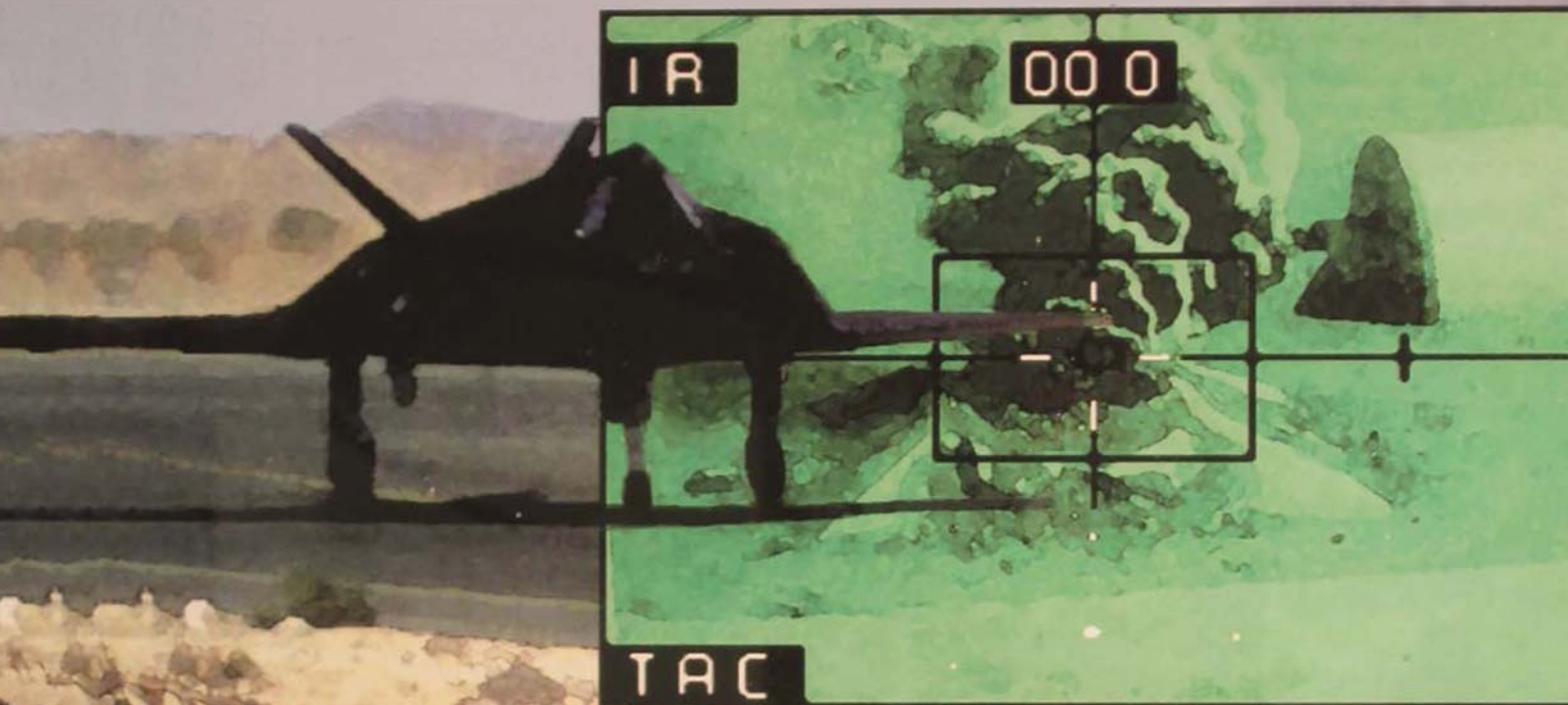


AIRPOWER

Fall

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JOURNAL



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Departures, Arrivals, and Destinations

Does the title sound like a travel itinerary? Perhaps, but the trip I want to talk about involves our future. You're probably saying, "Not again!" For it doesn't matter whether I plan to extol the shining prospects just around the corner or tell you the sky is falling—you have heard it all before. So you probably have, but the part I want to focus on is the trip itself and some changes along the way.

