Force: International Politics and Foreign Policy*, ed. Robert J. Art and Kenneth N. Waltz (Lanham, MD: University Press of America, 1983), 366, 375, 392; and Robert L. O'Connell, *Of Arms and Men: A History of War, Weapons, and Aggression* (New York: Oxford University Press, 1989), 9.

28. "The pace of the modernization of US information systems has been much more rapid than that of allied forces; and this has led to a widening gap in capabilities." David S. Yost, "The NATO Capabilities Gap and the European Union," *Survival* 42, no. 4 (Winter 2000–2001): 106.

29. Dr. Stephen Cambone (keynote address, Defense News Media Group's "ISR Integration 2003: The Net-Centric Vision," Arlington, VA, 18 November 2003).

30. Ibid.

31. Sergei Blagov, "US-Georgian Security Cooperation Agreement Provokes Outcry in Russia," *Eurasia Insight*, 16 April 2003, http://www.eurasianet.org/departments/insight/articles/eav041603a.shtml.

32. Sarah Karush, "Russian Not Happy with U.S. Spy Flights," *Associated Press*, 26 March 2003, http://mailman.lbo-talk.org/pipermail/lbo-talk/Week-of-Mon-20030324/008706.html (accessed 26 September 2003). See also Nikolay Gorshkov, "Russia Condemns 'US Spy Flights,' " BBC, RUSNET.NL, 24 March 2003, http://www.rusnet.nl/news/2003/03/24/print/politics01/shtml (accessed 26 September 2003); and Giorgi Kandelaki, "U2 Spy Flights over Georgia Help Raise US-Russian Tension," *Eurasia Insight*, 27 March 2003, http://www.eurasianet.org/departments/insight/articles/eav032703.shtml (accessed 26 September 2003).

33. Alexander Rondeli, president, Georgian Foundation for Strategic and International Studies, quoted in Andrew Curry, "Georgia on Their Minds," *U.S. News and World Report*, 6 October 2003, http://www.usnews.com/usnews/news/articles/031006/6military.b1.htm (accessed 27 March 2004).

34. "President Bush has expressed a willingness to provide military aid to 'governments everywhere' in the fight against terrorism." Perl, *Terrorism, the Future, and U.S. Foreign Policy*, iii.

> After the Sept. 11, 2001, attacks, Washington stepped up military assistance to Algiers in its 12-year civil war against Islamic extremist groups. The US military involvement is also part of a larger US antiterrorism campaign in the vast, desolate Sahel region in North Africa . . . that US intelligence officials fear could become a primary training ground for radicals exporting terrorism around the world. "The US government has an ongoing program known as the Pan-Sahel Initiative which provides training and support to Chad, Niger, Mali, and Mauritania to help them control their borders, interdict smuggling, and deny use of their national territories to terrorists and other international criminals," a Defense Department official said.

Bryan Bender, "US Search for Qaeda Turns to Algeria," *Boston Globe*, 11 March 2004.

35. Perl, *Terrorism, the Future, and U.S. Foreign Policy*, CRS-2.

36. Steven W. Zander, "Military Responses in Nonpolitical Conflicts," in *Challenge and Response: Anticipating US Military Security Concerns*, ed. Karl P. Magyar et al. (Maxwell AFB, AL: Air University Press, August 1994), 276.

37. Ochmanek, *Military Operations against Terrorist Groups*, 33.

38. Ibid., 14. Besides the physical limitation of flying a few ISR systems to numerous, geographically separated locations, the small inventory of UAVs also negates the intent of unmanned aircraft. Limited numbers of UAVs make them more valuable to military commanders, thus increasing the reluctance to use them in high-risk environments (including weapon threats, difficult weather, and mountainous terrain).

39. The list of "stressed" US Air Force jobs (for FY 2004, from 1 October 2003 to 30 September 2004) for enlisted members includes cryptologic linguists, linguist debriefers, interpreters/translators, intelligence-applications personnel, imagery analysts, signals-intelligence analysts, and electronic-signals-intelligence-exploitation personnel. These categories are defined by "shortage of needed personnel to do the job; above average deployment rate; and long working hours." Rod Powers, " 'Stressed' Air Force Jobs: Jobs Designated as 'Stressed' for Fiscal Year 2004," 6 April 2004, http://usmilitary.about.com/library/milinfo/blafstressedjobs.htm.

40. Ochmanek, *Military Operations against Terrorist Groups*, 22. See also Maj William B. Danskine, *The Time-Critical Targeting Model*, Maxwell AFB, AL: Air University, April 2000, http://www.au.af.mil/au/database/projects/ay2000/acsc/00-050.pdf (accessed 6 April 2004).

41. Mary DeRosa, *Data Mining and Data Analysis for Counterterrorism*, CSIS Report (Washington, DC: Center for Strategic and International Studies, March 2004), 3, 6.

42. Ochmanek, *Military Operations against Terrorist Groups*, 24.

43. Ibid., 23.

Updated Air Force Publication

The U.S. Air Force Transformation Flight Plan, 2004

MORT ROLLESTON

THE AIR FORCE recently released the latest version of *The U.S. Air Force Transformation Flight Plan* (*AFTFP*), a reporting document required by the Office of the Secretary of Defense's (OSD) *Transformation Planning Guidance* (*TPG*) that describes the ongoing transformation of the Air Force and the way it addresses the OSD's guidance. According to the *TPG*, the OSD's Office of Force Transformation uses the *AFTFP* and transformation road maps from the other services and US Joint Forces Command to conduct a strategic transformation appraisal for the secretary of defense. Issues and concerns raised by this appraisal inform the OSD's *Strategic Planning Guidance*, which directs budget development for the services. The main body of the *AFTFP* discusses this process, the way the Air Force defines and scopes transformation, and the service's transformation strategy and related initiatives. Several of the document's appendices delineate how Air Force transformation supports the OSD's guidance.

The *AFTFP* focuses primarily on the Air Force's transformation strategy, designed to help the joint war fighter address the anticipated security environment effectively and exploit new, revolutionary information technologies by

- working with the rest of the Department of Defense and agencies outside the department, as well as allies and coalition partners, to enhance joint and coalition war fighting;
- continuing to pursue innovation aggressively, to lay the groundwork for transformation;
- creating new organizational constructs to facilitate transformation and institutionalize cultural change;
- shifting from threatcentric and platform-centric planning and programming to adaptive capabilities- and effects-based planning and programming;
- developing "transformational" capabilities; and
- breaking out of industrial-age business processes and embracing information-age thinking.

Although significant differences existed between the 2002 and 2003 editions of the *AFTFP* because of new OSD requirements set forth in the *TPG* (signed in April 2003), for the most part, the 2004 version (the third edition) simply updates its predecessor. New sections cover the Air Force's efforts to help US allies transform their air forces, the new Air Force Lessons Learned Office, the Battlefield Airmen initiative, changes in the Air Force concept of operations, and various new business-transformation efforts. Furthermore, a new appendix maps Air Force transformation to the new joint operating concepts approved at the time of publication. The OSD is now updating the *TPG*, including its guidance to the content and time frames for future transformation road maps.

To Learn More . . .

"Air Force Transformation." https://www.my.af.mil/gcss-af/afp40/USAF/ep/home.do?topChannel=default&tabId=0.

The Edge: Air Force Transformation, 2005. Washington, DC: Headquarters US Air Force, Future Concepts and Transformation Division, 2005. http://www.af.mil/library/transformation/edge.pdf.

Elements of Defense Transformation. Washington, DC: Office of the Secretary of Defense, Office of Force Transformation, October 2004. http://www.oft.osd.mil/library/library_files/document_383_ElementsOfTransformation_LR.pdf.

"Officials Release Updated Transformation Flight Plan." Air Force Print News, 24 January 2005. http://www.af.mil/news/story.asp?storyID=123009672.

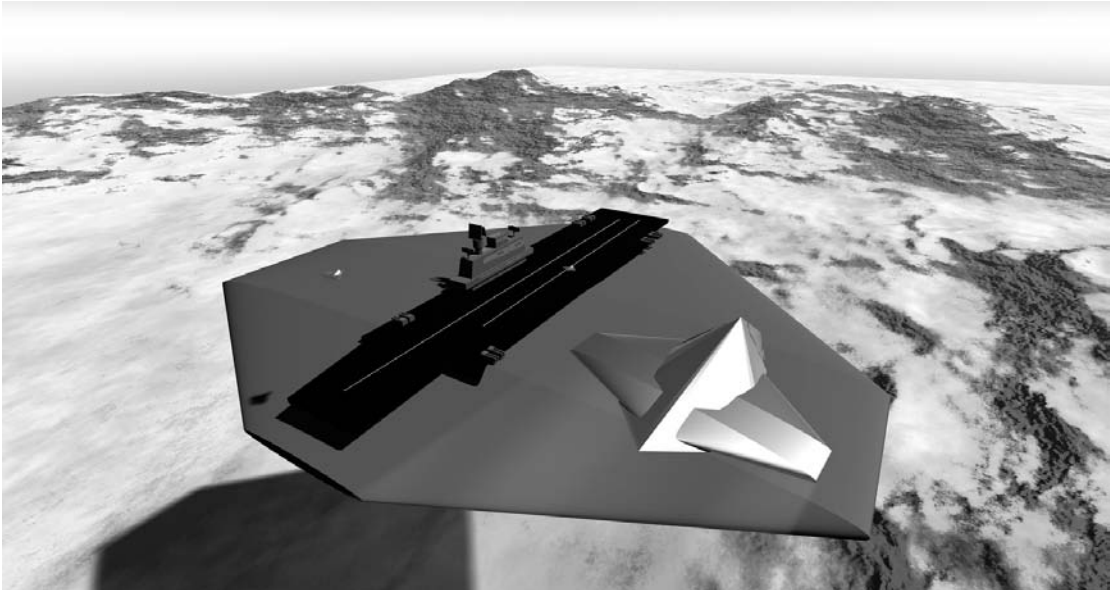
Transformation Planning Guidance. Washington, DC: Office of the Secretary of Defense, April 2003. http://www.oft.osd.mil/library/library_files/document_129_Transformation_Planning_Guidance_April_2003_1.pdf.

The U.S. Air Force Transformation Flight Plan, 2004. Washington, DC: Headquarters US Air Force, Future Concepts and Transformation Division, 2004. http://www.af.mil/library/posture/AF_TRANS_FLIGHT_PLAN-2004.pdf.

Narrowing the Global-Strike Gap with an Airborne Aircraft Carrier

COL GEORGE D. KRAMLINGER, USAF

Editorial Abstract: The United States faces a global-strike gap if it confronts a vast and well-defended adversary in an access-challenged theater halfway around the world. To close this gap, the Air Force should develop a fleet of airborne aircraft carriers to transport stealthy fighters and unmanned combat aerial vehicles over global range to protect, augment, and support the limited B-2 fleet.



US AIR FORCE BOMBERS played key roles in Operations Allied Force, Enduring Freedom, and Iraqi Freedom. Throughout Allied Force, B-2s flying 30-hour round-trip missions from the continental United States (CONUS) struck high-value Yugoslav targets at night through airspace considered too hostile for nonstealthy aircraft. Fortunately, North Atlantic Treaty Organization airfields in nearby Italy enabled the proven tactic of packaging short-range defense suppression, fighter, and jamming aircraft to improve bomber survivability.[1] Two B-2 sorties originating from the CONUS during each of the first two nights of Enduring Freedom quickly created a permissive environment above Afghanistan by eliminating the Taliban's meager strategic air defenses.[2] As a result, B-1 and B-52 bombers conveniently based at the British-owned atoll of Diego Garcia cycled freely over all of Afghanistan, pounding al-Qaeda positions around-the-clock.[3] During the 10 months preceding Iraqi Freedom, multirole fighters patrolling the southern and northern no-fly zones systematically dismantled much of the

Iraqi Integrated Air Defense System (IADS).[4] Consequently, the operation began with B-1s and B-52s based in Diego Garcia enjoying the freedom of action to loiter over most of Iraq with large payloads to rapidly engage emerging battlefield targets.[5] However, a permissive environment for nonstealthy bombers or favorable basing options for bombers and short-range support assets may not exist in the next conflict.

Nations that prohibit overflight or that deny basing rights, as well as adversaries who hold key airfields at risk or coerce allies with missiles armed with weapons of mass destruction (WMD), can prohibit access to regionally deployed land-based airpower. Naval attack fighters operating from the sea and conventional long-range bombers cannot survive penetration of a sophisticated IADS that denies access to all but the stealthiest platforms. Standoff air- and sea-launched cruise missiles are becoming increasingly vulnerable to advanced air defenses and have only limited capability against mobile, hardened, and deeply buried targets (HDBT) that create access denial. Long range, survivability, and penetrating weapons make the B-2 stealth bomber a highly capable global-strike platform.[6] Unfortunately, the 16 combat-coded B-2s in our inventory are insufficient to conduct an unescorted enabling operation in places where access denial precludes the use of regionally based airpower.[7] F/A-22 and F-117 stealth fighters should protect and augment the limited B-2 fleet by engaging mobile and hardened high-value targets, but they lack global range because of the single pilot's limited endurance. In the very near future, Iran, North Korea, and China will likely possess the combination of weapons, missiles, and air defenses to negate access to theater-based airpower. Consequently, the Air Force may have to use CONUS-to-CONUS missions to gain access to denied airspace. Hampered by a limited B-2 inventory and an inability to operate stealth fighters over global range, the United States will face a global-strike gap if it confronts a vast and well-defended adversary in an access-challenged theater halfway around the world.

The Airborne Aircraft Carrier Solution

To close such a gap, the Air Force should develop a fleet of airborne aircraft carriers (AAC) to allow stealthy fighters and unmanned combat aerial vehicles (UCAV) to protect, augment, and support the B-2 fleet. The AAC concept uses a Boeing 747-400 mother ship to transport and employ both a single stealth fighter in the piggyback configuration and a single UCAV carried under the fuselage. Air-to-air refueling will provide global range, enabling each AAC to remain airborne for days at a time. A retractable, protective shroud will cover the nose and cockpit of the stealth aircraft so its pilot can move freely between the AAC and fighter. Mechanisms to launch and recover the airborne stealth fighter and UCAV will facilitate multiple sorties by the parasite aircraft. Between missions both the fighter and UCAV will refuel and rearm while docked with the mother ship. After two or three coordinated strikes over the course of 12–24 hours, the mother ships will return the fighters and UCAVs to the CONUS for maintenance and regeneration as another group of AACs replaces them. The AAC concept will neither serve as a substitute for nor attempt to generate the sorties of a naval aircraft carrier. Instead, a fleet of AACs will enable the marshalling of high-payoff "silver-bullet" strike packages at the strategic and operational levels of war early in a campaign as a means of overcoming access denial and setting conditions for the deployment and employment of theater-based conventional forces.

Industry-Proposed Interim Solutions

To bridge the global-strike gap until the next-generation long-range strike platform becomes available, the Air Force is focusing on proven technology to develop an interim capability that is responsive, persistent, survivable in a nonpermissive environment, and ca-

pable of delivering a variety of weapons, including those designed to counter HDBTs.[8] The service hopes to field this interim capability by 2015, when a number of potential adversaries will possess the means to deny access. Industry has responded with a variety of proposals, including an upgraded B-1, an FB-22, an arsenal aircraft that carries cruise missiles, a variety of UCAV options, and an increased B-2 weapons load. The AAC option, however, is noticeably absent.

The B-1 played a significant role in Enduring Freedom and Iraqi Freedom by loitering over the battlefield with large payloads to engage emerging targets. Late in Iraqi Freedom, a B-1 orbiting above western Iraq made a 12-minute tasking-to-target dash that nearly killed a fleeing Saddam Hussein.[9] However, we can directly attribute the bomber's effectiveness to the permissive environments over Afghanistan and Iraq. Although the B-1 provides a critical capability to the nation, new engines, upgraded electronic countermeasures (ECM), the addition of air-to-air missiles, and an increased top speed will not appreciably enhance survivability when penetrating an access-denial IADS.

The proposed FB-22 will retain the speed, stealth, and fused sensor array of the F/A-22; incorporate a larger wing to hold more fuel; and carry 30 small-diameter bombs (SDB).[10] However, according to one air-and-space analyst, rewinging an aircraft is one of the most expensive of modifications and offers no guarantees.[11] Some experts suggest that the FB-22's supersonic speed will enhance capability against fleeting targets; others maintain that the medium bomber will not have the endurance necessary to loiter until an elusive mobile target reveals itself.[12] Critics contend this aircraft will stress an already strained tanker fleet. When fitted with a glide kit, the 250-pound SDB has a predicted standoff range of 60 miles, making the weapon highly effective against soft components of an access-denial IADS; however, it lacks the penetration to destroy an HDBT.[13] Though a welcome addition to the inventory, issues of cost, feasibility, and combat potential make investment in the FB-22 a risky proposition, given efforts to field other systems already over budget and behind schedule.

The Air Force might also close the global-strike gap by developing an arsenal aircraft with a high capacity for cruise missiles. Air- and sea-launched cruise missiles are critical for attacking soft targets in an access-denial environment but lack the responsiveness, capability, and affordability to close the gap completely. Gen Michael Moseley, the Air Force vice-chief of staff, suggests that these missiles, which can take hours to reach a target, may not offer the best solution to strike relocatable targets.[14] A single AGM-86D conventional air-launched cruise missile (CALCM) with a 1,000-pound warhead costs $1.8 million but can hold only a portion of the hardened target set at risk.[15] Conversely, a B-2 carries 16 2,000-pound penetrating Joint Direct Attack Munitions (JDAM) costing less than $25,000 each.[16] Furthermore, traditional cruise missiles are becoming increasingly vulnerable to the Russian S-300/400 surface-to-air missile (SAM) system used to create an access-denial IADS. The stealthy AGM-158 joint service standoff attack missile costs $330,000, offers a quick response with an advertised 200-mile range, and has some capability against hardened and mobile targets.[17] However, the S-400 (SA-20) SAM system is assessed to have an engagement range of 250 miles, forcing large, unprotected, nonstealthy aircraft such as a cruise-missile arsenal platform to operate no closer than 250–300 miles from the threat.[18] Consequently, the proposed arsenal aircraft may prove too vulnerable and expensive, given the limitations of standoff weapons, the B-52's ability to carry 16 CALCMs, the B-1's payload of 24 Joint Air-to-Surface Standoff Missiles, and the growing number of Navy platforms employing cruise missiles.[19]

Given the success of the Predator unmanned aerial vehicle (UAV) armed with the Hellfire missile, the Air Force is accelerating efforts to develop a UCAV that can perform a penetrating-strike sortie in a high-threat environment. The Boeing X-45A technology-demonstrator UCAV, which began flight-testing

in 2002, has successfully released a prototype SDB and has flown tactical profiles with a second X-45A UCAV (fig. 1).[20] We expect the fighter-sized X-45C to fly in 2007 with a radius of 1,200 miles, a cruise speed of .80 Mach, a 40,000-foot operating altitude, and a 4,500-pound payload.[21] Boeing is now proposing an X-45D with the range, payload, and size of a bomber.[22] Without a cockpit and associated pilot, the UCAV is stealthier than its manned counterpart and better suited to loiter in hostile airspace, waiting to attack elusive, mobile targets. However, the bomber-sized vehicle will require fighter sweep, threat suppression, and jamming support to protect this very expensive investment. The fighter-sized UCAV will need a prohibitive commitment of tankers to operate over global range.

Larger loads of smaller munitions will enable each B-2 to strike more targets per sortie but will not address the need to strike an ever-growing number of HDBTs in the early stages of an access-denial scenario. The standard B-2 weapons load consists of 16 penetrating 2,000-pound GBU-32 JDAMs. Modifications currently under way will allow each B-2 to

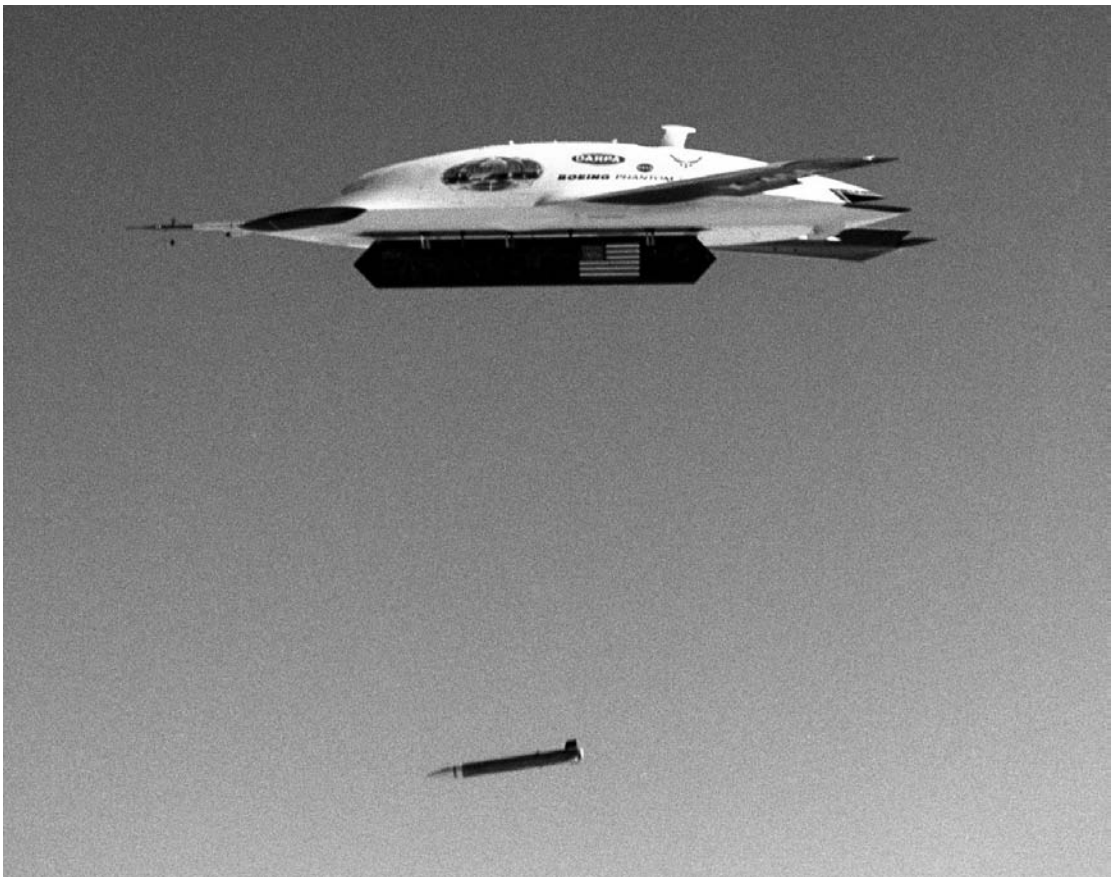


Figure 1. The X-45A technology-demonstrator UCAV releases an inert 250-pound SDB. (2d Lt Brooke Davis, "X-45A Completes First-Ever Inert Guided Weapons Release," Public Affairs Office, Edwards AFB, CA, 26 April 2004, http://www.edwards.af.mil/archive/2004/2004-archive-x45_weapon.html.)

carry 80 500-pound GBU-38 JDAMs.[23] Proponents claim that by 2007 the B-2 could carry 324 of the 250-pound SDBs. However, over 10,000 underground military facilities exist in 70 countries worldwide, over 1,400 of which are used for strategic command and control (C2), WMDs, and ballistic-missile basing—targets critical in the opening stages of any future access-denial scenario.[24] Even with improved accuracy and better explosives in smaller weapons, Newton's second law—force equals mass times acceleration—still applies, requiring large and accurate conventional weapons to defeat HDBTs. Fortunately, the B-2 can carry eight of the massive 5,000-pound GBU-37 bunker-buster bombs, and we have begun development of a 30,000-pound massive ordnance penetrator.[25] Adversaries will continue to dig more and tunnel deeper, thus preventing larger loads of smaller munitions from narrowing the global-strike gap.

Other Considerations

Stealth aircraft counter radar threats by deflecting and absorbing radar energy. Deflection is primarily a function of structural shape, and absorption depends upon skin coating. Fortunately, stealth aircraft can still survive in most high-threat areas with minimum external support, as evidenced by two lone F-117s delivering the opening blow against an underground bunker in heavily defended Baghdad during Iraqi Freedom.[26] On the other hand, the downing of an F-117 in hostile airspace during Allied Force demonstrates that stealth aircraft are not invincible. Deployment of mobile Russian S-300/400 radar-guided strategic SAM systems (SA-10, -12, and -20), also known as "double digit SAMs," effectively produces an impenetrable wall for nonstealthy aircraft and will likely evolve to threaten current stealth platforms.[27] With fuselage shape fixed, current stealth aircraft can make improvements only in skin coating against the ever-improving S-300/400 system. Consequently, ECM and the destruction of mobile air-defense components will become increasingly important enablers for the current family of stealth aircraft against an access-denial IADS.

In simple terms, the most effective ECM occurs when an escort jammer positions itself between the threat radar and strike aircraft. Unfortunately, Navy and Marine Corps EA-6B Prowler electronic-attack aircraft are too slow and vulnerable to provide escort jamming for B-2s in an access-denial environment.[28] The F/A-18G, the proposed replacement for the Navy EA-6B, offers increased speed but suffers the same vulnerability as any other conventional aircraft against an access-denial IADS. Furthermore, increasingly quiet submarines, stealthy mines, and antiship cruise missiles may push Navy carrier aviation from the littoral region to a range requiring a disproportionate commitment of land-based tankers. Plans are under way to replace B-52 wingtip tanks with jamming pods that will allow the venerable bomber to provide persistent standoff jamming after CALCM launch.[29] However, such jamming is becoming less effective as an access-denial IADS forces the platform to operate at ever-greater range. The Air Force is formulating plans to use the stealthy X-45C UCAV as a potential jamming platform, and the Marine Corps is considering a derivative of the stealthy F-35 Joint Strike Fighter to replace the EA-6B. However, experts are uncertain if we can internally mount jamming equipment, normally carried in external pods, to preserve stealth qualities and if automation can replace the three EA-6B ECM officers.[30] If successful, the unmanned X-45C is an ideal candidate for the dangerous penetrating escort mission, but employment of the fighter-sized UCAV from global range presents problems, given the excessive air-to-air-refueling requirements.

Finding mobile targets in an access-denial environment requires persistent, close-in, and stealthy intelligence, surveillance, and reconnaissance (ISR). During the Persian Gulf War of 1991, Iraq used camouflage, concealment, and deception along with mobility to effectively hide Scud-missile launchers in its western deserts despite a huge commitment of strike aircraft and standoff ISR platforms.[31]

During Allied Force, the Serbs constantly moved their mobile SAM systems, preventing ISR platforms from providing actionable targeting information. As a result, large sections of Serbian airspace remained unsafe for nonstealthy aircraft.[32] During Enduring Freedom and Iraqi Freedom, the RQ-1A Predator and high-flying RQ-4A Global Hawk UAVs demonstrated the enormous value of persistent, close-in ISR at finding, fixing, and tracking emerging and fleeting targets. However, neither of these UAVs is stealthy, and we have lost many of the low-flying Predators over hostile territory.[33] Double-digit SAM threats will push large, conventional ISR platforms such as the RC-135 Rivet Joint (signals intelligence) and the E-8 Joint Surveillance Target Attack Radar System to less effective ranges. Medium and low Earth orbit satellites lack the dwell time over a particular area for persistent ISR. Furthermore, space-based radars may not have sufficient fidelity to track mobile targets.[34] One of the X-45C program objectives calls for producing two hours of loiter time with a 4,500-pound payload 1,000 miles from the launch base.[35] Fuel saved by launching from an AAC near enemy territory will increase endurance and enable the stealthy X-45C UCAV to conduct persistent ISR in a high-threat environment. However, we currently have no practical method of employing fighter-sized UCAVs over global range.

To enhance effectiveness and survivability in a high-threat environment, B-2 bombers must become part of a coordinated strike package that includes fighter support, SAM suppression, and escort jamming. Daylight bombing by B-17s over Germany became effective only after P-51 fighters equipped with external drop tanks accompanied the bombers to the deepest targets and back. The Air Force lost 15 of 729 B-52 sorties to SAMs over North Vietnam in December 1972 during Linebacker II—and would have lost many more if not for jamming support and fighters flying SAM-suppression missions.[36] During Allied Force, F-15Cs cleared the skies of Serbian MiGs, F-16CJs suppressed deadly SAMs, and EA-6Bs provided standoff jamming as part of a coordinated package to improve effectiveness and survivability of the stealthy B-2 and F-117.[37] With only 16 combat-coded B-2s, the Air Force can ill afford to lose even a single stealth bomber to an enemy fighter or SAM. The AAC concept provides fighter sweep, SAM suppression, and escort jamming from global range when access denial prevents the execution of these missions from regional bases.

The AAC concept will be successful only if the UCAV employed from the mother ship is optimized to perform both the ISR and electronic-attack missions. UCAV developmental energy should not be wasted attempting to replicate the high-fidelity weapon-delivery capability of the F/A-22 or F-117. Instead, design of the X-45C production variant should focus on persistent ISR and close-in escort jamming in a high-threat environment—missions no platform can currently perform. UCAV design must enable rearming, refueling, and maintenance functions from the top of the vehicle since the upper surface will dock with the lower side of the AAC. The AAC UCAV should carry only a small weapons load—two SDBs to engage time-critical or mobile targets—and should dedicate the majority of payload capacity for ISR systems, jamming equipment, and additional fuel for increased persistence. Stealthy UCAVs jamming S-300/400 radars and finding mobile SAM launchers will become as big an enabler for the B-2 as the P-51 was for the B-17 in World War II.

History and Feasibility of an Airborne Aircraft Carrier

The idea of an aircraft carrier in the sky with parasite aircraft is not new. In the early 1930s, the Navy airships *Akron* and *Macon* were designed with an internal 60- by 75-foot hangar deck that included an overhead trolley system to store four Sparrowhawk scout planes, launching and recovering them with a retractable trapeze and winch assembly (fig. 2). Also in the 1930s, Russia experimented with parasite fighters carried by a Tupolev TB-3 bomber to provide defensive escort, offensive

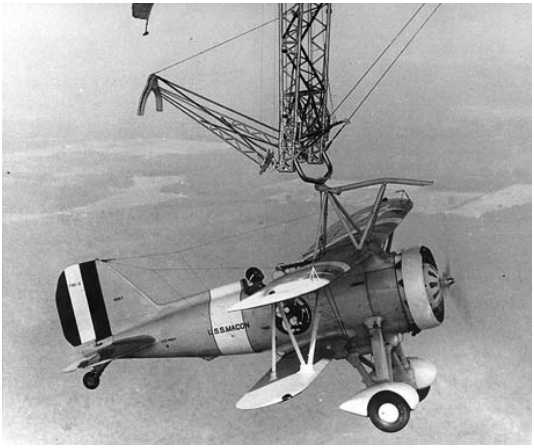


Figure 2. Curtis F9C-2 Sparrowhawk with the USS *Macon*. ("Curtiss F9C 'Sparrowhawk' Fighters—Part II: F9C-2s in Operation with Airships," Naval Historical Center, Photographic Section, http://www.history.navy.mil/photos/ac-usn22/f-types/f9c-d.htm.)

air-to-air sweep, and long-range offensive strikes. The most ambitious experiment used a large bomber with fighters carried above and below each wing and one under the fuselage on a trapeze.[38]

In the late 1940s, the desire to incorporate the World War II lessons of fighter escort with the intercontinental bomber led to the development of the XF-85 Goblin parasite aircraft, designed to fit into the bomb bay of a B-36 using a trapeze assembly for launch and recovery. However, the XF-85 proved unstable in flight-testing with a B-29 mother ship (fig. 3). Subsequently, the Air Force experimented with B-36s carrying F-84s on a trapeze assembly and with towing the fighters using a wingtip-attachment mechanism. Needing more intelligence during the early part of the Cold War, the service shifted its emphasis on the parasite from fighter escort to reconnaissance; for a very short period of time, the Air Force op-

Figure 3. XF-85 Goblin and B-29 mother ship. The McDonnell XF-85 Goblin program sought to provide the B-36 Peacemaker with a fighter for self-defense that the bomber could carry entirely within its bomb bay. An EB-29B replaced the B-36, which was not available for flight-testing. Because of turbulence, only three of seven flights resulted in successful captures. ("Parasite Fighter Programs: Monstro and the XF-85 Goblins," *Goleta Air and Space Museum*, http://www.air-and-space.com/goblins.htm. Air Force Flight Test Center History Office via Brian Lockett. Reprinted by permission.)

erated a GRB-36 squadron that carried RF-84 fighters using the bomb-bay trapeze assembly (fig. 4). Technical limitations and advancements in air-to-air refueling ended the service's experimentation with parasite-fighter projects. However, these B-36 experiments demonstrated the feasibility of using a trapeze assembly as a launch-and-recovery mechanism for the AAC UCAV, projected to be tailless and only four feet thick.

The National Aeronautics and Space Administration (NASA) has used mother ships and parasites for over 40 years. In-flight release of rocket planes and lifting bodies from under the wing of a B-52 furthered space exploration and development of the space shuttle. Two Boeing 747-100 shuttle carrier aircraft (SCA) now routinely ferry the DC-9–sized space-shuttle orbiter from Edwards AFB, California, to the Kennedy Space Center, Florida, in the piggyback configuration. Modifications to the 747 include three shuttle-attachment struts with associated interior structural strengthening and two additional vertical sta-

Figure 4. Fighter conveyor. In the early years of the Cold War, the US Air Force needed a reconnaissance aircraft that could reach targets deep in the Soviet Union with the speed and maneuverability to evade Soviet air defenses. The fighter conveyor (FICON) project provided a solution by using the intercontinental RB-36 to carry a jet-powered RF-84 parasite reconnaissance fighter. However, the program was abruptly cancelled in January 1956 when several pilots damaged their airplanes attempting to engage the trapeze. ("Flying Aircraft Carriers of the USAF: Project FICON," *Goleta Air and Space Museum*, http://www.air-and-space.com/ficon.htm. Dave Menard via Brian Lockett. Reprinted by permission.)

bilizers to enhance directional control (fig. 5). In 1977 space shuttle *Enterprise* made five free-flight tests from the first SCA with separation occurring at altitudes from 19,000 to 26,000 feet (fig. 6). The orbiter is 122 feet long and 57 feet high, with a wingspan of 78 feet; it weighs approximately 175,000 pounds when carried by the SCA.[39] In comparison, a combat-loaded stealth fighter is one-third the weight and less than half the size of the shuttle.[40] The size of current stealth fighters precludes carriage under the wing or fuselage of a mother ship, but these aircraft are certainly small enough for a comfortable fit in the piggyback configuration.

The commercially available 747-400ER (extended-range) freighter seems the best candidate for the AAC mother ship. This 231-foot-long aircraft carries 250,000 pounds for 5,000 miles, unrefueled; cruises at .85 Mach; and costs approximately $200 million.[41] By comparison, the 174-foot-long Boeing C-17 carries 160,000 pounds for 2,400 miles, unrefueled; cruises at .77 Mach; and costs $237 million.[42] The 747-400ER has a significant range advantage, given the weight of a 55,000-pound stealth fighter; 36,000-pound X-45C; and associated support equipment. Air-to-air refueling capability will give the 747-400 AAC the range and endurance necessary to conduct global-strike operations in an access-denial environment. The increased length and standard vertical-stabilizer configuration of the 747-400ER, compared to those of the C-17,

Figure 5. Shuttle carrier aircraft. (National Aeronautics and Space Administration, Dryden Aircraft Photo Collection, http://www.dfrc.nasa.gov/Gallery/Photo/STS-111/HTML/EC02-0131-10.html.)

Figure 6. *Enterprise* free-flight testing after separation from 747. (National Aeronautics and Space Administration, Dryden Aircraft Photo Collection, http://www.dfrc.nasa.gov/Gallery/Photo/ALT/HTML/ECN77-8608.html.)

will better facilitate a docking station for a 65-foot-long stealth fighter in the piggyback configuration. The sturdy cargo deck and cavernous space of the 747-400 freighter will provide for munitions storage, crew space, and structural modifications necessary to accommodate the recovery mechanisms.

The AAC concept entails many technological challenges, especially the development of a mechanism to recover the stealth fighter to the backbone of the mother ship in flight. A scissors-lift platform anchored to the cargo deck, extending through the upper fuselage, and then rising from the backbone above the vertical tail may provide a viable recovery scheme. With this system, the stealth fighter flies an instrument-aided approach to touchdown on the raised platform with landing gear extended. At touchdown, the platform securely captures the landing gear and then lowers the fighter to the mother ship's backbone. Like the shuttle orbiter, the stealth fighter will launch from the backbone position. Consequently, the scissors lift will not have to raise a fully loaded aircraft, thus minimizing the weight and complexity of the lift mechanism. The 747 mother ship may require a redesigned split vertical tail similar to that of the SCA. If practical, the distance between vertical tails may allow the fighter to fly an

instrument-aided approach directly to the backbone and negate the need for a scissors-lift mechanism. The AAC will include a retractable shroud that covers the nose and cockpit area of the fighter and a trapdoor leading from the backbone to the interior of the shroud to facilitate cockpit access. A series of trapdoors on the AAC backbone will enable access to the fighter's underside for refueling, rearming, and minor maintenance. A lift system will move munitions from the interior cargo deck of the mother ship through a trapdoor to the weapons bays of the docked fighter. Refueling between missions will generally occur in the docked position. However, the addition of a standard Air Force air-to-air refueling boom and probe-and-drogue system will offer tremendous mission flexibility. To increase battlespace awareness, the AAC will include an ISR sensor suite netted with the other AACs, supporting ISR platforms and the combined air and space operations center.[43] These are just some of the AAC design considerations, and this article in no way intends to offer a complete blueprint. However, past experience suggests that the AAC concept is feasible and that innovation can overcome the technological challenges.

Airborne Aircraft Carrier Concept of Operations

A fleet of 60 747-400 mother ships will enable continuous cycling of groups of 12–16 AACs per 24 hours to support global-strike operations in an access-denial environment. The mix of stealth fighters depends upon mission constraints but will likely consist of half F/A-22s and half F-117s. The stealth-fighter pilots ride in the mother ships until they approach the launch points in order to maintain a rest cycle, receive final tasking from the combined air and space operations center, and complete final mission briefings via a secure communication link with each other. The fighters will launch from their ACC just outside adversary fighter range to form a coordinated strike package with two CONUS-based B-2 bombers, air- and sea-launched cruise missiles, Airborne Warning and Control System Aircraft, standoff ISR platforms, and Navy carrier-based assets (threat and tanker availability permitting).[44] A portion of the UCAVs will launch in advance of the strike package to gather signals intelligence, triangulate threat locations, track mobile targets, and arrive in position to provide close-in escort jamming. F/A-22s will ensure air superiority and destroy mobile, high-value targets around-the-clock, thus denying the enemy daytime sanctuary created by the B-2 and F-117 limitation to operate only at night. F-117s will increase hard-target kill capability against key C2, WMD, and IADS components.[45] Successful development of the F/A-117 configuration (blue paint scheme permitting daytime operations) will allow daylight attacks against additional hardened and underground facilities, further denying sanctuary.[46]

After completing the first coordinated strike of the night, the stealth fighters and some UCAVs will return to their mother ships to refuel and rearm. Other UCAVs will remain on station gathering intelligence in preparation for the next strike. Four to six hours after completing the first strike, the stealthy fighters and UCAVs will launch to form the second strike package of the night with a new two-ship of B-2 bombers arriving from outside the theater. Arrival and departure of individual AACs may be staggered to enhance operational effectiveness while each AAC will air-to-air refuel every eight to 12 hours to maintain station time. With this battle rhythm, 12–16 AACs will be present at any one time and launch two to three strike packages every 12–24 hours before each mother ship returns to the CONUS for repairs and regeneration, replaced one-for-one by another AAC.

Although designed to operate at the high end of the conflict spectrum, AAC capability is scalable for smaller contingencies, raids, and situations involving a single attack on a fleeting, high-value target. With air-to-air refueling, a single AAC can maintain airborne alert for an extended period of time (without the crew-fatigue limitations of the B-2), waiting for the right set of conditions to conduct

a low-signature strike on a time-sensitive target. Furthermore, groups of AACs could enforce a no-fly zone as part of a sustained, coercive air-presence strategy when access denial prevents regional basing.