Change, whether intended or not, may be the only way to get to the future, but as you have probably noticed:

- It is much easier to favor change when we are able to view it objectively, as in "You need to make some changes."
- When it happens to us, change is uncomfortable, and the record seems pretty mixed. Just recall the times you've heard, "We made some changes while you were gone."
- For better or worse, change has become an integral aspect of all we do, and no lack of enthusiasm on our part seems to be slowing it down.

What are we to make of this? I would suggest several things: first, that this trip really is necessary—perhaps *unavoidable* is a better word. Second, any route we plan will be affected by the familiar factors of friction, chance, and human motivations and perceptions. If not exactly a "battle" for the future, certainly substantive change will result only from a struggle of wills and competing ideas. Thus, the ultimate destination is important, but what happens along the way to where we think we are going may be equally so.

What about that destination? Where do we go from here? Before I get to that, I want to tell you about some recent changes at *Airpower Journal*.

A particularly unwelcome change has been the departure of our editor, Col James W. "Bill" Spencer. He has gone on to bigger and, perhaps, better things at the Pentagon, but speaking for the staff and, I'm sure, the loyal readers of *APJ*, he will be sorely missed.

Over the last three years, Colonel Spencer has put his stamp on the *Journal*. His many contributions—flagship status, expanded content, and our electronic publication, *Air Chronicles*, to name a few—have been significant. It will be up to us from here on to see that they are lasting. This is not intended to disparage the acting editor, Major Petersen, or his loyal assistant (yours truly). Nor does it imply that our goal is simply to maintain the status quo. No, the greatest challenge for any leader is to build an organization that will not only survive but also prosper after his or her departure. Colonel Spencer has given us quite a legacy—one we intend to build on!

The other recent change here at *APJ* is an arrival—me. Let me just say by way of introduction that my background is primarily technical (engineering, flight test, and operational analysis). This would seem to be a pretty strange route to *APJ*, and none of it is of any consequence to you except to note that as one who labors over everything he writes, I can assure all of you who similarly struggle that your submissions will have a "friend in court." But as the contest hype goes, "You got to enter to win!" I hope to be hearing from you.

Personnel changes aside, the work of promoting professional dialogue continues. In this edition, we are pleased to bring you a number of articles to inform, stimulate, and hopefully elicit feedback from you. Almost all of them discuss what the future should look like or how we should get there, but I want to bring to your attention the way point by

General Shelton, chairman of the Joint Chiefs of Staff. Although its title is "Operationalizing Joint Vision 2010," it's really about change. This is "big" change—the kind that will affect us all, and, once started, things will never be the same again. The chairman requested that we get the word out, and we are honored to comply—but it would be a disservice just to leave it at that.

No one would argue about the importance and timeliness of the chairman's message for Joint Vision 2010, but to provide real value, *APJ* needs to be more than just a one-way means of communication. Therefore, as you read this way point, consider the lessons, implications, and improvements that we students of air and space power might have to offer on this subject. The following questions come to mind:

- How should we view technology and asymmetric threats? As airmen, we have dealt with asymmetric challenges before and not always successfully. What have we learned?
- What are the best ways to incorporate technological opportunities in setting operational requirements? We have sometimes been burned when we confused technical possibilities with operational needs, but we have also fielded capabilities based on technology that operators alone might not have identified. Do we now know the right formula for success?
- How do we juggle investments in technology and people with the cost of cur-

rent operations in a successful transition to the future force? Can we achieve and sustain a balance between developing the revolutionary potential of tomorrow and supporting what is militarily prudent for today?

Reviewing many of the recent articles on change and our future, I can't help pondering two additional issues. The first involves the way we approach problems. It is easy to demonize service parochialism, but is there such a thing as too much jointness? At some point, is there a risk of stifling creativity within the services? The second concerns status. Do we really know where we are? I hear a lot about organizations operating at or near the breaking point. In engineering, failures due to stress and strain on *materials* are usually predictable. When it comes to organizations and missions, however, I'm not so sure. Even if we could know, do we? Believing that you are going to succeed even though you're overtasked and lacking required support may be the only way to operate these days. But are we being honest with each other—or even with ourselves—about where we are in the flight envelope?

Tough questions? You bet. Are these the most important or even the right issues to be discussing? I will let you decide. The only thing certain is that change is coming. Let's return to the question, "What's our destination?" As far as we're concerned, that's up to you. □



Ricochets and Replies

We encourage your comments via letters to the editor or comment cards. All correspondence should be addressed to the Editor, Airpower Journal, 401 Chennault Circle, Maxwell AFB AL 36112-6428. You can also send your comments by E-mail to editor@cadre.maxwell.af.mil. We reserve the right to edit the material for overall length.

SUGGESTIONS FOR PROFESSIONAL FODDER

In "Fodder for Professional Development: Reference Works for the Air Warrior/Scholar" (Spring 1998), Dr. David Mets brings up a basic point about the study of both the evolution of airpower and the people who have contributed to its development. There is no organized program to nurture and encourage airpower studies, inside or outside the United States Air Force, and this deficiency has potentially serious implications for our future.

Although such a program is vital to encouraging the study of airpower, it is probably not within the Air Force's charter to oversee such a program. The free give-and-take of the academic community scares many individuals within the ordered bureaucracy of the military. Some members of the academic community would choose not to participate because of the military connection even though their contributions could be vital to the examination and evolution of airpower doctrine and its application. Also, any service-run program can be held hostage to the vagaries of politics and the budget process. That should not discourage us from participating in and supporting such a program, however. Any such program that evolves would have several components, only one of which I shall address here.

As Dr. Mets makes clear, there is no central repository or archive of primary airpower-related research materials. This basic, fundamental problem must be solved to permit the fullest growth of airpower studies. Papers of our key leaders, movers and shakers, theoreticians, innovators, and gadflies are scattered across the country at numerous libraries and other institutions. Although it may not be possible to physically relocate many of these papers to a central location, we can take certain steps. The Air Force's Historical Research Agency at Maxwell AFB, Alabama, is building a web site with information about the extent and location of the personal papers of key leaders (<http://www.au.af.mil/au/afhra/pp2.htm>). This inventory is a valuable first step.

Organizing, describing, and annotating these papers will require the cooperation of many groups. Sponsoring the studies of qualified graduate students or scholars is likely to produce some in-depth work. The answer lies in cooperation.

For instance, to facilitate the study of the Air Force Academy's collection of papers by many early Air Force leaders, the Air Force History Support Office (AFHSO) might write no-cost orders permitting selected military or civilian scholars to use billeting and dining facilities for reasonable, specified periods of time that are mutually agreeable. This arrangement would allow a significant reduction of costs incurred in the research effort.

Organizations such as the Air Force Association and Air Force Historical Foundation could cosponsor this research, providing fellowships funded by industry and philanthropic foundations interested in promoting the study of airpower-related subjects. These organizations could also organize a periodic

or even ongoing review panel of academics and military-aviation historians to consider proposals for research, approving and perhaps even rank-ordering desirable proposals. AFHSO could then sponsor these researchers. This type of plan would work for papers located at or near any military installation such as Air University at Maxwell AFB, the National Archives, or the Library of Congress (researchers could stay at Bolling AFB or Andrews AFB). This proposal leverages the strengths of each group to the advantage of the field as a whole.

For locations not near military bases, local airpower groups and individuals could work with local hotels for reduced rates or even on-campus guest housing. The possibilities are limited only by how many times one is willing to hear the words, "No, we don't do that; we haven't tried that before," and so on, ad nauseam.