Beyond the First Generation

A parasite-aircraft/mother-ship combination offers a less expensive and more effective method of looking at future bomber development. The future manned bomber could use the AAC and piggyback concept whereby the smaller bomber is optimized for threat penetration, survivability, and weapons delivery (especially against mobile and hardened targets), thus driving down development cost and aircraft price, while the mother ship is built for long range and payload capacity. The US aircraft industry could then optimize itself to take advantage of new technology such that it builds a small number (50–60) of relatively low-cost, up-to-date stealthy parasite bombers and UCAVs with a fairly short development cycle.[47] A stealthy, blended-wing C-5B replacement could be designed with AAC duty in mind, thus increasing the synergy between the airlift and global-strike forces. Consequently, the AAC concept offers a promising capability to reduce medium-term strategic risk, facilitate long-term transformation, and potentially revolutionize the way the Air Force procures bomber systems.

Conclusion

In view of ever-expanding global interests, the growing importance of the geographically vast Asia-Pacific region, diminished reaction time, and the proliferation of antiaccess capabilities, the United States faces a global-strike gap. Defense of US vital interests cannot wait for procurement of the next long-range strike platform or development of a hypersonic, suborbital global-strike vehicle. Consequently, the United States must narrow the global-strike gap as a hedge against uncertainty and turmoil in the near- and midterm security environment. The AAC concept enables F/A-22s, F-117s, and fighter-sized UCAVs to destroy critical mobile and hardened targets while protecting the limited B-2 fleet with fighter sweep, SAM suppression, and escort jamming over global range in an access-denial environment. A fleet of 60 AACs will reduce the near-term global-strike gap with a balance among cost, capability, flexibility, and strategic risk. Eventually, global-strike missions using AACs and B-2s will gain air superiority, neutralize WMDs, and paralyze an adversary as a means to facilitate the introduction of less stealthy combat aircraft into the theater. Airborne aircraft carriers offer a cost-effective and practical method to close the global-strike gap in an access-denial environment. □

Notes

1. Rebecca Grant, *The B-2 Goes to War* (Arlington, VA: IRIS Press, 2001), 40–42. Most North Atlantic Treaty Organization bases have blast-resistant hardened aircraft shelters designed to protect fighter-sized aircraft in a nuclear, chemical, or biological environment—a capability that may not exist at expeditionary bases in many parts of the world.

2. During Allied Force and Enduring Freedom, the B-2 flew missions from Whiteman AFB, MO, because no other location provided the climate-controlled hangars necessary to cure the tapes, calks, and coatings associated with maintenance of the radar-absorbent skin. During Iraqi Freedom, the B-2s departed Whiteman, struck targets in Afghanistan, and then landed at Diego Garcia after a 40-plus-hour flight. After swapping crews with engines running, the B-2s departed Diego Garcia and arrived back at Whiteman some 30 hours later. With this shuttle-bombing-like arrangement, each combat sortie was airborne over 70 hours. In preparation for Iraqi Freedom, the Air Force erected portable, climate-controlled maintenance hangars at Diego Garcia and Royal Air Force Fairford, England, thus significantly decreasing transit time and increasing combat utilization. However, basing rights at these two locations require formal approval from the British government—something that may not always be guaranteed. Rebecca Grant, "An Air War Like No Other," *Air Force Magazine Online* 85, no. 11 (November 2002), http://www.afa.org/magazine/nov2002/1102airwar.asp.

3. John A. Tirpak, "Long Arm of the Air Force," *Air Force Magazine Online* 85, no. 10 (October 2002), http://www.afa.org/magazine/oct2002/1002longarm.asp.

4. Tommy Franks with Malcolm McConnell, *American Soldier* (New York: HarperCollins Books, 2004), 388; and Suzann Chapman, "The War before the War," *Air Force Magazine Online* 87, no. 2 (February 2004), http://www.afa.org/magazine/feb2004/0204war.asp.

5. Adam J. Hebert, "The Long Reach of the Heavy Bombers," *Air Force Magazine Online* 86, no. 11 (November 2003), http://www.afa.org/magazine/nov2003/1103bombers.asp.

6. The B-2 is the only Air Force bomber capable of carrying the 5,000-pound GBU-37 "bunker buster," guided by the global positioning system (GPS). See "Smart Weapons: GPS Guided Bombs," *GlobalSecurity.org*, http://www.globalsecurity.org/military/systems/munitions/smart.htm.

7. Only 16 of the 21 B-2 bombers in the Air Force inventory are combat coded. Using a 70-hour CONUS-to-CONUS round-trip sortie duration as occurred during Enduring Force as a worst-case scenario and assuming an 85 percent mission-capable rate, one could reasonably expect that 12–13 B-2A bombers could be available for day-to-day tasking. Sortie duration and the number of available stealth bombers will result in a cycle of only four aircraft in the target area during each 24-hour period, with four bombers en route and four returning to the CONUS or already on the ground undergoing regeneration. See Hebert, "Long Reach."

8. Amy Butler, "Sambur: 'Proven' Technology Needed for Interim Air Force Strike Capability," *Defense Daily*, 3 May 2004, 4.

9. Hebert, "Long Reach."

10. David A. Fulghum, "Taking a Chance," *Aviation Week and Space Technology*, 31 May 2004, 28.

11. David Hirschman, "Lockheed Awaits Word on Bomber," *Atlanta Journal-Constitution*, 6 February 2004.

12. "U.S. Air Force's FB-22 Concept Draws Scrutiny in Hill Report," *Aerospace Daily and Defense Report*, 2 June 2004.

13. Robert Wall and Douglas Barrie, "Making an Impact," *Aviation Week and Space Technology*, 17 May 2004, 44.

14. Michael Sirak, "USAF Focuses on Future Long-Range Strike Plans," *Jane's Defence Weekly*, 28 January 2004.

15. "Boeing Selects Lockheed Martin to Provide CALCM Hard-Target Warhead," Boeing Company news release, 2 December 1999, http://www.boeing.com/news/releases/1999/news_release_991202o.htm.

16. "Joint Direct Attack Munitions GBU-31/32," fact sheet, *Air Force Link*, http://www.af.mil/factsheets/factsheet.asp?fsID=108.

17. Robert Wall, "Changing Perceptions," *Aviation Week and Space Technology*, 15 September 2003, 32.

18. "S-300PMU3/S-400 SA-20 Triumf," *GlobalSecurity.org*, http://www.globalsecurity.org/military/world/russia/s-400.htm; and "Study Finds Current, Planned Long-Range Strike Capability Lacking," *Inside the Air Force*, 10 October 2003, 1.

19. In a move to give the US Navy added capability in projecting long-range firepower, the Defense Transformation Board recommends converting four nuclear ballistic submarines to cruise-missile carriers. See Frank Wolfe, "Panel Advises Navy JSF Acceleration; SSBN Conversion; B-2A Modernization," *Defense Daily International* 2, no. 23 (15 June 2001), http://web.lexisnexis.com/universe/document?_m=75be873eca268c008ebc734206978772&_docnum=40&wchp=dGLbVlz-lSlzV&_md5=2009ddc2df89c08cc415a021dce90c3f.

20. Robert Wall, "Lock Step; Boeing Demonstrates UCAVs Operating in Formation," *Aviation Week and Space Technology* 161, no. 6 (9 August 2004): 33; and Robert Wall and David Fulghum, "Stage Setting," *Aviation Week and Space Technology* 160, no. 17 (26 April 2004): 32.

21. "Boeing Receives First Engines for X-45C Unmanned Combat Aircraft," Boeing Company news release, 18 November 2004, http://www.boeing.com/news/releases/2004/q4/nr_041118t.html.

22. Fulghum, "Taking a Chance," 28.

23. John A. Tirpak, "Bomber Questions," *Air Force Magazine* 84, no. 12 (December 2001): 42.

24. "Nuclear Posture Review Report," *GlobalSecurity.org*, 8 January 2002, http://www.globalsecurity.org/wmd/library/policy/dod/npr.htm.

25. Michael Sirak, "Massive Bomb to MOP Up Deeply Buried Targets," *Jane's Defence Weekly*, 21 July 2004.

26. Franks, *American Soldier*, 453–61.

27. The S-300 system, recently sold to Iran, is currently active in Russia, most former Soviet republics, Bulgaria, China, and India. See John A. Tirpak, "The Double-Digit SAMs," *Air Force Magazine Online* 84, no. 6 (June 2001), http://www.afa.org/magazine/june2001/0601sams.asp.

28. In a move to reduce cost and increase jointness, the Air Force retired the EF-111 fleet in the late 1990s and now relies on Navy and Marine Corps EA-6B fleets for jamming and electronic combat.

29. John A. Tirpak, "The New Way of Electron War," *Air Force Magazine Online* 87, no. 12 (December 2004), http://www.afa.org/magazine/Dec2004/1204electron.asp.

30. Robert Wall, "EA-35 Assessment," *Aviation Week and Space Technology* 162, no. 1 (3 January 2005): 54.

31. For details on the commitment of significant resources to search for Scud missiles with little result, see Rick Atkinson, *Crusade: The Untold Story of the Persian Gulf War* (Boston: Houghton Mifflin Company, 1993), 144–48.

32. Benjamin S. Lambeth, *NATO's Air War for Kosovo: A Strategic and Operational Assessment* (Santa Monica, CA: RAND, 2001), 230, http://www.rand.org/publications/MR/MR1365/.

33. Richard J. Newman, "The Little Predator That Could," *Air Force Magazine Online* 85, no. 3 (March 2002), http://www.afa.org/magazine/march2002/0302predator_print.html.

34. Robert Wall and David A. Fulghum, "Under Scrutiny—USAF Reconnaissance, UCAV Plans Undergo Senior-Level Appraisal," *Aviation Week and Space Technology*, 20 September 2004, 26.

35. If the combined weight of the desired ISR and electronic-attack payload is less than 4,500 pounds, the savings in weight and volume can be used for additional fuel to increase battlespace persistence. Robert Wall, "Head to Head," *Aviation Week and Space Technology* 160, no. 8 (23 February 2004): 37.

36. Walter J. Boyne, "Linebacker II," *Air Force Magazine Online* 80, no. 11 (November 1997), http://www.afa.org/magazine/nov1997/1197lineback.asp.

37. Grant, *B-2 Goes to War*, 40–42.

38. Michael Taylor, *The World's Strangest Aircraft* (Hertfordshire, United Kingdom: Regency House Publishing, Ltd., 2001), 42–45.

39. Ibid.

40. Stealth fighters weigh approximately 55,000 pounds, are 65 feet long and 16 feet high, and have a wingspan of 44 feet. See "F-117A Nighthawk," http://www.af.mil/news/factsheets/F_117A_Nighthawk. html. See also "F-22 Raptor," *Air Force Fact Sheets*, http://usmilitary.about.com/od/afweapons/l/blf22.htm.

41. "Technical Characteristics—Boeing 747-400 Freighter," Boeing Company, http://www.boeing.com/commercial/747family/pf/pf_400f_prod.html.

42. "Specifications—C-17 Globemaster III Tactical Transport Aircraft, USA," *Airforce-technology.com*, http://www.airforce-technology.com/projects/c17/specs.html.

43. An Air Force transformation goal is to create a "smart" tanker that expands the air-refueling mission to one of communications platform and supports efforts to make every platform in the battlespace part of a larger information/sensor network. Since tankers are always close to the battlespace or flying intercontinental routes as part of an air bridge, they can form the airborne nodes of this battlespace-communications network with passive sensors and Link 16–like connectivity. The same concept can be applied to an ISR suite for the AAC. Ideally, the AAC can be fitted with a smaller version of the air-to-air surveillance radar envisioned for the E-10 multisensor C2 aircraft, thus providing a netted air picture for C2 and high value airborne asset (HVAA) protection. Amy Butler, "Tanker Smarts," *Aviation Week and Space Technology* 162, no. 8 (21 February 2005): 39–40.

44. Given a fleet of 60 747-400 AACs and an 80 percent mission-capable rate, 48 AACs would be mission ready at any one time. Like the B-2A CONUS-to-CONUS missions, one-third of the mission-ready aircraft would be on station, one-third returning from the previous tasking cycle, and the other one-third en route, resulting in 16 AACs on station every 24 hours.

45. To maximize capability against HDBTs, each B-2A sortie will carry eight 5,000-pound-class weapons for a total of 32 weapons per night. Eight F-117s, each carrying two 2,000-pound-class penetrating weapons, will fly two sorties per night from the AAC for a total of 32 penetrating weapons. If the F/A-117A conversion is successful, an additional daytime sortie by each F/A-117 will add another 16 penetrating weapons.

46. Laura Pellegrino, "A Nighthawk in Raptor's Clothing," *Air Combat Command News Service*, 8 December 2003, http://www2.acc.af.mil/accnews/dec03/03348.html.

47. Designed and built by the famous Lockheed "Skunk Works," the F-117A evolved from concept to technology demonstrator in two and one-half years, with the first flight of a production aircraft occurring four years later. A total of 64 airframes were built. Paul F. Crickmore and Alison J. Crickmore, *Nighthawk F-117 Stealth Fighter* (Ann Arbor, MI: Lowe and B. Hould Publishers, 2002), 182–89.

Free Electronic Subscriptions

Now you can obtain a free subscription to the online version of *Air and Space Power Journal*'s English and Spanish editions at http://www.af.mil/subscribe.
We will then send you an e-mail message with links to all of the articles in each new quarterly issue.

Neither War nor Not War: Army Command in Europe during the Time of Peace Operations: Tasks Confronting USAREUR Commanders, 1994–2000 by Richard M. Swain. Strategic Studies Institute (http://www.carlisle.army.mil/ssi/index.cfm), US Army War College, 122 Forbes Avenue, Carlisle, Pennsylvania 17013-5244, May 2003, 283 pages.

This first-rate study examines how the US Army in Europe (USAREUR) had to adapt to the post–Cold War peacekeeping and peace-enforcement operations in the Balkans. The manner in which commanding generals (of USAREUR; the commander of Supreme Headquarters Allied Powers, Europe; and individual division commanders) adapted and shaped their forces, headquarters, and staffs says volumes about their personal leadership skills and personalities.

In the late 1990s, the US military was drawing down from the 350,000 troops it had stationed in Europe during the Cold War and first Gulf War. The Balkans, actually the former Yugoslavia, had exploded into a brutal civil war. Until 1994, involvement by the United States and the North Atlantic Treaty Organization (NATO) had remained minimal, but as the brutality increased, the Clinton administration began contemplating a more interventionist foreign policy and, by default, military intervention. Apprised of the situation, US Army commanders did not wait until the signing of the complex Dayton peace accords but started training and planning for an eventual operation in Bosnia. In that country, three ethnic groups vied for control of the province: Serbs allied with Serbia itself, Croats allied with Croatia, and Muslims seeking independence from the other two groups. Both Serbia and Croatia forcibly moved outside ethnic groups to gain territory, with Bosnian Serbs killing entire Muslim populations of villages and cities in the process. The peace accords divided the province into three separate ethnic areas with a federation presidency. The US Army, together with its NATO and overseas allies, set up military sectors and zones of separation to implement the treaty.

Before this could happen, however, hundreds of American soldiers, along with their equipment and logistical support, had to be shipped from Germany to staging bases in Hungary to facilitate a December entry into Bosnia. Army commanders had to train their troops in mine clearing, route security, and crowd control. The author effectively discusses organizational changes in terms of the events in Bosnia, allowing readers to understand the influence of Washington, NATO, and the United Nations (UN) on the day-to-day operations of the US Army. The command structure in Europe—always complex because of NATO and US command channels—became further frayed when representatives from the European Union and UN high commissioners intervened in the operations of the Bosnia Stabilization Force and Implementation Force.

The US Army confronted violence against returning refugees, dealt with protests resulting from its apprehension of human-rights violators, and attempted to keep the Pale hardliners from overthrowing the Serb government located in Banja Luka. Jealousy over prerogatives by various officials ultimately compounded the situational and political difficulties. Ethnic differences and foot-dragging

by international agencies forced the extension of the mission—originally designed to last one year—as the US Army and its international allies sought to pacify the region. Another conflict in Kosovo in 1999 would finally mark the end of Serbian-provoked war in the Balkans. However, ethnic strife continued to fester, and the US Army was forced to deploy troops to two theaters.

Swain also details the complexity of the staffs that US Army generals had to rely on to manage daily operations in Bosnia, USAREUR operations in Germany, and the variety of international staffs—none of which were colocated but maintained headquarters throughout Bosnia and Europe. Gens. Eric Shinseki and Tommy Franks both speculated about what kind of changes in leadership training the Army would have to make to prepare its personnel for future peace-implementation missions that undoubtedly would confront the Army worldwide. The 1999 war in Kosovo would bring its own challenges to Gen Montgomery Meigs, commander of the Bosnian Stabilization Force and V Corps. The activities and responsibilities of US Army commanders shifted as US, international, and Bosnian political contexts changed. The tasks in Bosnia evolved from conducting simple separation and demobilization to serving as the instrument of coercion to impose a political regime on all ethnic groupings located in Bosnia.

Neither War nor Not War is an excellent study of post–Cold War military operations that Air Force officers should read in conjunction with Col Robert C. Owen's *Deliberate Force: A Case Study in Effective Air Campaigning* (Air University Press, 2000). I recommend it highly to anyone studying or researching Balkan military operations as well as NATO and UN operations during this time.

Capt Gilles Van Nederveen, USAF, Retired
Fairfax, Virginia

Blitzkrieg to Desert Storm: The Evolution of Operational Warfare by Robert M. Citino. University Press of Kansas (http://www.kansaspress.ku.edu), 2501 West 15th Street, Lawrence, Kansas 66049-3905, 2004, 424 pages, $39.95 (hardcover).

Army Field Manual 3-0, *Operations*, June 2001, defines operational warfare as "the level at which campaigns and major operations are conducted and sustained to accomplish strategic objectives within theaters or areas of operations. . . . [It] determines when, where, and for what purpose major forces are employed to influence the enemy disposition before combat. It governs the deployment of those forces, their commitment to or withdrawal from battle, and the arrangement of battles and major operations to achieve operational and strategic objectives" (2-2 through 2-4). *Blitzkrieg to Desert Storm* examines warfare in the mid to late twentieth century through the prism of this definition (even though Robert Citino, the author, does not say as much) to determine how modern armies attempt to produce decisive results—the elusive goal of operational warfare.

Citino builds on his previous works on this subject—*The Path to Blitzkrieg: Doctrine and Training in the German Army, 1920–1939* (1999) and *Quest for Decisive Victory: From Stalemate to Blitzkrieg in Europe, 1899–1940* (2002)—to illustrate the essentials of operational success in warfare. He examines the operational level of warfare in World War II, the Korean conflict, the Arab-Israeli wars, the Indo-Pakistani war of 1971, the Vietnam War, the Iran-Iraq War, and the first Gulf War as examples of armies shaping the battlefield and exerting their will upon the enemy rather than merely aiming the army in the enemy's general direction, as happens more often than not in warfare.

Military leaders should read this book closely to ensure that they don't fall into the usual trap of looking for formulas of success that fail to reveal the nature of the operational art. The author points out the ease of developing an arrangement for decisive victory, but attaining such results is a rarity. Citino eschews the use of magic words that tend to find their way into the military lexicon only to be overused by less thoughtful leaders and academicians as if the mere mention of them grants legitimacy to one's position. He points out that the now commonly used German terms such as *Auftragstaktik* are actually the creation of non-German observers attempting to explain the early German successes in World War II. Now we have several American concepts such as *information warfare* and *asymmetrical warfare* that have crept into modern thinking on the subject of conflict. Like some antibiotics, these terms can lose their effectiveness from overuse.

Advising against the pursuit of concrete theories of war, Citino favors a continuing study of warfare that contributes to the planning process. He touts the importance of applying fire and maneuver equally in combined-arms operations to put pressure on the enemy from all directions. The skillful execution of such operations tends to blur the distinctions between mobility and firepower.

Using examples from the Iran-Iraq War, Citino cautions against giving too much credence to the

pronouncements of pundits and analysts who populate the 24-hour news cycle. Observers of the current wars in Iraq and Afghanistan should find this advice useful during the current deluge of reporting on every minuscule event. News alerts purporting to inform and educate are posted virtually every hour on the all-news networks. Such notices are based on the flimsiest of information, resulting in shallow analysis that goes unexplained, unexamined, or uncorrected and has a shelf life lasting only until the release of the next big story—sometimes only minutes away. Such reporting tends to degrade a viewer's understanding of the operational level of warfare, replacing it with an insatiable taste for sound bites and film clips, taking all who indulge in them down a path of snap judgments and decisions based on opinion polls.