Papers are ready for use, and the next step is making them available. Again, cooperation is paramount, since institutions (especially private universities and archival facilities) may have to overcome the desire to limit access to or retain control of what they view as "their" property. Scanning and digitizing, along with the growing availability of read-write CD devices, give us a cost-effective means of quality reproduction, especially when the collection includes photos. We also have the opportunity to access papers through the World Wide Web as well as distribute copies via CD. Some will be worthy of publication through Air University Press. Although the author or editor won't make any money, publication credit may be worth the effort. Other university presses and specialty academic presses are alternatives, but their products, often of high quality, can be somewhat high-priced.

The encouragement and assistance of retired military members—especially senior officers—will be crucial, as is support from airpower groups, prominent historians, and academics. These are the movers and shakers who can both reach out to attract bright young minds and solicit the academic and

financial support necessary for the long-term success of this kind of effort.

With a bit of luck and hard work, we may be only a few years away from having one or more sets of airpower-related papers on Dr. Mets's next recommended reference list.

MSgt Gerald A. White Jr., USAF
Washington, D.C.

IN SEARCH OF THE WEAK FLANK

Having read "In Search of High Ground" (Spring 1998) by Lt Col David K. Edmonds, as well as a number of other popular theories on airpower, I'm somewhat amazed by the way airpower is treated. Too often it is viewed as the ultimate strategic weapon or as inherently "strategic" in nature. Is that really an accurate assessment?

As many authors and theorists have noted, airpower came to be viewed by some as a means to avoid another World War I-style slaughter. It would free militaries from future wars of attrition. However, ground warfare also changed considerably between the world wars. The Germans during the Second World War found a weakness in the early Allied armies and exploited that weakness with devastating effectiveness from September 1939 until about November 1941. During that period of time, they only suffered one significant defeat—the Battle of Britain. Although the German daylight air campaign was relatively short, the losses as a percentage of strength were significant, and the results far from a decisive German victory. Next, look at the American daylight bombing campaign. Examine the losses and the duration of the campaign. Don't they resemble a war of attrition? Clearly the campaign lacked the quick and decisive results of the German blitzkrieg.

Now let's view Desert Storm and modern airpower. From my memory, weren't the initial objectives of the air campaign to achieve air superiority by attacking radar and air com-

Continued on page 111

Myths of the Gulf War

Some "Lessons" Not to Learn

DR. GRANT T. HAMMOND

THE EUPHORIA HAS DIED down over our "triumph without victory"¹ in the Gulf War, but the harm it can do is still with us. It is time to examine what we think we saw and learned from both the television imagery and the postwar interpretations. We need to assess with a more dispassionate eye what did and did not take place. Much—indeed, perhaps most—of what

the public knows to be true about the Gulf War simply is not so. This article examines a number of assertions about the war and disputes the conventional wisdom on the subject.

What follows is a list of propositions about the Gulf War that are commonly accepted as true by the American public in general and by many policy makers and members of the military as well. They are at best half-truths, if not outright myths. One can quibble with all of them, but they constitute the conventional wisdom on the Gulf War. It is important that we assess these propositions carefully. If not, we shall take the wrong "lessons learned" from the experience. Doing so will mean mismanagement of increasingly scarce defense resources and the development of an inappropriate strategy with which to confront the future. We can ill afford either.

When the US military is called upon again, as it will be, the public is the enabling agent for its employment. Our image of defense of the nation and our vision of our security will provide the context for that decision. A public beguiled by myths of the Gulf War and false expectations about our capabilities and future success is dangerous. When policy reach exceeds practical grasp, disaster often results. Hence, this article ultimately is an effort to diminish the oft-unfounded confidence in US capabilities as a result of the Gulf War.