Citino questions the wisdom of the current US Army approach to transformation, which seems to replace firepower with speed. He warns against substituting a robust Army with one that is smaller, lighter, and cheaper. Although such transformation may seem wise during relatively peaceful times interrupted by small, limited wars, the author suggests that we may find ourselves in the same boat as the British at the outset of World War II when their small "tankettes" could not stand up to German armor. He points out that the best reason for maintaining a heavy force is that it can better deal with an unpredictable future. Successful armies do not lock themselves into limited courses of action; rather, they keep their options open and available so that they can respond to threats decisively. As reasonable as that sounds, the fact that Citino does not offer any analysis that compares the pre–World War II political/military situation with today's environment makes his concerns seem a bit speculative at best. There are few significant threats on the horizon that we cannot oppose with airpower and deep fires—options that didn't exist for the British in 1940. When one considers today's improved capabilities, the author's comparisons of the current military transformation with pre–World War II armies may not stand up.

Citino concludes that operational success depends upon a commitment to four elements that have proven so useful in the past. Training, doctrine, weaponry, and military history are more important than technology and the various buzzwords of warfare. Ever since Russell Weigley wrote *The American Way of War: A History of United States Military Strategy and Policy* (1973), soldiers and scholars have struggled with identifying an American way of war. Some individuals believe that it is actually only an American way of battle. Citino's book continues the exploration of this concept—one that might allow armies to translate operational conquests to strategic victories. In perhaps his most insightful statement, he observes that "there is only one law regarding operational doctrine; in the end, each army must work out its own doctrine for itself, based on its national values, traditions, and culture" (p. 96). Our challenge today lies in discovering those elements and applying them to operational warfare. Readers of *Blitzkrieg to Desert Storm* will be rewarded by an informative and interesting review of recent military history that will inspire thoughtful consideration of the future.

CSM James H. Clifford, USA
Fort Gillem, Georgia

Fallen Astronauts: Heroes Who Died Reaching for the Moon by Colin Burgess and Kate Doolan, with Bert Vis. University of Nebraska Press (http://www.nebraskapress.unl.edu), 233 North 8th Street, Lincoln, Nebraska 68588-0255, 2003, 272 pages, $40.00 (hardcover), $25.00 (softcover).

On 20 July 1969, Neil Armstrong became the first man to walk on the moon. This pinnacle achievement in the history of the United States and the world, however, came with a significant cost. At the height of the space race between America and the Soviet Union in the 1960s, eight astronauts tragically perished: four died in aircraft crashes, three succumbed to fire in the *Apollo 1* capsule, and another lost his life in an automobile accident. Colin Burgess and Kate Doolan provide comprehensive accounts of the lives and deaths of these men. Their exhaustive research and concise writing have produced an account that grips the reader's attention from cover to cover. In addition, the deceased astronauts' families provided many of the book's 37 photographs, giving us a rare glimpse into both their public and private personas.

Fallen Astronauts begins with the life and death of Capt Theodore C. Freeman, USAF, an exceptional pilot who became an astronaut in 1963. While flying a normal training mission in October 1964, Freeman's T-38 aircraft was struck by geese during the landing approach at Ellington AFB, Texas. Freeman thus became the first of America's space heroes to die. Subsequent chapters focus on the fiery crash in February 1966 of another T-38, this one piloted by astronauts Elliott M. See and Charles Bassett, scheduled to fly together in *Gemini*

9; the deaths of Virgil "Gus" Grissom, Ed White, and Roger Chaffee in the *Apollo 1* fire at Cape Kennedy in January 1967; Ed Givens's tragic automobile accident in a Houston suburb in June 1967; and the death of C. C. Williams, whose T-38 fell from the sky near Tallahassee, Florida, in October 1967. The loss of these men had a profound impact on America's space program, including the selection of the 10 men who would walk on the moon. Burgess and Doolan point out that, had they lived, several of the eight would have left their footprints on the lunar surface.

Bert Vis contributes a fascinating chapter on the deaths of the Soviet Union's cosmonauts in the 1960s and early 1970s. Like their American counterparts, these men also paid the ultimate price to further their country's space program. One of the more interesting stories concerns Yuri Gagarin, who in 1961 became the first human to fly in space. Gagarin fell in and out of favor with the Soviet government and died when his MiG crashed in 1968. Another cosmonaut, Grigori Nelyubov, found himself booted out of the Soviet space program for disciplinary reasons—an action that might have led to his suicide. Vis also adds new details to the catastrophic ending of the *Soyuz 11* flight of June 1971, in which three cosmonauts lost their lives.

Fallen Astronauts brilliantly chronicles the lives and deaths of men who had a calling to serve their nations in space. Don't let the melancholy title fool you. This book is a joy to read!

Maj Michael P. Kleiman, USAFR
Kirtland AFB, New Mexico

Post-Soviet Military Theory and Strategy: A Discussion of the Russian Journal *Military Thought*
East View Publications (http://www.eastview.com), 3020 Harbor Lane North, Minneapolis, Minnesota 55447.

The Soviet Union has produced many notable military thinkers such as V. K. Triandafilov and Mikhail Tukhachevski, premier writers on the role of armor in combat. Others, like Aleksandr Svechin, who wrote on strategy, would fall victim to Stalin's purges. The Soviet dictator altered or simply destroyed many original Russian ideas on Clausewitz, thinking that they inspired German aggression in World War II. The fall of the Soviet Union liberated many archives, and original, uncensored works are beginning to appear in print. This review highlights issues for the year 2003 of the journal *Military Thought*, published monthly by the Russian Federation's Defense Ministry, in an attempt to provide insight into cutting-edge matters discussed by Russian military thinkers in the tactical and strategic realms. (Although originally published in Russian, *Military Thought* is available in English from East View Publications in Minneapolis.)

Col O. N. Kalinovskiy, *Military Thought*'s chief editor, identifies five priorities for the themes of 2003: (1) forecasting the future character of wars in the twenty-first century; (2) searching for and discussing new forms and methods of warfare, C4I (command, control, communications, computers, and intelligence), logistics, and combat-service support; (3) exploring the interaction among agencies, military branches, and the joint performance of combat missions; (4) searching for effective ways of enhancing combat readiness, mobilization, and operational effectiveness, as well as discussing contract systems (outsourcing) techniques; and (5) reforming the system of military training. Furthermore, readers of *Military Thought* will expand their view of terrorism, combat training, and many other topics.

Lt Gen E. A. Karpov, Col G. A. Mokhorov, and Col V. A. Rodin lead off the January–February issue with an article entitled "International Terrorism and Its Military-Political Organizations," which describes such organizations as secret with concealed contacts and relations, as well as a tendency to make verbal agreements between leaders. Although scattered throughout the world, they nevertheless possess shared values. The authors note that the ideology of jihad has become the only part of Islam practiced by militants, who show little understanding of Islamic history or law and rely on clerics who impose their own interpretation of the faith. The article urges a direct assault on channels of funding as the quickest method to challenge and disrupt terrorist groups.

In the same issue, Col Gen A. S. Rushkin, chief of operations for the Russian General Staff, delves into the main factors of Russia's military reform in his article "On a New Configuration of the RF Armed Forces—Russian Federation." He highlights the need for a three-branch structure for land, air, and sea, as well as for combat operations having an interbranch (joint) character. Russia would maintain and employ nuclear forces only as a deterrent against large-scale or nuclear attacks against the homeland and its allies. General Rushkin also criticizes the old Soviet conscript system, arguing for a desperately needed professional armed force.

Each of the issues under discussion contains a section by Maj Gen Ivan Vorobyov, retired, Russia's premier military scientist and combined-arms theorist. Readers interested in tactical exercises will enjoy Vorobyov's remarks on the art of command and control, as well as offense and defense in different terrains. He also speaks of waging battles not necessarily for terrain or destruction of enemy formations, but for time, and of the Russian concepts of risk taking, in light of the fact that commanders cannot obtain all of the information they need before acting.

Perhaps the most interesting aspect of the journal is its coverage of the Academy of Military Sciences Council's session of 6 June 2003, devoted to studying Operation Iraqi Freedom. "Lessons from the War in Iraq," by Maj Gen G. A. Berezkin, deputy of Russia's Defense Ministry Center of Military-Technical Information Studies, which appears in the May–June issue, shows a fixation on battlespace dominance provided by the U-2, JSTARS, and Global Hawk systems. In the same article, Lt Gen V. V. Barvinenko, deputy chief of the Military University of Air Defense, attempts to account for the poor performance of Soviet and Russian jets and air defense systems in Iraq, attributing air defense failures to overwhelming information superiority, air dominance, and effective command and control by coalition forces.

In this section, we see that Russia's preeminent military academics view the war in Iraq as American hegemony and make references to the NATO war of aggression against the Serbs over Kosovo. Despite 12 years of United Nations sanctions against Saddam Hussein, his previous deployment of chemical weapons, and mass genocide of Kurds and Iraqi Shia, authors like General Berezkin write that military action in Iraq represents the most clear-cut manifestation of the US military-political course in recent years. To them, it embodies the flagrant violation of all rules of international law to subdue a "rebellious" regional center of power and ensure Washington's unconditional hegemony in the world.

As a foreign area officer concentrating on the Middle East, I find the journal quite helpful because many Arab armies whose weaponry is still Soviet vintage retain an interest in Russian military doctrine. Indeed, some nations, such as Syria, possess Soviet weapons exclusively. Additionally, the journal offers articles on the pros and cons of Russian aircraft carriers, lessons from the Soviet-Afghan war as they apply to today's war on terrorism, and Russian solutions to training and the development of military curriculum. In sum, readers interested in Russian affairs will find that *Military Thought* can introduce them to cutting-edge new thinking on a variety of military topics.

LCDR Youssef Aboul-Enein, MSC, USN
Washington, DC

The Militarization and Weaponization of Space by Matthew Mowthorpe. Lexington Books (http://www.lexingtonbooks.com), 4501 Forbes Boulevard, Suite 200, Lanham, Maryland 20706, 2003, 262 pages, $70.00 (hardcover).

Matthew Mowthorpe's *The Militarization and Weaponization of Space*, based on his PhD dissertation at the University of Hull's Center for Security Studies, examines the policies of the United States, Russia, and China towards the military use of space from the Cold War to the present. Covering areas such as the three nations' space law, policy, and doctrine, along with technical data on weapons systems actually fielded or tested, the book offers a well-researched and expansive look at the history of space militarization and weaponization.

Chapters 1 and 2 examine US military-space policy during the Cold War, covering the rather familiar territory of the sanctuary, survivability, control, and high-ground space doctrines. Mowthorpe describes the evolution of US space thought, beginning with President Eisenhower's insistence on maintaining space as a weapons-free commons and continuing with early weaponization attempts via nuclear antisatellite (ASAT) and antiballistic missile (ABM) programs, the Strategic Defense Initiative, and former president George H. W. Bush's Global Protection Against Limited Strikes (GPALS) missile shield. The author then turns to attempts by the United States and Soviet Union to build a viable ballistic missile defense (BMD) during the Cold War, explaining how this effort became the first serious attempt to weaponize space and defining this process as "either weapons based in space or weapons based on the ground with their intended target being located in space" (p. 3).

Chapter 3 assesses the Soviet approach to military space during the Cold War, describing military systems such as the Fractional Orbital Bombardment System (FOBS) for nuclear delivery as well as political dealings with the United States and the future of the Russian space industry after the collapse of the Soviet Union. Chapter 4 addresses the People's Republic of China and its quest to build space capabilities, including the drive to develop a robust military-satellite capability, and that coun-

try's ownership of the newest manned space program. Analyzing the US and Soviet ASAT programs in depth, chapter 5 considers the policies regarding such weaponry in both countries and outlines the programmatic and operational history of both nations' efforts in this area. Chapter 6 considers space-based weapons, focusing primarily on the technical aspects, history, and intent of the US space-based laser program. Chapter 7, arguably this book's best, deals with the views of the United States, Russia, and China regarding the revolution in military affairs (RMA) and military space. Mowthorpe discusses the three countries' attempts, both technological and doctrinal, to transform terrestrial military operations via space capabilities. He offers interesting insights into each nation's perspective on military space, together with commentary on the doctrinal mind-set of their terrestrial forces and their views on the future of warfare. Trends in US space thought after the Cold War—including the 2001 report of the Space Commission, Pres. George W. Bush's national missile-defense program, and withdrawal from the ABM Treaty—are examined in chapter 8.

The order in which the chapters appear seems confusing and disjointed. Instead of systematically looking at the United States, Russia, and China, and then addressing specific issues such as BMD, Mowthorpe jumps around, seemingly at random. This scheme seriously impedes the flow of the book, forcing the reader to approach it as a series of essays rather than as a single work. Furthermore, the book's matter-of-fact, somewhat dry approach to its subject is less than inspiring.

Nevertheless, Mowthorpe's attempt at recounting the history of space militarization and weaponization by examining the actions and policies of the United States, Russia, and China does succeed on a number of levels. His scholarship and sheer volume of research are expansive and relevant, especially the parts dealing with US efforts in BMD and the discussion of the RMA. An appendix on potential defenses against ASAT weapons, which includes a description of the effects of nuclear weapons in space, presents many ideas not normally found in military-space literature. Moreover, an extensive bibliography lists a surprising number of journal and magazine articles published in the mid-1980s (a vast but often overlooked source of scholarship on military space).

Although armchair military-space enthusiasts may find *The Militarization and Weaponization of Space* unpalatable for bedtime reading, anyone with a serious interest in or a desire to understand the history and issues of military space will find it most helpful.

2d Lt Brent D. Ziarnick, USAF
Schriever AFB, Colorado

NATO's Eastern Agenda in a New Strategic Era by F. Stephen Larrabee. RAND (http://www.rand.org/), 1700 Main Street, Santa Monica, California 90407-2138, 2003, 192 pages, $30.00. http://www. rand.org/publications/MR/MR1744/.

On 2 April 2004, seven new flags were raised in front of NATO Headquarters in Brussels. This flag raising marked the formal admission to NATO of Estonia, Latvia, Lithuania, Slovakia, Romania, Slovenia, and Bulgaria. A few years ago, this admission ceremony would have been thought to be very unlikely. The ceremony marked another step in NATO's continuing transformation, a transformation that started with the end of the Cold War and continues in the new strategic environment of the post-9/11 world. In this short, well-informed, and clearly articulated book, Stephen Larrabee does an excellent job of explaining the reasons for NATO's continued enlargement and the challenges that lie ahead for both the United States and NATO.

This book was written under the auspices of RAND's Project Air Force. Larrabee, a well-respected analyst of NATO's transformation, has written on this subject for over a decade. In a now famous article in the September/October 1993 issue of *Foreign Affairs*, with Ron Asmus and Richard Kugler, he coined the saying "NATO must go out of area or go out of business" (p. 31). He continues this line of argument and believes that NATO's eastward expansion is a key part of maintaining its relevance in the post-9/11 world.

He identifies four strategic challenges facing NATO's transformation as it moves its boundaries eastward: (1) consolidating the democratic transitions in Eastern and Central Europe, (2) ensuring the security of the Baltic States, (3) developing a post-enlargement strategy for Ukraine, and (4) deepening the Russia-NATO partnership. Larrabee feels that NATO will have to develop strategies for dealing with the Balkans, the Caucasus, and Central Asia.

The first Central and Eastern European countries to join NATO were Poland, the Czech Republic, and Hungary in March 1999. Ironically, they joined only weeks before NATO "went to war" for the first time in its history with the launching of Operation Allied Force. Hungary found itself pro-

viding bases for NATO air strikes on Serbia. The second wave of enlargement added Slovakia, Romania, Bulgaria, and Slovenia as NATO members in Central and Eastern Europe. Larrabee notes that all these countries are still working on solidifying their democracies and have significant work to do to modernize their armed forces. To the US Air Force, these countries offer staging bases for areas to the east. Bases in Bulgaria and Romania were used during Operations Enduring Freedom and Iraqi Freedom. These countries also offer a less restrictive training environment than many places in Western Europe. By "showing the flag" in these countries, the United States showed commitment to them, strengthened military-to-military relations, and brought beneficial hard currency to their economies.

The admission of the Baltic states of Latvia, Lithuania, and Estonia to NATO marked the culmination of a process believed to be impossible only a few years ago. They became the first countries from the former Soviet Union to be admitted to NATO. Granted membership mainly for political reasons, they present NATO with a significant defense problem: how would they be defended? Larrabee suggests that the best solution might be through the employment of precision-guided weapons and networkcentric warfare, following the "Afghan model." The Air Force would assume leadership in executing this type of strategy.

His analysis of the need for NATO and the United States to expand and deepen their relations with the Ukraine and Russia involves similar problems. Both countries currently have flawed or weak democracies and militaries in need of extensive reform. Both are crucial to future security in Europe, and in the case of Russia, globally. He makes clear that the stakes are high and that the outcome is far from assured.

Larrabee points out that the problems that existed in the Balkans during the 1990s are still unsettled, but he believes that the European Union could assume much of the responsibility for this region, freeing NATO for other tasks. He continues to believe that NATO has a valuable "out of area" mission to perform and notes that the importance of Central Asia increased substantially with NATO and US involvement in Afghanistan, which will be sustained for the foreseeable future. In addition to Afghanistan, he sees a role for NATO in Iraq and possibly elsewhere in the Middle East.

Larrabee offers a compelling case that the United States can leverage its interests in pursuing a war on terrorism and other security challenges of the twenty-first century by exploiting its leadership role in NATO. Strengthening NATO's capability to adapt to the new security environment will not be an easy task. It will require a significant commitment of time and effort on the part of the United States, but such a commitment would be well worth the effort.

The major asset of this book is the clear and concise manner in which the author presents his analysis. For those pressed for time, he distills the essence of his analysis in a nine-page summary in the front of the book. Although the book does not have an index, it is well organized, allowing specific information on a given topic to be found quickly. For those looking for a good primer on the strategic implications of the latest round of NATO enlargements, this book should be the first stop.

Dr. John Albert
Montgomery, Alabama

Chinese Warfighting: The PLA Experience since 1949 edited by Mark A. Ryan, David M. Finkelstein, and Michael A. McDevitt. M. E. Sharpe, Inc. (http://www.mesharpe.com), 80 Business Park Drive, Armonk, New York 10504, 2003, 344 pages, $69.95 (hardcover), $26.95 (softcover).

Because the downfall of Taiwan was imminent, why didn't that country slip to the People's Republic of China (PRC, mainland China) in 1950, as predicted by the CIA's intelligence and analysis? *Chinese Warfighting* answers that question and others concerning the operational history of the PRC's People's Liberation Army (PLA). The book bridges the gap in PLA literature between the founding of the PRC and current PLA modernization efforts. Whereas contemporary Chinese military studies focus on technology, this work offers eight distinct themes: operational planning; command and control; the linkage between fighting and politics; operational design, combat tactics, and performance; technological issues and doctrinal flexibility; the role of Mao Tse-tung; operational scale and typology of fighting; and deterrence.

An anthology of essays written by a diverse group of authors, *Chinese Warfighting* is designed as a road map for operational histories of the PLA's major combat campaigns. It contains the proceedings of a two-day conference in June 1999 convened by the Center for Naval Analyses Corporation's Asian Security Studies Center, whose goal was to "explore the operational history of the Chinese PLA since 1949." Contributors include prominent academicians from mainland China, Taiwan, and the

United States, some of whom have served in the PLA and US military.

The authors are quick to point out the unique difficulties experienced during China's wartime decision making. After the creation of the PRC, friction emerged between Mao and his field commanders. The latter, successful and accustomed to operating autonomously during the civil war, chafed under his extremely involved leadership style. This situation played a role in every conflict subsequent to this formative period.

Due in part to Mao's heavy-handedness, China has historically demonstrated a tendency towards the primacy of politics over military considerations when it acts on the world stage. This theme emerges in every conflict sketched in the book: Korean (1950–53), Taiwanese (1949–present), Sino-Indian (1962), Sino-Soviet (1969), and Sino-Vietnamese (1979). Moreover, China's policy makers have willingly absorbed heavy losses in order to attain political goals. Although the PLA experienced appalling casualties during the Korean War, China considers the outcome a victory because the United States remained beyond the 38th parallel. But, to a limited degree, reliance on mass has given way to modern technological ingenuity.

China recognizes a need to modernize, but its domestic politics have limited such aspirations. In the past, for example, Mao's Great Leap Forward and Cultural Revolution greatly hindered the country's modernization and economic development. Following the first Gulf War, China's worst nightmares came true as American bombers delivered laser-guided munitions with deadly, pinpoint accuracy. The event sent chills through the PRC's politico-military community and became the catalyst for a new wave of creative thought within the military establishment. Overall, *Chinese Warfighting* is fair in its presentation of causal factors and assignment of responsibility for China's operational military legacy.

The editors organize chapters both chronologically and thematically, thus allowing readers great flexibility in selection. The introductory chapter, which establishes a frame of reference, is particularly useful to readers who may find themselves drifting in the essays' abundant details. Maps help readers conceptualize theaters of operations, and the bibliography includes prominent works in both English and Chinese. The contributors' use of recently declassified primary-source documents and memoirs sheds light on the early experiences of the PLA.

No primer on contemporary Chinese military strategy, *Chinese Warfighting* is not for the recreational reader. But individuals who wish to add depth to their study of China and who seek to decipher the formative historical experiences responsible for China's drive towards transformation will find it worthwhile. Varied in its sources, viewpoints, and conclusions, and ripe with detail that presents a fresh look at "how we got from there to here," *Chinese Warfighting* gives us some indication of what we can expect from the PLA in the future.

2d Lt Daniel L. Magruder Jr., USAF
Hurlburt Field, Florida

America's Role in Nation-Building: From Germany to Iraq by James Dobbins et al. RAND (http://www.rand.org), 1700 Main Street, P.O. Box 2138, Santa Monica, California 90407-2138, 2003, 263 pages, $35.00 (softcover). http://www.rand.org/publications/MR/MR1753.

Without a doubt, we need a book like *America's Role in Nation-Building*. Ever since the Bush administration executed regime change, first in Afghanistan and then in Iraq, both supporters and critics of these operations have bolstered their arguments with historical analogies—or at least claims of such analogies. So any work that promises a systematic examination of previous American efforts at "nation building"—thus providing a meaningful starting point for real comparison and lessons learned across cases—has great value. The authors, who include former US ambassador James Dobbins, went to the trouble of convening a broadly representative and impressive panel to discuss the situation on the ground in Iraq. This effort to better link the lessons of the past to the present circumstances there only enhances the book's usefulness to readers interested in issues concerning the occupation and reconstruction of that country.

For the most part, the authors effectively and informatively walk readers through seven cases (Germany, Japan, Somalia, Haiti, Bosnia, Kosovo, and Afghanistan, in that order). Their facts and figures seem reliable, although one can wonder about Afghanistan's place in the "historical" case studies, and they take a balanced, pragmatic perspective. The lessons learned, though somewhat generic, accurately reflect the case studies, which consistently link operational questions and factors to a broad view of reconstruction that includes not only the reestablishment of security and order, but also economic/political reconstruction and devel-

opment over time. Following a rather mechanical but useful summary of the comparisons across the seven cases, the contributors examine the situation in Iraq at the time of this writing (mid-2003) and the country's likely needs and challenges in the medium term. The book deserves particular praise for maintaining continuity in its discussion about the broad range of issues one must consider when assessing Iraq; the discussion also includes an excellent treatment of economic challenges.

The study does have its flaws, some simply the product of trade-offs. For example, no expert would find sufficient coverage of his or her area, field, or case in *America's Role in Nation-Building*. But one expects this of a book that tries to provide an effective and usable summary of seven different historical cases in order to better inform an eighth. Furthermore, the lessons learned, by and large, seem intuitive and often very broad—again, the result of extrapolating general lessons from particular events. As long as the findings remain relevant to policy questions of the day, it seems unfair to criticize them if they fail to surprise us. Take, for example, the book's observation that a strong correlation exists between the number of troops deployed on the ground and a reduction of postconflict casualties. At first glance, such a broad statement seems unassuming, but this logic results in a recommendation that the United States and its supporting allies would need to deploy between 258,000 and 526,000 troops through 2005 to maximize success and minimize casualties—a point that has great significance in terms of policy.

Two issues, however, qualify as weaknesses—not trade-offs. The first involves the definition of nation building itself. The entire work proceeds from the premise that nation building equals democratization and that any US-led mission since 1945 which involved a serious effort at establishing a democracy, no matter how minimal, qualifies for inclusion in the book. This questionable assumption equates the occupation of Germany or Bosnia with the operations in Somalia and Haiti in terms of the value of lessons learned. The authors do point out the unique circumstances of both nation-building failures in Somalia and Haiti, but that does not seem to weaken the value of these cases to the study as a whole—either in terms of historical comparisons or assessments of present-day Iraq. Second, despite having made the conscious choice to use the term *nation building*, along with its social and cultural connotations, as opposed to *democratization* or *state building*, along with their more functional implications, the book then takes a decidedly functional approach to nation building. Indeed, the authors mention cultural, historical, or social variables only when doing so supports their arguments. Witness, for instance, the assertion that the United States has significant experience with nation building in Muslim countries, a stance that basically places the socioeconomic realities and political cultures of Bosnia, Somalia, and Iraq on an equal footing. Very few people with any familiarity with these countries would make such a claim. Neither weakness proves fatal, but together they demonstrate the limits of this type of sweeping, collective, and aggregate study in terms of applicability to any given case.

More than likely, many readers will find this book quite helpful. Such an audience would include individuals not familiar with the historical analogies currently being tossed around; those interested in comparing the Bush administration's policy in Iraq to a broad set of lessons and proposals regarding occupation, reconstruction, and democratization; and anyone pondering the direction of US efforts in Iraq. None of them, however, should view *America's Role in Nation-Building* either as a single source of historical insight or as a primer on how to conduct occupation or democratization in Iraq.

Dr. Lewis K. Griffith
Maxwell AFB, Alabama

The Iraq War: Strategy, Tactics, and Military Lessons by Anthony H. Cordesman. Center for Strategic and International Studies (http://www.csis.org), 1800 K Street, NW, Suite 400, Washington, DC 20006, 2003, 592 pages, $25.00 (softcover).

As of this writing, Anthony Cordesman's comprehensive volume might be the best place to begin any study of the ongoing War of the Iraqi Succession. It is also a useful encyclopedia of all sorts of information connected with military aspects of the war and a helpful guide to official sources available as of the summer of 2003. The book is likely to remain a standard reference for basic war-related facts for years. It surely will be both the starting point and a baseline for numerous subsequent studies. The work's focus is entirely consistent with its subtitle: the military strategy of the combatants, the operations and tactics of the coalition campaign, and the military conclusions that one might draw in an admittedly limited and preliminary manner. The volume thus delivers precisely what it promises and does so in a measured, objective, and well-organized manner. Its timely appearance is

the source of both its value and, as Cordesman himself readily acknowledges, its limitations.

A brief review of the book's organization reveals something of its scope and ambition. Following an introductory chapter on the limits of analysis, *The Iraq War* devotes about 40 pages to the forces involved on both sides, nearly 100 to the course of the war, about 370 to "lessons" of various kinds, and about 50 to "the civilian aspects of nation building and the challenge of winning the peace." Numerous explanations of various weapons and communications systems, emerging technologies, and operational concepts provide enormously useful clarifications of technical issues that would otherwise bewilder many readers. There is something here *for* everyone but all too little *from* everyone, or at least many, who might have had or will have something of value to contribute to fundamental questions. That, of course, raises the question of sources.

The book has an exceptionally solid foundation in the three kinds of sources most readily available at such an early stage in the war's historiography. Inevitably, Cordesman relies upon the official briefings of the coalition's aggressive public-relations machine, upon the early "documents" manufactured to summarize points that the various governments wished to present, and, to a lesser degree, upon a variety of journalistic accounts. Extensive quotations from official briefings and published statements provide quite a comprehensive version of the US government's view of the course of the war. The notes are very clear guides to the locations of transcripts of briefings and other sources summarized in the text. When technical clarification requires further explanation, the notes refer the reader to articles or books helpful in understanding the basis of the author's discussions. In all these respects, the volume is a model of what can and should be accomplished in such a preliminary study.

Cordesman provides an encyclopedic listing of coalition forces of every kind and of their actions in the course of the campaign to the fall of Baghdad. Iraq had no navy to speak of and an air force incapable of resisting the kind of aerial strength available to the world's wealthiest, most advanced nation and its allies. As Cordesman notes, on the ground several factors acted to nullify Iraq's moderate advantage (largely apparent rather than real) in numbers. Technological superiority and airpower combined to give coalition forces overwhelming dominance in combat power far beyond that suggested by any numerical comparison. As the author notes, there may be no way to model the disparities in real strength when the United States faces such an opponent. Iraqi forces could not move in large numbers and could not fight in a coordinated manner, although much battalion-level combat took place.

Even though the march to Baghdad proved relatively easy, Cordesman cautions against an excess of American "triumphalism." We do not yet know enough about the details of combat to "make sweeping judgments about what forces did or did not contribute to the outcome." In this area rests the second major value of the volume: an exhaustive examination of the possible lessons and very detailed discussions of questions to be considered in future efforts to estimate strategic situations, judge capabilities, and transform the US military into an even more modern and technologically based force.

The author's identification of problems, shortcomings, failures, and lessons will find supporters and detractors in every part of the US government. There is something here for almost everyone to like and dislike. His challenging arguments in the military realm touch every aspect of America's armed forces, from the lowest units of infantry combat to use of space and information technology. Every officer should be interested in what he has to say. Fortunately, Cordesman's searching probes go far beyond combat and combat support into the broader area of national strategy.

The following are but a sample of these. His warnings relating to conflict termination, peacemaking, and nation building are worthy of consideration and have become even more obviously relevant since the completion of the manuscript. These include the caution that in such circumstances and with such goals, a nation will find implementation of its grand strategy more elusive than achieving success in combat. Cordesman argues that the United States caused many (not all) of the problems that emerged after Saddam's fall. The range of foreseeable yet unforeseen problems is staggering.

Among the dozens of mistakes that contributed to or even caused these problems, a few seem particularly noteworthy: failure of the National Security Council to perform its mission; failure of the Department of Defense (and others) to create a working interagency approach to planning and executing peacemaking; reliance on civilian officials more expert in ideology than in policy; placement of coalition headquarters in the middle of Baghdad; failure of military leaders to prepare plans for combat termination; failure of the US military culture to look beyond war fighting despite numerous warnings; and so forth.

One does not have to agree with all or even any of this path-breaking book's conclusions to derive value from it. The tone of *The Iraq War*, like its subject, is somber and unsettling. Ultimately, waving the bloody shirt is useful for creating popular support for war, but it provides a poor basis for strategy. This would be a good place to start contemplating the problems of such undertakings before we run off to do it again.

Dr. Daniel J. Hughes
Maxwell AFB, Alabama

Intelligence in War: Knowledge of the Enemy from Napoleon to Al-Qaeda by John Keegan. Alfred A. Knopf (http://www.randomhouse.com/knopf/home.html), 1745 Broadway, New York, New York 10019, 2003, 416 pages, $30.00 (hardcover), $15.00 (softcover).

Since the shock of 11 September and the failure to find weapons of mass destruction in Iraq, the subject of intelligence has received a great deal of attention. With auspicious timing, therefore, John Keegan's latest book tackles *Intelligence in War*, promising a study of *Knowledge of the Enemy from Napoleon to Al-Qaeda*. It is fascinating and fast paced but not necessarily convincing.

Undoubtedly, Keegan is exactly what the dust jacket describes him as: "Britain's foremost military historian," which may be exactly the problem. He made his name with the seminal work *The Face of Battle*, a study of soldiers' experience in war—what a modern management consultant might call "human factors in warfare." At the time (1976), this approach represented much-needed innovation since military history tended towards dry recitation of events and analysis of generals' decisions on maps. Keegan did much to put blood, sweat, and tears back into the study of military history; indeed, his hallmark has become the telling of riveting tales of human experience in war and reminding academics not to forget war's true (bloody) nature. In this regard, his work has proved pivotal and perhaps without equal, for he writes with true dash. In fact, he has made something of a rebel name for himself in academia with his openly expressed scorn for the tedious, jargon-laden prose of so many of his fellow academics. Reflecting this perspective, Keegan's central theme asserts that the importance of intelligence is widely overrated—that in war "foreknowledge is no protection against disaster" and "only force finally counts." "War is ultimately about doing, not thinking," as he concludes.

To argue his case, Keegan adopts a case-study approach. After laying out his position in an introduction and first chapter, he offers seven additional chapters: Adm Horatio Nelson's pursuit of a young Napoléon to Egypt, Stonewall Jackson's campaigning in the Shenandoah Valley, a history of radio-intercept intelligence in naval action during the First World War, and then four on the Second World War. One of these, "Crete: Foreknowledge No Help," argues his point especially well. In this little-remembered campaign, a German airborne assault succeeded in capturing the island from Allied defenders who were neither outnumbered nor unsupported. This occurred despite the British ability to read German plans and intentions through the famous breaking of the Enigma code (the Ultra secret). The other examples from the Second World War include the US naval victory over the Japanese at Midway (here, Keegan concedes that American breaking of Japanese codes played a significant role but was not as important as luck), the struggle against German U-boats during the Battle of the Atlantic (intelligence was merely "one factor among many"), and a curious study of the role of the traditional human spy in reporting on the German V-1 and V-2 "wonder weapons." He also provides an extremely brief overview of "military intelligence since 1945" and a concluding chapter that argues against the decisive importance of such intelligence.

As one would expect from Keegan, the stories he tells in his case studies make for brilliant military history and riveting reading. This is precisely the point—they are short campaign histories rather than convincing arguments for Keegan's main thesis. In fact, for a book that purports to be a study of intelligence in war, it spends rather little time discussing intelligence itself; mostly, we get tales of derring-do on the high seas or far-flung battlefields. All readers will find this tack engaging. Fans of Keegan (or, indeed, of Tom Clancy, who offers an endorsement on the inside flap) will also find it satisfying. Others may be disappointed with his treatment of intelligence. If so, such reactions will continue a pattern well established in Keegan's work: universal regard for his writing and study of the human face in warfare but mixed reviews from academics regarding his analytical conclusions. His admirers call this sour grapes from people whose work is never published outside specialty presses.

Intelligence in War is thus vintage Keegan. His fans will not be disappointed; his critics will not be con-

vinced. Armchair generals and general readers will not be bored. I heartily recommend the book to them. Others can prepare their rebuttals, which are not likely to be as widely read.

Maj Paul Johnston, Canadian Armed Forces
Winnipeg, Manitoba, Canada

Challenging Conventional Wisdom: Debunking the Myths and Exposing the Risks of Arms Export Reform edited by Tamar Gabelnick and Rachel Stohl. Federation of American Scientists (http://www.fas.org), 1717 K Street, NW, Suite 209, Washington, DC 20036, and Center for Defense Information (http://www.cdi.org), 1779 Massachusetts Avenue, NW, Washington, DC 20036-2109, 2003, 223 pages, $25.00.

It's difficult to review a book titled *Challenging Conventional Wisdom*; after all, isn't it our job to challenge conventional wisdom? Shouldn't we applaud those who do, or risk being considered Luddites, who hate progress? I almost feel as if I should relaunch the inquisition of Galileo before reviewing such a book. (Galileo, you're safe. I'll tackle the book and the authors.)

The conventional wisdom the title refers to is hardly conventional. The book critiques the rather esoteric subculture of wannabe reformers of arms exporting—those people in government, defense industries, and, yes, the military, who feel that the United States needs to reform export controls. The editors' premise is that "reform" actually means "loosen restrictions" and that this is unequivocally bad. Come to think of it, that is *their* conventional wisdom.

Challenging Conventional Wisdom includes articles by people in academia, government, think tanks with at least a passing liberal bias, journalism, and the military. Some of the pieces are thoughtful, raising important points that lay people can understand and appreciate. Others are strident, attacking the very premise that the United States should involve itself in foreign military sales (FMS), decrying the profits made by defense corporations, and belittling those who think the system too restrictive. Furthermore, these articles can be too esoteric, targeting a very narrow audience well versed in the arcane world of arms control, and beyond the grasp of general readers unfamiliar either with FMS or the oversight and limitations currently in place.

The opening and closing chapters, both written by the editors, offer summaries of each essay. Readers who want to target specific areas of interest should find them very useful. Part 1 of the book "examines the myths perpetuated by export control reformers" (p. 17): (1) the defense industry is in trouble and needs US government subsidies and a relaxation of export controls to compete internationally; (2) current controls damage US national security by preventing interoperability with foreign forces and stymie the development of "cutting-edge" US military technologies; (3) arms exports allow the US government to influence other nations' domestic and foreign policies; and (4) without radical changes, our allies will start to look elsewhere for arms (p. 16). In general this part of the book is uneven, repeatedly arguing that economics overrides security concerns. This notion is not true of the system currently in place, although I suppose in the context of examining what some reformers are proposing, one may accurately say that, for them, economics remains the most important issue.

Some chapters are alarmist and biased, appearing to attack not only the reformers but also the current arms-export system. For example, the second chapter, John Feffer's "Supporting the Arms Industry: U.S. Government Subsidies of the Arms Trade," slams the US government for promoting arms sales. Yet, it fails to explain why the government should not support arms sales, accepting as axiomatic (or perhaps the author's "conventional wisdom") that this support is intrinsically bad or evil. For this material to be useful, the author should state the government's arguments for supporting the arms trade and then counter them. The United States advocates, markets, and promotes sales of weapons with the goal of increased access to, interoperability with, and influence upon the customer country. Our government also supports business interests because jobs are important to the US economy. The author needs to explain why the government pursues these goals and then, if appropriate, address why the goals and economic interests are inappropriate or the means unsuccessful.

Some of the better chapters come later. In chapter 4, "U.S. Arms Exports and Interoperability: Fighting with Each Other," Col Daniel M. Smith, USA, retired, points out that the "softer" side of military capability can be more important than advanced hardware. That is, if the US government wants to help a country improve its capabilities, then it should look at improving that nation's training, organization, doctrine, and tactics. All the shiny new equipment in the world is useless without trained operators, but too often in the past the United States has pushed the equipment without pushing the support. This policy is changing. Al-

though those in the US FMS community know that the problem exists, it still happens, partially because customer countries sometimes fail to heed our government's advice.

Part 2 of the book is more balanced, providing arguments on the benefits of proposed export reforms as well as examining their potential risks. The most important of these very real risks involves undermining US security interests by allowing the proliferation of weapons in countries that either should not have them or cannot safeguard them. Exporting weapons to nations that fail to guarantee they will not transfer them to another state or nonstate actor is almost as bad as putting them on the open market for any terrorist to purchase. At times this section is also alarmist: in "Risky Business: The Security Implications of Arms Export Reforms," Jason Meyers contends that terrorists obtaining weapons of mass destruction is "the almost certain outcome of implementing the proposals" (p. 126). At other times, however, when the sky is not about to fall down on us, part 2 is exceedingly cogent and reasonable. "Policy reform should precede process reform," according to Joseph P. Smaldone, who shows the dangers of exporting weapons to strife-torn regions in "Foreign Policy Risks of Arms Exports Reforms" (p. 132). He is exactly right.

The final part of the book looks at alternative proposals for reform and provides good summaries of existing arms-control regimes, such as the Wassenaar Arrangement and the Missile Technology Control Regime (MTCR). It also examines evolving trends, such as exports of unmanned aerial vehicles, which have become increasingly popular following their success in Afghanistan and Iraq. I recommend this part to readers seeking general knowledge of the MTCR and other arms-control regimes.

Although *Challenging Conventional Wisdom* offers some interesting essays, it is too specific and biased for a broad Air Force audience. At the beginning, the editors observe that "US security and foreign policy interests should always come before economic concerns" (p. 22). This statement is true. Unfortunately, the book tries to show that any economic gain by a defense contractor is automatically bad for our security interests. This is not the case. Because export controls are essential, those of us in the arms-trade field need to take them seriously and protect US security interests. The book focuses on the desire of defense-industry leaders, who feel that relaxation of export controls is in our best interest. But this is not conventional wisdom for those of us who review export licenses; who deal with our allies, friends, and customers around the world; or who are responsible not for supporting the US arms industry but for promoting American interests. For us, national security always comes first.

Lt Col Steven Payson, USAF
Washington, DC

The Papers of George Catlett Marshall, vol. 5, **"The Finest Soldier," January 1, 1945–January 7, 1947** edited by Larry I. Bland and Sharon Ritenour Stevens. Johns Hopkins University Press (http://www.press.jhu.edu), 2715 North Charles Street, Baltimore, Maryland 21218, 2003, 854 pages, $85.00 (hardcover).

There are many ways for military professionals to study strategy. They can immerse themselves in the classic and contemporary works of strategic theory; they can follow Napoléon's advice to read and reread the campaigns of the great captains; and they can intently study current events and future trends so as to familiarize themselves with the drift and set of the great issues of the day. But another way to do it is to look over the shoulder of the strategist's daily comings and goings to determine the types of issues that person encounters and the ways these issues are handled. This is part of the logic behind the developmental value of assignments as aides-de-camp and executive officers. But a slightly different variant of this method can be used by those who do not have the opportunity to garner such assignments—reading. Three types of books allow the study of an individual strategist in this manner: memoirs, biographies, and collections of the strategist's papers. Memoirs tell the story from the viewpoint of the individual in question; they are valuable, but they are almost always influenced by the natural human desire for self-congratulation. Biographies may eliminate the bias of the subject, but they are hostage to the capabilities and objectivity of the biographer. The third genre, collections of papers, has much to recommend it. Although its value is admittedly influenced by the knowledge and attitudes of the editor, it does allow for a degree of independent judgment by the reader, based on access to primary-source materials, without the significant inconvenience of traveling to archives and rooting through the material oneself. As an added bonus, if the work is skillfully edited, much very useful explanatory material can be included, which makes the reader's comprehension of the collection considerably easier.

The volume under review meets all of these desirable criteria. It provides an over-the-shoulder look

at the working out of strategy by one of its greatest practitioners of the twentieth century, George Catlett Marshall. It shows him dealing with a plethora of strategic issues that significantly influenced the achievement of Allied victory in World War II and the shape of the postwar world. Furthermore, the editors have facilitated comprehension of the material by including a helpful chronology of the major events in Marshall's professional life during the period, excellent explanatory synopses of major events in which Marshall participated but about which he did not originate substantive documents, and detailed explanatory notes that identify major players and put issues in context.

It is impossible in a short space to do justice either to the breadth of issues Marshall confronted in the two years covered by this volume or to the depth of his painstaking efforts to ensure that strategic design was buttressed by the detailed staff work and coordination necessary to give it the best possible chance of success. Thus, this review will but touch on three critical issues that Marshall dealt with: Army ground-force structure in the closing months of World War II; the creation of a unified military department; and one of the most intractable problems ever to confront American statesmanship—the post–World War II governance of China.

The basic decision on Army ground-force structure had been made in late 1943: cap it at 88 divisions. This was based primarily on Marshall's judgment that the Army's service forces and the air forces (particularly the B-29 program) required much more manpower than had been originally estimated and that the efficiency and effectiveness which came from these forces justified taking fairly significant risks in ground-force structure. During the fall of 1944, as the Army in Europe was slugging its way across eastern France and Belgium in its push to the German border and as ground units in the Pacific were meeting strong Japanese resistance at Leyte, it seemed to Secretary of War Henry Stimson that there were too few divisions to meet strategic requirements. Stimson's angst on this issue came to a head during the German Ardennes counteroffensive launched in mid-December 1944. Finally, on 4 January 1945, Stimson could stand it no longer, and he "had it out with Marshall" (p. 9, note 2). But to no avail—Marshall stood his ground and would not yield to Stimson's entreaties. Although fairly desperate measures had to be taken to find infantrymen, Marshall's stance was clearly justified by subsequent events. It also represents one of those interesting issues in which the military leader was quite justified in resisting the intrusions of his political master.

Perhaps Marshall's most enduring commitment made to American postwar security was his firm and unequivocal support for a unified military department. In a memorandum for the Joint Chiefs of Staff of 10 October 1945, he laid out his argument for such unity with impeccable clarity. He began by noting that postwar peace depended on American involvement in international affairs, that such involvement demanded military capability to back it up, and that such capacity required political acceptance of military expenditure. He further remarked that

> it is, therefore, of especial importance, I believe, to the future peace of the world that whatever we propose for our armed forces be on a sound business-like basis to secure the most economical set-up compatible with requirements. I am strongly convinced that unless there is a single department for the armed forces within which the difficult and numerous complexities can be ironed out prior to a presentation of requirements to the Bureau of the Budget and Congress, there can be little hope for the future of maintaining a military posture that the world will respect, and will respond to our future military overtures accordingly (p. 328).

Such a department would, of course, require separate and equal land, air, and sea components, i.e., it would demand an institutionally independent air force. Although such a development was almost inevitable, the fact that Marshall put the full force of his personality and the full prestige of his office behind the initiative greatly accelerated its adoption. Thus, if it is correct to say that Hap Arnold was the "father of the United States Air Force," it is probably also accurate to identify George C. Marshall as its godfather.

Marshall's mission to China was one of the most thankless tasks ever given to an American soldier. It required reconciling the virtually irreconcilable ideologies of Chiang Kai-shek's nationalist movement and Mao Tse-tung's communists. Marshall spent 12 massively frustrating months using every ounce of military professionalism and political savoir faire he could muster to achieve some sort of modus vivendi between the two competing factions, ultimately to no avail. But his papers regarding this effort are fascinating in three respects. First, aspiring strategists can learn much from the way Marshall systematically prepared himself for his assignment. Second, they can study the tremendous patience and creativity Marshall displayed in attempting to craft a workable solution to an intractable problem. And finally, they can profit from absorbing the candor and

texture of Marshall's frequent dispatches to President Truman that pithily described and cogently assessed extremely complex political-military situations in concise, compelling prose. Marshall's life and work truly demonstrate that the making of sound strategy is built on a foundation of clear thinking and effective communication.

Dr. Harold R. Winton
Maxwell AFB, Alabama

"Oil for the Lamps of China"—Beijing's 21st-Century Search for Energy, McNair Paper no. 67, by Bernard D. Cole. Institute for National Strategic Studies, National Defense University (http://www.ndu.edu/inss/press/nduphp.html), Building 62, 300 5th Avenue, Fort McNair, Washington, DC 20319-5066, 2003, 95 pages. http://www.ndu.edu/inss/mcnair/mcnair67/01_toc.htm.

This study provides an exceptionally comprehensive examination of the energy sector in China. It examines the forces that are creating the growing appetite for energy, the types of energy available and currently used, the drivers of policy, and the organizations and infrastructure that implement the various strategies. In many ways, the need for energy and the response to that need may presage future conflicts over a potentially scarce resource, as many economically underdeveloped nations attempt to create modern economies.

Professor Cole describes the significance of China's increasing dependence on both foreign energy and foreign investment to sustain economic growth. His careful elucidation of the role of different types of energy (oil, coal, natural gas, alternative, etc.) in the Chinese economy provides an excellent description of the problems facing Beijing as it attempts to provide the necessary resources for a growing economy while also addressing environmental and social concerns.

The author concludes his study with an examination of Beijing's geopolitical and national security concerns regarding its energy infrastructure, the political ramifications of its dependence on foreign sources of energy, and future policy options. China's ability to maintain and develop energy sources will have a profound effect on its future political direction and behavior, which, of course, creates national security issues for both the Western Pacific and Middle East—areas in which the United States has vital national interests. This study, which has an extensive selection of endnotes, is an excellent starting point and reference for any security or economic strategist interested in the details of this increasingly important topic.

Paul Younes
Newport, Rhode Island

Commanding an Air Force Squadron in the Twenty-first Century: A Practical Guide of Tips and Techniques for Today's Squadron Commander by Lt Col Jeffry F. Smith. Air University Press (http://www.maxwell.af.mil/au/aul/aupress), 131 West Shumacher Avenue, Maxwell AFB, Alabama 36112-6615, 2003, 194 pages, $18.00 (softcover).

In *Commanding an Air Force Squadron in the Twenty-first Century*, Lt Col Jeffry Smith updates and expands upon Col Timothy T. Timmons's *Commanding an Air Force Squadron* (1993). The newer book preserves the framework and overall feel of its predecessor while providing more current information about and additional support to some dated topics. Colonel Smith demonstrates an excellent grasp of the challenges faced by squadron commanders. Blessed with an easy writing style, he walks the reader though many types of issues that commanders deal with throughout their tenure. Although the author takes a light but serious approach to topics (note such chapter titles as "Cats and Dogs" and "The Good, the Bad, and the Ugly"), he does not shy away from difficult topics—closing down a unit or the death of a squadron member, for example.

Although the book focuses on Air Force squadrons, its lessons apply to all levels of command. Every commander has to counsel subordinates, communicate skillfully, write performance reports, and use e-mail and meetings effectively—all of which Colonel Smith covers in depth. He lays a firm foundation of supporting material by including text from current and former Air Force squadron commanders whose extensive, real-world accounts detail their handling of a variety of situations. These examples illustrate how leaders of various squadrons and other units throughout the Air Force apply the concepts under consideration.

Unlike some books on command and leadership, this one offers no checklists or recipes for success. Rather, it gives practical advice and allows readers to create their own plan of action. All too often, checklists are either too generic or too specific to be of use. To his credit, the author avoids this trap by taking a sensible, real-world approach that

helps develop leaders who can deal with crises without having to rely on artificial, formulaic guidance.

Indeed, this is not so much a book on leadership as it is one on command. The difference is subtle but noticeable. The reader will not find chapters on leadership traits, situational-leadership models, or motivation techniques. Instead, Colonel Smith implements a welcome and much-needed change by tailoring his study to address topics either overlooked by other books or too narrow for their scope of coverage—for example, arriving at a new unit, dealing with change-of-command issues, and interacting with the squadron's first sergeant.

Because this book is precisely what its subtitle denotes, I recommend it not only to squadron commanders, but also to anyone seeking to expand his or her leadership skills. They will certainly benefit from its unique perspective and coverage.

Maj Kevin D. Smith, USAF
Diego Garcia, British Indian Ocean Territory

The Fall of Hong Kong: Britain, China, and the Japanese Occupation by Philip Snow. Yale University Press (http://www.yale.edu/yup), P.O. Box 209040, New Haven, Connecticut 06520-9040, 2003, 528 pages, $40.00 (hardcover), $22.50 (softcover).

Philip Snow's account of the Japanese occupation of the British colony of Hong Kong is an exceptionally impressive study that many, many people should read. Why? Well, it is the product of extensive and multilingual research in the archives of the United Kingdom, Japan, Taiwan, and Hong Kong itself. Snow has used his findings to provide a wide, comprehensive, but also nuanced history of what happened in this territory during World War II. In well-rendered prose, he argues that the Japanese occupation weakened the British hold on the colony in the postwar years both internally and externally as the native peoples of Asia acquired political power and colonial empires collapsed.

As the title suggests, Snow shows his readers the fairly obvious confrontation between the Japanese and the British. The battle for control of the island was a relatively brief event in the last month of 1941, with the British and Chinese Nationalists floundering against the able and well-prepared advance of the Japanese 23rd Army. Snow, both of whose parents were writers, shows a novelist's attention to colorful detail. Readers learn that after an 18-day siege—planned to last for three months—Governor Sir Mark Young became the first man to surrender a British colony since General Lord Cornwallis lost America in 1781. After making his decision, Sir Mark vomited in disgust.

The bulk of the book, however, focuses on the topic of the subtitle. Snow shows how officials of the two imperial powers worked together to maintain order in the colony after the transfers of power that marked the beginning and ending of World War II. The British police stayed on duty in the early days of the occupation before the Japanese had the manpower to establish their own authority. The emperor's soldiers reciprocated in 1945 as the king's men returned to power. But Snow goes farther and deeper, explaining how factions within the Imperial Japanese Army and the triangular rivalry between the army, navy, and Kempeitai (secret police) shaped occupation policies. China was also rife with internal differences as the Communists and Nationalists resisted the Japanese but made ready with more energy and intensity for the coming civil war with one another. Preparation for this pending showdown resulted in both Chinese political parties deciding to tolerate the return of the British rather than see the territory come under the sway of their domestic enemy.

This study also covers the experience of the subject peoples of Hong Kong—what they went through varied significantly from group to group. The Chinese majority profited little from their new colonial overlords. Despite their pan-Asian rhetoric, the Japanese seemed more intent on simply replacing the British than on liberating Hong Kong from foreign exploitation. By the standards of the Imperial Army, the Japanese ruled with a light touch during their first year and a half in power. As the occupation continued, however, Japanese officials began to plunder the colony for all it was worth, using progressively harsher tactics to suppress resistance to their rule. Although no group enjoyed immunity, the Japanese were particularly severe in their treatment of the Chinese. Indians benefited from the new regime as the Japanese, in an attempt to foment unrest on the subcontinent, gave them a favored status they had never known in British Hong Kong. British expatriates found themselves at the receiving end of stern but proper treatment.

Snow includes two lengthy chapters that discuss the reinstitution of British sovereignty. Britain held on to the colony for another 50 years but with a much weaker grip than the one it exerted before 1941. A number of circumstances—the weakness of China as well as ideological and military concerns of higher priority in Beijing rather than the

strength of the British empire—accounted for Hong Kong's continuing colonial status.

Many people in the US armed services and the Departments of State and Defense—or at least those individuals assigned to military-occupation duties—should put this study on their reading lists. The more things change, the more they stay the same. Although one finds significant differences between the armies of Imperial Japan and the United States, the problems that Americans have encountered in Iraq are similar in many respects to those the Japanese faced in Hong Kong. For example, the criminal element took advantage of the initial chaos that followed the collapse of British authority. The Japanese conducted scant administrative planning to deal with problems after the military victory. One organization replaced another after virtually ignoring food shortages, and electrical power and public utilities remained inoperative. This confusion did little to endear the Japanese to their new subjects. Unlike Americans in Iraq or in other US occupations, the Japanese could and ultimately did resort to violence and terror to maintain order. As a result, they had to do less to resolve the problems they encountered.

Although an exceptionally good study, *The Fall of Hong Kong* does have some flaws. The most important shortcoming is the rather excessive use of passive voice. Phrases like "is said to have been" abound on the pages of this book. Although this comment might strike some readers as trivial, it reflects a more significant issue, insofar as Snow often uses the passive to introduce rumor into his account. This type of construction also weakens the thrust of his narrative, particularly when he does have evidence in hand. Despite these minor blemishes, this study will stand as the authoritative account on this topic for several generations. For that reason, people tasked with occupation duties in other locales can profit from reading *The Fall of Hong Kong*.

Dr. Nicholas Evan Sarantakes
Maxwell AFB, Alabama

Fighting the Breakout: The German Army in Normandy from COBRA to the Falaise Gap by Rudolf Christoph Freiherr von Gersdorff et al., edited by David C. Isby. Greenhill Books/Lionel Leventhal Limited (http://www.greenhillbooks.com), Park House, 1 Russell Gardens, London NW11 9NN, 2004, 256 pages, $34.95 (hardcover).

Fighting the Breakout is one of five edited works (so far) from Greenhill Books that consist of intelligence reports written by senior German officers at the end of World War II for US Army Military Intelligence. This particular volume is the third one from the German perspective on the fighting in France after the D-day landings. The first, *Fighting the Invasion*, covers German preparations and reactions to the Allied landings on 6 June 1944, and the second, *Fighting in Normandy*, presents the German perspective on the fighting from D-day to the battle for Villers-Bocage. *Fighting the Breakout* records the actions of the German Seventh Army and Fifth Panzer Army from the American breakout at Saint-Lô on 25 July through the encirclement and near destruction of German forces in Normandy at the Falaise Gap, 20–21 August.

The reports, written from memory and without the aid of Ultra messages or notes, provide a first-hand look at the fighting that occurred during this period. Frequently, the authors supplement their memories with references to unit war diaries (*Kriegstagbuch*). Although the reports contain errors in spellings, place-names, and dates, the editor points out that "when compared with the German memoirs of the 1950s and 1960s that were translated into English—works which shaped the overall view of the war for many years . . . these documents are no worse, and may be better" (p. 9). The majority of the reports were written by Rudolf Christoph Freiherr von Gersdorff (a colonel at that time), chief of staff of the German Seventh Army (and an anti-Hitler conspirator), and his superior, Gen Paul Hausser, commander of Seventh Army.

The reports offer great insight into the outstanding fighting qualities of the German soldier. Despite complete Allied control of the air and the Allies' seemingly never-ending supply of men, ammunition, and equipment, German troops in Normandy continued to fight well. The reports repeatedly demonstrate senior German commanders' valiant attempts to stem the Allied onslaught by moving divisions, regiments, and battle groups (*Kampfgruppen*) around the battlefield to replace units decimated by the fighting. The German army lost 60,000 men, either killed or taken prisoner, and most of their equipment in the Falaise Gap, but about 20,000 escaped the trap to fight again. Despite the tough and often desperate fighting in Normandy, the German retreat did not turn into a rout.

The reports also regularly point out the bad, often out-of-step orders from the German Armed Forces Command (*Oberkommando der Wehrmacht* [OKW]) and from Hitler himself. Specifically,

their orders to the German commanders in Normandy to spurn retreat and attempt a counter-breakthrough to Avranches—as the Americans fought their way south and then east, and as the British broke out from Caen—significantly contributed to the encirclement of the German forces and to the great losses of men and equipment at Falaise. The reports also demonstrate that, although German field commanders in Normandy knew firsthand what was happening, they did little to prevent the coming catastrophe other than complain to their seniors.

Readers will also appreciate the editor's introduction to the book as well as his introductions to each part. The latter provides excellent commentary on the origins of the reports, their contribution to the vast literature on World War II, and the value of the book as a whole. The chapter introductions give us brief overviews of the fighting during the periods covered in each chapter, thus facilitating better understanding of the events related in the intelligence reports.

My only significant criticism concerns the photographs and maps, the former mainly of American troops in combat, with only a few of German soldiers in Normandy. Since the book is written from the German perspective, one would expect the editor to use more images of the Germans and fewer of the Americans. The plentiful maps, drawn in various scales and presented in shades of gray, are too indistinct to be of much use to the average reader. I often had great difficulty locating places on most of them.

Dr. Robert B. Kane
Montgomery, Alabama

Africa's Armies: From Honor to Infamy: A History from 1791 to the Present by Robert B. Edgerton. Westview Press (http://www.westviewpress.com), 5500 Central Avenue, Boulder, Colorado 80301-2877, 2004, 328 pages, $30.00 (hardcover), $18.00 (softcover).

The need for creative, multidisciplinary analyses of security problems is more critical than ever. Africa provides a potentially fertile field for such research: cultural, geographic, and historical environmental circumstances merge there in a way that seems unique.

Robert Edgerton would appear an ideal scholar to help in this undertaking. An anthropologist who teaches at the UCLA School of Medicine, Edgerton has published works that examine the Crimean War, the Mau Mau rebellion, British and Zulu soldiers in late nineteenth-century South Africa, Japanese military traditions, Asante warriors in West Africa, and multicultural relativism in "primitive" societies.

His new monograph promises a "review [of] the history of sub-Saharan Africa's armies from precolonial times to the present," a discussion of "possible pathways to future well-being," and speculation on "the role Africa's military forces can and must play if the future is to bring better times" (p. viii). Edgerton assumes that in precolonial and colonial times, African militias fought with honor and courage, but, with independence, African military leaders selfishly grabbed power—with catastrophic results (p. vii).

Edgerton skips about the region to present his case. A cursory chapter (19 pages) covers political, military, and cultural aspects of precolonial Africa; chapters 2 and 3 offer a potpourri of African resistance to colonial conquest and rule. Subsequent chapters sketch various civil wars, military coups, and government corruption, as well as provide an in-depth look at genocide in Rwanda and Burundi. A final chapter, "Africa Today and Tomorrow," cites Mauritius, Botswana, Nigeria, Uganda, Tanzania, Mozambique, and the Côte d'Ivoire as moderately successful examples of "hope for the future."

The book is a disappointment, neither living up to its title nor attempting to fulfill its declared purposes. Rather, it is a compilation of selective, often sensationalistic, descriptions of African security dilemmas drawn from secondary materials (the chapter on genocide in Rwanda and Burundi is a prime example). It lacks substantive analysis that would explain, for example, what is meant by "army" or "military," or how these concepts could apparently include precolonial militias, European-style colonial armies, combatants within Somali lineage segments, warlords, gangs of child soldiers, and conventional armed forces. There is no discussion of finance, tactics, doctrine, training, or recruitment that would help illuminate the dynamics of these groups. Readers will find only sparse, superficial explorations of political illegitimacy as a cause of Africa's security dilemmas. Likewise, the book fails to mention the implications of civil-military relations in a context of political illegitimacy or the links among Africa's precarious ecological circumstances, economic underdevelopment, instability, historical legacies, and the atrocities it graphically (and repeatedly) describes.

Analysis, when it appears, seems illogical and pedestrian. Edgerton conflates cause and effect in ascribing the roots of Africa's current crises to

"witchcraft" and "maladaptive African culture" (pp. 230ff.): witchcraft in any society is symptomatic of pathologies, not their cause. The use of one-dimensional concepts like "warrior tribes" (the "historically warlike Muslim Hausa and Fulani peoples" and "various warlike Nilotic tribes," pp. 104ff.) by an anthropologist to explain factionalism is indicative of the work's superficial approach to complex problems. Moreover, he ignores the Belgian Congo, which provides an important counterexample to the assertion that colonial armies were highly respected.

The single map is of no use in elucidating the text and is at least a decade out of date: Eritrea is not represented; Burkina Faso is misrepresented as "Burkina" and the Côte d'Ivoire as the "Ivory Coast"; and the boundary between Togo and Ghana is missing. The book's one redeeming feature is its bibliography. Otherwise, the military professional who seeks to understand the basics of Africa's security situation will have to go elsewhere.

Col Bryant P. Shaw, PhD, USAF, Retired
Troy University

The American Foreign Legion: Black Soldiers of the 93d in World War I by Frank E. Roberts. Naval Institute Press (http://www.usni.org/press/press.html), USNI Operations Center, 2062 Generals Highway, Annapolis, Maryland 21401-6780, 2004, 288 pages, $29.95 (hardcover).

More than three decades ago, historians began to weave the little-known exploits of African-Americans into the fabric of American history. Frank E. Roberts's *The American Foreign Legion* continues that trend by contributing another chapter to American military historiography.

By 2004 the public had grown accustomed to reading about black soldiers in nearly every area of American military history. Roberts cogently reminds us that was not always the case. By taking the reader back to the second decade of the twentieth century, he places on center stage the story of the 93d Division, thus showing a time and place when all servicemen were not treated equally.

The story line begins when the US Army refuses to use black soldiers, assigning them instead to the French army. What no doubt was designed to demean and disgrace had the unintended effect of giving these black Americans the opportunity to excel on the battlefield. More pointedly, Secretary of War Newton D. Baker "issued specific orders to Gen. John J. Pershing . . . that all American units would serve under the direct command" of Allied Expeditionary Forces Headquarters (p. 1). Pershing relied on an obscure clause in the policy statement to release to the French army the four regiments of American infantry (the 369th, 370th, 371st, and 372d) that neither he nor his commanders wanted. Roberts's story tells how units of the 93d fought to repel potent German offensives on the one hand and to combat the rigidity of American military segregation on the other.

Once placed under French command, blacks proved their worth as fighters and true defenders of justice and equality. Using 11 maps and detailed accounts of infantry action in such operations as the Battles of Champagne-Marne and the Meuse-Argonne, as well as the Oise-Aisne Offensive, Roberts relives Allied assaults in vivid detail, recounting movements on almost an hourly basis.

A paradox of this study is that by 1917–18, American military commanders should have been familiar with the success of blacks in uniform. They should have known of blacks who had served in the American Revolution, the War of 1812, and the Civil War in particular. Even if they had not heard of Crispus Attucks or Martin R. Delaney, they should have known of Eugene Bullard (the "Black Swallow of Death") or some of the black units that had fought with the French in Senegal or with the British in the Dardanelles campaign or in Cameroon. Indeed, when Sergeant Cox boasted that "this here flag ain't never agoin' to touch the ground" (p. 100) as the 369th moved towards Remicourt in 1918, images of William H. Carney of the 54th Massachusetts at Fort Wagner should have surfaced in the minds of every military commander.

Roberts shows that blacks excelled under French command in World War I, yet when the time came to celebrate, he writes that the bravery of blacks was overlooked despite their having earned 42 Distinguished Service Crosses and 325 individual conferrals of the Croix de Guerre, among other awards as listed in appendix B. Indeed, America brought no black participants to the celebration on Bastille Day in 1919, as other nations did. Even worse, the official record of the US Army failed to show that the 93d had served at all.

Therefore, not only should we applaud Roberts for his well-written work on the 93d, we should applaud him even more for using 20 photos to add names and faces to "rescue from oblivion" another seldom-told chapter in American military history. Absent this book, the exploits of Cpl Freddie Stowers, the sole African-American to receive the Medal of Honor (although posthumously), may

have remained untold, or James Reese Europe, the son of a Reconstruction federal-patronage recipient in Alabama, may have remained known only in America for his jazz. This well-documented study belongs on the shelf of every serious student of military history.

Dr. Richard Bailey
Montgomery, Alabama

The Future Security Environment in the Middle East: Conflict, Stability, and Political Change edited by Nora Bensahel and Daniel L. Byman. RAND Corporation (http://www.rand.org/publications), 1700 Main Street, P.O. Box 2138, Santa Monica, California 90407-2138, 2004, 365 pages, $30.00 (softcover). http://www.rand.org/publications/MR/MR1640/MR1640.pdf.

This important, insightful book systematically examines Middle Eastern governments and societies to reveal current trends, forecast future threats, and assess the impact on US interests and policies in the region. Written by seven different policy experts commissioned by RAND's Project Air Force, the chapters cover distinct topics: political reform, economic reform, civil-military relations, leadership change, energy security, information distribution, and weapons of mass destruction (WMD). A typical chapter frames the issue, examines broad themes for the region, provides case studies for individual nations, and then discusses policy implications for the United States. Each provides clear logic, definite findings, and firm policy recommendations. The writing style is crisp and direct; the research is commendable, consistently exhibiting both breadth and depth; the topics are complementary; and key items are repeatedly cross-referenced. Editors Bensahel and Byman effectively tie the text together: the introduction clearly outlines themes and approaches, and the conclusion neatly summarizes key issues, findings, and—most noteworthy—regional uncertainties (oil prices, Iraq, the Arab-Israeli conflict, the influence of Russia and China, and regime changes). Major points of this work can be grouped as instruments of national power, so central points can be discussed briefly.

Politically, the United States faces "contradictory interests"—to promote either regional stability or political reform. The first is safer, but the second is necessary: "The conundrum facing U.S. policymakers is that political reform is essential for long-term regional stability but may increase regional instability and anti-American sentiment in the short run" (p. 19). Middle Eastern regimes have survived through "cooption and coercion" (p. 54). They will liberalize (increase civil and political rights) but only in slow, measured, calculated steps. For most regional leaders, domestic issues outweigh foreign affairs. Thus, the United States should follow a policy of "shaping and hedging" by actively seeking redundant bases, quietly advocating political reform, and carefully cultivating non-regime figures (p. 194).

Informationally, a "revolution" has swept the region and now complicates US policies. "Mid-tech" tools (videocassettes, photocopiers, and satellite television) are prevalent, allowing distribution of a single message quickly and cheaply (p. 227). Regimes' inability to direct or even monitor the information conveyed poses public-relations challenges for the United States, for "we cannot control what they think, but we can compete for their attention" (p. 251).

Militarily, the nations' forces have a "dual mandate": to control both internal and external threats (p. 142). The first has priority. Political leaders retain command of compliant military leaders with inducements and safeguards that inhibit professionalism, detract from performance, and weaken integration into coalitions. Ian O. Lesser's chapter on WMDs presents very troubling information. These weapons, broadly defined here, are attractive in that they offset conventional weaknesses, convey prestige, appease domestic pressure groups, and conform operationally with the tight centralized control so prevalent in the region. Because the Middle East will face "sustained insecurity," US policy should have as a core aim the prevention of transfers of WMDs and ballistic missiles to states in the region (p. 276).

Economically, the entire region confronts severe stress. Since 1970 the urban population has grown by 100 million, and half the populace now resides in the few major cities. In real terms, personal incomes and state budgets have declined significantly in the same period. Overcrowding, unemployment, poverty, youth demographics, and limited resources have produced a situation "highly toxic" for regional governments (p. 72). Furthermore, Islamists are routinely the most organized opposition groups. The region will maintain its dominant position in the energy trade since prices depend largely on Middle Eastern production of oil and natural gas. The resulting revenue has produced "rentier states" that survive on income provided by fossil fuel (p. 20). This "mono-crop" export is state controlled, largely independent of

the citizens, and highly volatile (p. 107). The separate nations and the entire region will continue to face "grave economic challenges" (p. 128).

The book contains a few minor flaws, most dealing with structure and the publication timeline. Research began before the terrorist attacks of 9/11 and largely ended before the Iraq War (p. 12). Thereafter, the authors updated their chapters, but somewhat inconsistently. The most current bibliographical entry dates from June 2003, the year before publication. Some referenced periodicals date from 1999 to 2001, despite the availability of subsequent editions (pp. 317ff.). The national security strategy discussed dates from 2000 (p. 18). The complexity of coordinating separate authors and a long publication period do detract from the work, for recent events in Iran, Iraq, Libya, and Palestine have since altered the security environment. Additionally, the table formats provide no help and convey little information. Readers would also benefit from brief biographies of the contributing authors. Overall, though, these are small matters.

I highly recommend *The Future Security Environment* to organizations concerned with national security—US Central Command as well as the Central Intelligence Agency, Joint Chiefs of Staff, National Security Agency, and National Security Council, among others. Policy makers and implementers as well as operators and desk officers will all benefit greatly from the thorough discussions and clear recommendations. The authors conclude that the Middle East will remain prominent and challenging and that American military power should more fully integrate with the other instruments of national power. The text ends on a somber note: "Unless it pursues a multidimensional and coordinated policy approach, the United States will be confined to reacting to crises rather than preventing and managing them" (p. 315).

Lt Col Kurt W. Schake, PhD, USAF
University of Illinois–Champaign

Beginnings of the Cold War Arms Race: The Truman Administration and the U.S. Arms Build-Up by Raymond P. Ojserkis. Praeger Publishers (http://www.praeger.com), 88 Post Road West, Westport, Connecticut 06881-5007, 2003, 248 pages, $65.00 (hardcover).

The thesis of this fine book can be found in one of its quotations from Pres. Harry S. Truman. Discussing the impact of the Korean War with a journalist in 1953, Truman said that the communist invasion of South Korea was "the greatest error he [Soviet dictator Joseph Stalin] made in his whole career." Without that invasion, Truman continued, "we'd have done what we did after World War I: completely disarmed. And it would have been a cinch for him to take over the European nations, one by one." Raymond P. Ojserkis masterfully supports this thesis throughout *Beginnings of the Cold War Arms Race*, utilizing an impressive array of archival materials in the United States and Great Britain, personal papers, memoirs, contemporary press accounts, and secondary sources. The author, who holds a DPhil degree in international history from the London School of Economics and History, demonstrates a thorough understanding of both the men and events that shaped America's awakening to the dangers of the Cold War.

Ojserkis emphasizes the American arms buildup following the outbreak of war in Korea in 1950, but he places that within the broader context of US domestic and foreign policy. He is certainly not the first scholar to argue that the Korean War marked a major turning point in recent American history. But he parts company with scholars such as Samuel Huntington, who, in his classic work *The Soldier and the State*, claimed that Truman accepted the robust military and containment strategy outlined in National Security Council Report 68 (NSC 68), *United States Objectives and Programs for National Security*, 14 April 1950, and personally desired an arms buildup that he also deemed politically impossible prior to the Korean War. Ojserkis disagrees, building upon an analysis of Truman's own words, budget plans, and the positions of his cabinet members to show that the president planned to cut defense spending right up to the very day North Korean troops poured south across the Korean demilitarized zone.

More importantly, Ojserkis convincingly demonstrates that Truman's reaction to the outbreak of war in Korea was not limited to the defense of the government in Seoul. Within the next two years, the US defense budget tripled in size, and America embarked on a massive conventional- and nuclear-arms buildup. Much of that resultant armed strength went not to Korea but to Europe—prompting Gen Douglas MacArthur, the US and UN commander in Korea, to complain that, as in World War II, his Pacific operations were once again secondary to those in Europe!

Readers may wish to consider this book in tandem with Thomas P. M. Barnett's *The Pentagon's New Map: War and Peace in the Twenty-first Century* (2004). Both consider the challenges and options

facing the United States and its presidents at critical moments in the nation's history. Barnett, in fact, compares Pres. George W. Bush and the strategic landscape he faced in the wake of the 2001 terrorist attacks to Harry Truman following the outbreak of the Korean War. Barnett claims that Truman had the "easier" task since the Soviet Union presented a more rational and understandable threat.

Ojserkis demonstrates, however, that determining what to do in the face of apparent communist aggression was anything but easy for Truman. The author notes, for example, that Truman had to contend with a lack of dependable intelligence on Soviet capabilities and intentions, the size of Moscow's atomic arsenal, and the rise of McCarthyism at home. Ojserkis maintains that when war broke out in Korea, Truman nevertheless quickly concluded that it was part of a larger Soviet threat that required a broad, even global, American response. He does not discount an ideological aspect to this response, noting the crusading tone of NSC 68, but does so without allowing his work to degenerate into yet another polemic aimed at blaming red-baiting American cold warriors with overreacting and setting in motion a ruinous arms race that might otherwise have been avoided had cooler heads prevailed. Ojserkis concludes that the Soviet threat might have been overstated, but it was real—Stalin's paranoia and unpredictability made it so.

The Korean War not only ended Truman's fiscal conservatism, it also fundamentally changed "peacetime" America. In the face of a seemingly implacable and expansionist Soviet Union, the Truman administration extended conscription, reinstituted wartime wage and price controls, and poured money into a massive conventional-arms buildup while social programs designed as part of Truman's Fair Deal lost funding or disappeared altogether. America was fighting a "limited," undeclared war in Korea, but, according to Ojserkis, the country was really preparing for another global confrontation by accepting the rearming of Germany and Japan, building national air defenses, and establishing a far-flung network of bases and alliances. More importantly, Ojserkis deftly describes these changes against the backdrop of bureaucratic and ideological maneuvering within the military and the administration that, for good or ill, set the stage for America's response to the Soviet challenge. Moreover, Truman's changes in America's global commitments—to NATO, Japan, Korea, Taiwan, and other nations and regions—have actually survived the Cold War. Ojserkis declares that none of this would have happened without the war in Korea.

Raymond Ojserkis has produced a richly researched and balanced survey of a tumultuous and often misunderstood time in American history. Military officers, students of international relations and bureaucratic politics, as well as Cold War historians and defense analysts will find much of value in this superbly written book. *Beginnings of the Cold War Arms Race* also reminds us that policies put in place in response to the attacks of 9/11 may likewise shape the diplomatic and military posture of this nation for decades to come.

Dr. Mark J. Conversino
Maxwell AFB, Alabama

The Moral Warrior: Ethics and Service in the U.S. Military by Martin L. Cook. State University of New York Press (http://www.sunypress.edu), 90 State Street, Suite 700, Albany, New York 12207-1707, 2004, 175 pages, $54.50 (hardcover), $17.95 (softcover).

Martin Cook, professor of philosophy at the Air Force Academy, begins this book with a fascinating comparison of the situation of the United States in the wake of the Soviet Union's collapse to that of imperial Athens in the period between the Persian and Peloponnesian Wars. He argues that, like Athens then, America now finds herself in a "world-historical moment" with an opportunity to change the world's geopolitical landscape—and a responsibility to do so wisely. Cook sees the end of the Cold War and the simultaneous rise of international humanitarianism and of terror (nonstate or state sponsored) as signaling the decline of the Westphalian international system and the need for a new world order to replace it. He summarizes his purpose: "I will explore the moral directions I believe these challenges will point us toward and the revisions in our thinking about the nature and role of the profession of arms these challenges will entail for the United States and its military" (pp. 17–18).

Part 1 of the book, "Moral Facets of Military Service," addresses aspects of military service that, in the West at least, form a fairly constant framework. The first chapter discusses the growth and character of the principles of just-war theory, to which the US military is committed by law, treaty, and American constitutional principles. The second chapter takes up the question of the justification of military service, given the imperfect justice of modern

states. The third considers the normative dimensions of military professionalism: the responsibility of the military to sustain mission-essential expertise in a changing environment, to maintain professional cohesion and unity, and to foster a sense of professional identity and motivation commensurate with mission requirements. The fourth chapter considers the responsibilities of the military professional in advising civilian superiors, particularly in the areas of military necessity and feasibility, but also regarding such just-war categories as proportionality, reasonable hope of success, and discrimination.

Part 2, "Moral Soldiers and Moral Causes: Serving the Needs of Justice in the New World Order," applies just-war principles to new—or newly important in the post–Cold War era—aspects of the application of military power. Chapter 5 takes up the issue of humanitarian intervention and the idea of "just peacemaking." Chapter 6 considers resistance to international terrorism and the challenges to Westphalian thinking presented by a "war" against nonstate actors who may be sheltered by sovereign states. Chapter 7 explores the tension between noncombatant immunity and force protection (when stretched to a zero-casualty "immaculate war" mentality as in Kosovo). Chapter 8 takes up moral issues raised by the theory and practice of strategic bombing, noting that while technology has made discrimination feasible, strategic focus on some infrastructural "centers of gravity" (especially dual-use targets such as power grids) is inherently nondiscriminatory.

The idea that we occupy a world-historical moment in which the international community is breaking the mold of the Westphalian system and moving toward the "new kind of universalism" (p. 155) heralded by the establishment of the United Nations and drawing its impetus from horror at the Holocaust, has been a leitmotif for Cook throughout; in the final chapter, "Transcending Westphalia," it takes center stage. The Kosovo campaign, he contends, was clearly contrary to the Westphalian understanding of just war because it violated the territorial integrity and political sovereignty of a recognized state. Defenders of such campaigns must look to that new universalism which sees protection of human life and rights as the responsibility of the international community.

This liberal internationalist theme—with its attendant call for diminished national sovereignty—is likely to be the most controversial aspect of the book. When Cook speaks of the justice of defending the "globalized civilization grounded in democracy, human rights, free trade, communication, technology and science" (p. 36), I find myself wondering if that is really the best account of ourselves that we heirs of Moses and Christ, Aristotle and Augustine, and Thomas More and Abraham Lincoln can give. Does globalized civilization leave room for tradition, honor, faith, home rule, and the laws of nature and of nature's God? It is, however, a virtue of the book that it treats this theme without succumbing to the whitewashing optimism of many defenders of the modern order. It is no part of his argument, Cook insists, to idealize our civilization: we must ask, "If this civilization fails, what comes next?" (p. 114). This is the same question, he notes, that Augustine posed to Christians wrestling with the morality of serving the Roman Empire. When what comes next is barbarism, whether in ancient or modern varieties, the justification for defending civilization seems clear. But still I have to wonder, are our choices limited to the options Benjamin Barber calls "Jihad" and "McWorld"? I wish Cook had said more on this.

He realizes that defending our civilization—and as part of this, conducting the war on terror and various humanitarian operations—will require tactics, force reorganization, and international political structures not currently available. At a few points, he makes concrete suggestions on how to proceed (e.g., the idea of "just peacemaking teams" to work on root causes of instability, in tandem with the military's provision of security [see chap. 5]). Other of his ideas will be much more controversial: for example, allotting to the United Nations (or other organizations such as international courts) greater authority over internal affairs of states and possibly even its own standing military force. But even if we disagree, it is worthwhile to measure our ideas and arguments against his. He does not merely assert his positions but argues for them, and does so in a way that is broad-minded and fair. For example, when he contends that the commitment to force protection must be tempered by the commitment to noncombatant immunity, Cook notes that those who resist this often do so primarily for moral reasons rooted in the nature of the contract between soldier and society.

This is a fine book and a timely one (although readers should not expect an in-depth analysis of recent events in Afghanistan and Iraq). It raises and explores more issues than it tries to settle definitively, but that is no vice in itself, especially if it leads its readers to begin thinking these issues through themselves. The author shows familiarity with military culture and doctrine that goes well

beyond what one will find in most philosophical treatments of military ethics, and introduces enough detail into his discussions to avoid too high a degree of abstraction. *The Moral Warrior* is clear, readable, and, even when controversial, not unreasonable. I highly recommend it.

Dr. Christopher Toner
Maxwell AFB, Alabama

The Iraq War by John Keegan. Alfred A. Knopf (http://www.randomhouse.com/knopf/home.html), 1745 Broadway, New York, New York 10019, 2004, 255 pages, $24.95 (hardcover).

John Keegan is the latest military historian to enter the fray and publish an "immediate history" of the Iraq war. Although such history can never stand as the final word on an event, it can prove useful by providing background in the context of the time during which the event takes place, and, in terms of outlining the sequence of events, it can ultimately serve as a starting point for further study. *The Iraq War* does all of these things very well—although some better than others—and offers a unique, if brief, history of the second Gulf War.

Where does one begin a book on the Iraq war? Keegan starts with the Ottomans, brings us forward through the creation of modern Iraq after World War I, and then provides a discussion of Saddam Hussein's rise to power. Although this may seem excessive at first glance, his argument offers an interesting contrast to most discussions published thus far and gives the reader some much-needed context and background of America's latest war.

Of particular interest is Keegan's discussion of the rise of extremist Islam. Until the fourteenth century, Islam—or at least Islam under the Ottoman Turks—was arguably the most enlightened society in the world, outside of China. Unfortunately for Islam, and perhaps the West as well, Muslim religious leaders closed their collective minds to intellectual development, stressing religious study instead. Following the collapse of the Ottoman Empire after 1918, a perversion of Islam emerged which emphasized that the faithful seek ultimate worldwide triumph through strict adherence to Muhammad's teachings, including violent action against the nonbeliever—a view bound to lead to confrontation with the West. In one of his key insights, Keegan recognizes that, in a sense, the terror war had been germinating in the heart and soul of Islam long before 11 September 2001.

After his brief history of Iraq, Keegan discusses the lead-up to the war. According to him, after the first Gulf War in 1991, the neoconservatives, as they would come to be known (including Paul Wolfowitz, Dick Cheney, and Richard Perle, among others), advocated seizing the "American moment"—the opportunity to change the world for the better. This philosophy emphasized three basic premises: (1) preemptive attacks on nations that might threaten the United States, especially with weapons of mass destruction—a course of action that would probably entail bypassing the United Nations; (2) a belief that historically tribal people and those led by autocrats could become "politically enlightened and economically prosperous" (p. 97); and (3) a belief in a democratic domino effect—that is, once one nation in a region transformed into a democratic, free-market state, neighboring countries would follow suit. Much of America may not be aware that our strategy of unilateralism, "democratic imperialism," and preemption started not in 2002 but in 1992.

The Clinton years sidelined this plan, but with the advent of George W. Bush's presidency, the neoconservatives were determined to implement their strategy. The 9/11 attacks provided the needed pretext. In fact, Bush became interested in regime change as early as December 2001. After the fall of the Taliban, the administration turned its attention to Saddam even though Keegan believes that the links between al-Qaeda and the Iraqi regime were tenuous at best. Unfortunately for Saddam, the United States did not differentiate between religious terrorists and dictators. The author does not present this information in a condemning tone; in fact, he believes that the world is better off with Saddam out and with a US and British presence in Iraq. Furthermore, he notes that it took political courage for President Bush and Prime Minister Tony Blair to launch Operation Iraqi Freedom in the face of world opposition. His presentation is a matter-of-fact examination of the changes in US strategy from containment to offensive exportation of our governmental system. This fascinating examination of the background and prewar context is Keegan's strength, leaving the reader well versed in the climate leading up to the start of combat operations.

I find the remainder of the book, however, somewhat less satisfying. Keegan moves briskly through the American and then the British portions of the war with enough anecdotes to whet the reader's appetite but fails to delve deeply into the strategy and tactics of the different forces. For ex-

ample, the book insufficiently examines either the failure of the Apache attack helicopters of the Army's 11th Aviation Regiment as opposed to fixed-wing airpower, or the amazing speed and flexibility of the US and British armies. The bottom line is that even though Keegan offers adequate treatment of the actions, readers interested in a battle narrative or deeper discussion of airpower's contribution should examine other works, such as *The Iraq War: A Military History* by Williamson Murray and retired general Robert H. Scales.

Keegan's book will not be the last word on the war, nor is it intended to be. Instead, in 255 pages, *The Iraq War* serves up a concise, current history of the conflict. It is a good starting point for those of us who want to learn more about the war's background in the context of the time it occurred.

Lt Col James P. Gates, USAF
Woodbridge, Virginia

Valkyrie: North American's Mach 3 Superbomber by Dennis R. Jenkins and Tony R. Landis. Specialty Press (http://www.specialtypress.com), 39966 Grand Avenue, North Branch, Minnesota 55056, 2004, 246 pages, $39.95 (hardcover).

The decade following the end of World War II witnessed a surge in aviation technology. Performance for fighter aircraft leaped from 450 mph to better than Mach 2. Missiles replaced guns as the main air-to-air weapons. Bombers showed dramatic increases in range, speed, and payload. The weapon systems hitting the drawing board in the mid-1950s continued this push for "higher, faster, and farther." We had high expectations for these next-generation aircraft—especially the B-70.

The B-70 Valkyrie was to be Strategic Air Command's crown jewel from the mid-1960s on. Cruising at altitudes above 70,000 feet and dashing towards the target at 2,000 mph, it would have created an extremely difficult threat for Soviet air defenses to counter. Because of cost overruns and the unforeseen success of ICBM technology in the late 1950s, however, the B-70 project transitioned into the XB-70 research program shortly after President Kennedy took office in 1961. This program yielded two airframes, the first flight occurring in September 1964. A spectacular midair collision in June 1966 killed two pilots and destroyed the second XB-70 as well as an F-104 chase plane. Subsequently, the flying program for the remaining XB-70 moved over to NASA in January 1967. The last flight of the XB-70 occurred in February 1969 when the delta-winged bomber arrived at Wright-Patterson AFB, Ohio, to become part of the Air Force Museum's permanent collection. These are the bare facts; the *truth* is well told by authors Dennis Jenkins and Tony Landis.

Valkyrie follows the same successful format used by Jenkins and Landis in *Hypersonic*, their excellent book about the X-15 research aircraft: high-gloss, quality paper; detailed text well supported by illustrations; and lots of color and black-and white photographs. The book's 246 pages are divided into two forewords, a preface, eight chapters, and seven appendixes. The wealth of technical information throughout enhances the overall credibility of the work without overpowering the story. Approximately the first third of the book provides background information, and the remainder details the B-70. This layout effectively connects the B-70 to the Department of Defense's other advanced aircraft projects of the time.

As a cost-saving measure, engineers designed the B-70 to share systems with two other late-1950s programs under development concurrently: the nuclear-powered bomber and the Mach 3 interceptor. The authors devote a chapter to each of these projects as well as another chapter to high-energy fuels research. Readers could examine any of these chapters independently of the others with little loss of continuity (it's almost like getting four books for the price of one).

Jenkins and Landis cover all aspects of the B-70, from the drawing board to flight testing and retirement. They describe the political climate, together with the demise of the nuclear-powered bomber and the Mach 3 interceptor. The termination of these programs shifted huge additional system-development costs to the B-70 project and became a factor in its ultimate cancellation as a bomber and conversion to a research project. The well-documented flight program makes up a quarter of the book, including the midair collision of June 1966—unfortunately, the most memorable part of the B-70 program. Readers also learn about the various B-70 systems as well as the types of weapons it would have employed. Jenkins and Landis offer a detailed list of the 129 flights made by the XB-70s, photos of the men who flew them, commentaries from two of the principal test pilots, two pages of "interesting facts" from North American and General Electric press releases, good documentation, and an excellent index.

As a book about a nonoperational aircraft, *Valkyrie* will probably attract only a limited audience within the Air Force community. However, we

would do well to heed its lessons about procurement, such as the sharing of subsystems and funding issues. Furthermore, concerns about the cost of weapon systems are just as valid today as they were in the 1960s. I found *Valkyrie* thoughtfully laid out, well written, and likely the last word on the B-70. To my knowledge, we have little other published information on the B-70 program. Therefore, a book of this quality should have strong appeal to aviation enthusiasts and historians alike. I look forward to more books by these authors.

Lt Col Dave Howard, USAF, Retired
Montgomery, Alabama

Raid on the Sun: Inside Israel's Secret Campaign That Denied Saddam the Bomb by Rodger W. Claire. Random House: Broadway Books (http://www.broadwaybooks.com), 201 East 50th Street, New York, New York 10022, 2004, 288 pages, $24.95 (hardcover), $14.95 (softcover).

Perhaps the most significant military, and certainly political, event of Israel's fight for survival is the surprise attack on Saddam Hussein's Osirak nuclear facility in 1981. This event shocked all the nations involved, left Iraq's nuclear ambitions in ruins, and frightened the rest of the Arab world. *Raid on the Sun* describes the attack with remarkable clarity and accuracy.

Granted access by the Israeli government to formerly classified documents and voluntary contact with all eight pilots, the mission coordinator, and cockpit film of the attack. Rodger Claire captures details previously unknown to the rest of the world. His style combines historical fact with clandestine thrill and the suspense of cloak and dagger, making the reader privy to every perilous decision made by the Israeli leadership. Claire goes a long way toward breaking the code of fighter-pilot language, explaining and providing enough information to satisfy even an F-16 pilot. He occasionally lapses into Nintendo-like references, however (e.g., using *joystick* rather than *control stick* or *stick*), and twice mentions infrared-guided SA-6s (a capability thus far not demonstrated by this missile). All in all, though, his diligent research is most impressive.

Claire's firsthand accounts of the mission are by far the most remarkable part of this book. At the time the United States was fielding the F-16, Israel took advantage of a dropped deal with a shaky Iran to take delivery of the world's newest fighter. Although the aircraft had not seen combat and its limitations remained relatively unknown, Israeli pilots would demonstrate its combat potential and, more importantly, show how a select group of determined men can change the course of world events. The author effectively captures the psychological dilemmas of each player on the Israeli team. Accounts of the squadron's veteran commander, who, though inexperienced in the F-16, requisitioned a place on the mission and thus disrupted the team's cohesion, create the type of locker-room drama that sets this book apart. To follow an extraordinary group of warriors on a landmark mission that would change the face of the Middle East, to know the risk of failure on a personal and political level, and to feel the sweat pour into their eyes as they validate two years of training with one precise squeeze of the pickle button—all of these elements will attract historians, tacticians, and military leaders to this story.

Though 24 years removed from the historic attack, we cannot ignore its significance. Imagine, as the first Bush administration did, that Saddam Hussein possessed any form of nuclear capability in 1990. Imagine, as an Israeli, that Scud warnings mean running to a fallout shelter instead of donning a gas mask. Imagine a madman who stops at nothing to satisfy his megalomania, including bartering that weapon to any number of suspect agents. In a current international environment that includes similar risks from an unpredictable Kim Jong Il and an insolent Iran, this book serves to remind diplomats as well as the world's political and military leaders of the significance of action as opposed to contemplation.

Raid on the Sun is a tribute to the people who reached beyond conventional boundaries to make a difference. It marks the strategic relevance of military ingenuity and the decisive outcome of leaders who truly lead. Historical scholars, casual military enthusiasts, and aviation experts will all find this book most rewarding. I recommend it highly.

Maj J. Rick Rosales, USAF
Monterey, California

Mission Debrief

Air and Space Power Journal, the US Air Force's professional journal, is published in English, Spanish, Portuguese, and Arabic. A French edition will begin publication in 2005. Each version has its own personality as well as an editor—a native speaker of the particular language and an expert in the region of coverage—who selects the journal's content. We're always looking for good, thought-provoking articles 2,500 to 5,000 words in length, written in any of our published languages. All submissions will be edited in accordance with the standards set forth in the *Air University Style Guide for Writers and Editors* (available online at http://www.maxwell.af.mil/au/aul/aupress/Resources/style/austylgd.pdf). For details, please see our guidelines for submitting articles at http://www.airpower.maxwell.af.mil/airchronicles/howto1.html. You can contact us by e-mail at aspj@maxwell.af.mil; regular mail at *Air and Space Power Journal*, 401 Chennault Circle, Maxwell AFB AL 36112-6428; phone at DSN 493-5322 (commercial [334] 953-5322); or fax at DSN 493-5811.

Subscribing to *ASPJ*: Both Printed and Electronic Subscriptions Are Available

Printed copy

- Write to New Orders, Superintendent of Documents, P.O. Box 371954, Pittsburgh PA 15250-7954; call (202) 512-1800 (voice), (866) 512-1800 (toll-free outside the DC area), or (202) 512-2250 (fax); or visit http://bookstore.gpo.gov on the Internet.
- Say that you want to subscribe to AFRP 10-1, *Air and Space Power Journal*, stock number 708-007-00000-5.
- Enclose a check for $32.00 ($44.80 for international mail). Major credit cards are accepted.
- Spend a year enjoying four quarterly issues mailed to your home or office.

Free electronic copy

- Log on to the "Subscription Center" at the Air Force Link Web site http://www.af.mil/subscribe, select *Air and Space Power Journal* (English and/or Spanish editions), enter your name and e-mail address, and then click on the "submit" button. You will immediately receive an e-mail asking you to reply in order to confirm your subscription. You won't receive your subscription unless you reply to that message. Electronic subscription is free.

Is Your USAF Organization Receiving the Proper Number of *ASPJ* Copies?

The free distribution of AFRP 10-1, *Air and Space Power Journal*, to USAF organizations and members is based on the following "Basis of Issue" criteria:

- One copy for each general on active duty with the US Air Force and Air Reserve Forces.
- One copy for every five (or fraction thereof) active duty US Air Force officers in grades second lieutenant through colonel.
- One copy for each US Air Force or Air Reserve Forces office of public affairs.
- Three copies for each Air Reserve Forces unit down to squadron level.
- Three copies for each air attaché or advisory-group function.
- One copy for each non–US Air Force, US government organization.
- One copy for each US Air Force or US government library.

If your organization is not receiving its authorized copies of *Air and Space Power Journal*, please contact our staff via any method listed in the paragraph at the top of this page.

Cumulative Article Index

A cumulative index of *ASPJ* articles, listed alphabetically by the author's last name, is available at http://www.airpower.maxwell.af.mil/airchronicles/apjindex.html.

The Editor

OUR CONTRIBUTORS

Maj Gen Stephen R. Lorenz (USAFA; MPA, University of Northern Colorado) is the deputy assistant secretary for budget, Office of the Assistant Secretary of the Air Force for Financial Management and Comptroller, Headquarters US Air Force, Washington, DC. The general attended undergraduate pilot training at Craig AFB, Alabama. A command pilot with 3,300 hours in eight aircraft, he has commanded an air-refueling squadron, a geographically separated operations group, an air-refueling wing that won the 1994 Riverside Trophy for Best Wing in Fifteenth Air Force, and an air-mobility wing that won the 1995 Armstrong Trophy for Best Wing in Twenty-first Air Force. He also commanded the training wing at the US Air Force Academy, where he served as the commandant of cadets. General Lorenz is a graduate of Squadron Officer School, Air Command and Staff College, Air War College, and the National War College.

Maj Alexander Berger (BA, University of New Hampshire; MS, Troy State University; MA, US Naval Postgraduate School) is chief of the Intelligence Plans and Resources Division, Directorate of Intelligence, Air Mobility Command, Scott AFB, Illinois. He previously served as Red Flag intelligence flight commander, 547th Intelligence Squadron, Nellis AFB, Nevada; Latin American regional analyst, Defense Intelligence Agency, Bolling AFB, Washington, DC; director, Joint PSYOP Course, USAF Special Operations School, Hurlburt Field, Florida; and chief of Intelligence, 55th Fighter Squadron, Bitburg Air Base, Germany. Major Berger is a distinguished graduate of both Air Command and Staff College and the US Naval Postgraduate School.

Col John L. Conway III, USAF, retired (BA, MA, University of Alabama), is a military defense analyst at the Airpower Research Institute, Maxwell AFB, Alabama. An intelligence officer with major assignments at Headquarters Air Intelligence Agency, North American Aerospace Defense Command, and the National Security Agency, he served as senior intelligence officer at Headquarters Air Force Reserve Command (AFRC), Robins AFB, Georgia, and in several wing and squadron intelligence assignments, including a combat tour in Vietnam with the II Direct Air Support Center in Pleiku Province. For his last active duty assignment, he served as chief of the Counterdrug Support Division, Headquarters AFRC. Colonel Conway has also held positions as a systems engineering and technical assistance contractor to the U-2 Directorate at Robins AFB and as an advisor to the Gordon Regional Security Operations Center, Fort Gordon, Georgia.

Lt Col William B. Danskine (BS, Oregon State University; MPA, University of Oklahoma; MMOAS, Air Command and Staff College; MAAS, School of Advanced Airpower Studies) is an electronic-warfare instructor, 338th Combat Training Squadron, 55th Wing, Offutt AFB, Nebraska. Previous assignments (all at Headquarters European Command [EUCOM], Stuttgart-Vaihingen, Germany) include chief of Intelligence, Surveillance, and Reconnaissance (ISR) Branch, J-2; lead planner and ISR collection manager, EUCOM Counterterrorism Campaign Planning Group, J-3; and chief of Airborne ISR Operations, J-2. He is also a career electronic-warfare officer and mission director on RC-135V/W Rivet Joint aircraft from the 55th Wing at Offutt AFB. Colonel Danskine is a master navigator with over 4,000 flight hours, including Operations Southern Watch, Decisive Endeavor, Provide Promise, Deny Flight, and Allied Force.

Col George D. Kramlinger (USAFA; MAAS, School of Advanced Airpower Studies; MA, Naval War College) is the commander, 612th Air Operations Group, Headquarters Twelfth Air Force, Davis-Monthan AFB, Arizona. As director of the combined air operations center (CAOC) at US Southern Air Forces, he is responsible for the planning and execution of air and space operations in the Southern Command area of responsibility. He has served in a variety of flying, staff, and leadership positions, including CAOC planner and F-117A pilot flying combat missions over Yugoslavia during Operation Allied Force. Most recently, he served as the deputy director of operations for NATO's CAOC 6, Eskisehir, Turkey. Colonel Kramlinger is a graduate of Squadron Officer School, Air Command and Staff College (with distinction), Naval War College (with distinction), and the USAF Fighter Weapons Instructor Course.

Order Processing Code:
*5679

United States Government INFORMATION

❏ YES, please send me ____ subscription(s) of the ***Air and Space Power Journal*** (AURE) for $32.00 each ($44.80 foreign).

The total cost of my order is $_____. Price includes regular shipping and handling and is subject to change. International customers please add 25%.

Company or personal name (Please type or print)

Additional address/attention line

Street address

City, State, Zip Code

Daytime phone including area code

Purchase order number (optional)

Charge your order. It's easy!

To fax your orders
(202) 512-2250

To phone your orders
D.C. Metro area
(202) 512-1800
toll-free outside D.C. area
(866) 512-1800

For privacy protection, check the box below:

❏ Do not make my name available to other mailers

Check method of payment:

❏ Check payable to Superintendent of Documents

❏ GPO Deposit Account ☐☐☐☐☐☐☐–☐

❏ VISA ❏ MasterCard ❏ Discover ❏ American Express

☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

☐☐☐☐ (expiration date)

Thank you for your order!

Authorizing signature 11/95

Mail To: Superintendent of Documents
P.O. Box 371954, Pittsburgh PA 15250-7954

Important: Please include this completed order form with your remittance.

Want a Subscription to the *Air and Space Power Journal?*

Copy this page, fill it out, and mail it along with a check or credit card number to

Superintendent of Documents
P.O. Box 371954
Pittsburgh PA 15250-7954

Make all checks payable to Superintendent of Documents

EDITORIAL ADVISORY BOARD

Gen John A. Shaud, USAF, Retired
Lt Gen Bradley C. Hosmer, USAF, Retired
Maj Gen I. B. Holley Jr., USAFR, Retired, ***Duke University (professor emeritus)***
Col David S. Fadok, USAF, ***College of Aerospace Doctrine, Research and Education***
Dr. J. Douglas Beason, Colonel, USAF, Retired, ***Los Alamos National Laboratory***
Dr. Alexander S. Cochran, ***National War College, National Defense University***
Prof. Thomas B. Grassey, ***Naval War College***
Lt Col Dave Mets, USAF, Retired, ***School of Advanced Air and Space Studies (professor emeritus)***

The *Air and Space Power Journal* (ISSN 1554-2505), Air Force Recurring Publication 10-1, is published quarterly. You may subscribe by writing New Orders, Superintendent of Documents, P.O. Box 371954, Pittsburgh PA 15250-7954; calling (202) 512-1800 (voice), (866) 512-1800 (toll-free outside the D.C. area), or (202) 512-2250 (fax); or visiting http://bookstore.gpo.gov. Annual rates are $32.00 domestic and $44.80 outside the United States. The GPO stock number is 708-007-00000-5. See *Air and Space Power Journal* online. Visit *Air and Space Power Chronicles* at http://www.airpower.maxwell.af.mil/.

The *Journal* welcomes unsolicited manuscripts. Address them to Editor, *Air and Space Power Journal*, 401 Chennault Circle, Maxwell AFB AL 36112-6428. E-mail or submit your manuscript via electronic file in either MS Word or WordPerfect format to aspj@maxwell.af.mil. All submissions will be edited in accordance with the standards set forth in the *Air University Style Guide for Writers and Editors* (available online in the *Air and Space Power Journal* section of *Air and Space Power Chronicles* at http://www.au.af.mil/au/oas/aupress/style). *Journal* telephone listings are DSN 493-5322 and commercial (334) 953-5322.