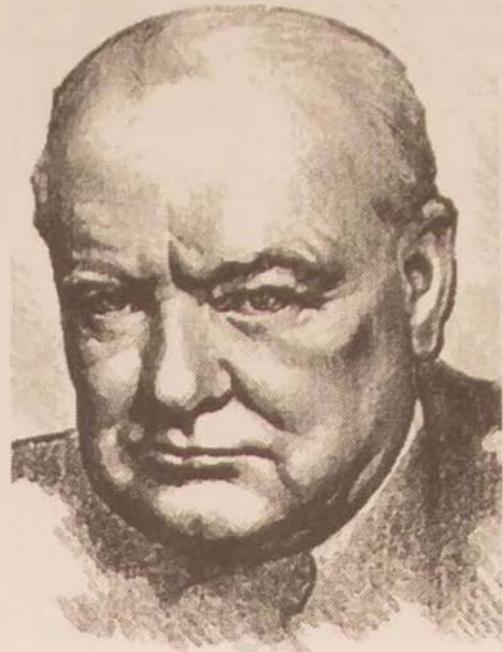
It Was a War

Magnificent, But Was It War?

—Angelo Codevilla, *Commentary*,
April 1992

The Gulf War matches our conventional image of warfare, but it was an anomaly nonetheless. It looked like a war to the American public and the world at large, given the extensive television coverage provided by Cable News Network (CNN). It was a war by definition, but it was a very odd one. It also had remarkably few casualties for the ordnance expended. The 146 combat deaths suffered by the United States (346 total from all causes) out of 511,000 troops deployed from 6 August 1990 to 12 February 1991 represent a loss rate one-tenth of what the Israelis suffered in the Six-Day War of 1967. In fact, the number of deaths was so low that young American males were safer in the war zone than in peacetime conditions in the United States.² That doesn't seem like what we think of when we think of war, does it?

It was not a war in a classic sense. For most of the "war," only one side fought. For most of the 43 days of the air campaign and the one hundred hours of the ground campaign, with few exceptions, the Iraqi military didn't fight. Iraq's planes stayed on the ground or fled to



Ann Armstrong

When you are winning a war, almost everything can be claimed to be right and wise.

—Winston Churchill

Iran, and most of its naval forces eschewed combat. There were few pitched battles—the Battle of Khafji being the major exception, but even that was a limited encounter by most standards. The famous "left hook" envelopment meant that we largely avoided contact with the enemy, and vast numbers of Iraqi troops fled north to Basra or surrendered rather than fight. In many ways, we won a battle—the battle of Kuwait—and not a war. We achieved a truce, not a peace.

It didn't end the way most wars we have fought in this century have ended. We didn't occupy enemy territory, democratize the political system, administer the country, or invest in its infrastructure after defeating it, as we did with Germany and Japan. We didn't leave tens of thousands of ground troops in the area to insure that it doesn't happen again, as we did after World War II and Korea. Nor did we totally leave the country, as we did after Vietnam. For all the one-sidedness of the military triumph, victory has proven to be elusive, with the central issue—Iraqi claims on Kuwait—unresolved. The circumstances after the Gulf "War" in many ways are not terribly



different from their antecedents. Save for the destruction of many targets, what did we accomplish? Is there a better peace after the war than existed before it?

It's Over

Battle Stations

—*Newsweek* Article on US Deployments to the Gulf, 16 February 1998

The war is not over. Its impact lingers on in many ways, and the region may be no more secure than it was eight years ago. The US Navy had six ships on station in the Persian Gulf region in July 1990. In the spring of 1998, it had 15 deployed to the area. The US Air Force had two composite wings—one at Dhahran, Saudi Arabia, and one in Incirlik, Turkey—with roughly two hundred planes. It had none in the area in July 1990. As a result of the most recent incident of Saddam's jerking our chain, more than 44,000 service members deployed to the region in the spring of 1998. Even after reducing the force by more than half, we intend to leave approximately 19,000 troops in the area.³ Meanwhile, US planes patrol the skies, implementing no-fly zones in Operation Provide Comfort—now Northern Watch—in northern Iraq and in Southern Watch in the south. Each of these flights merely bores holes through the sky. The pilots do not practice air-to-air combat, close air support, or bombing skills. They just put hours on engines and airframes that further deteriorate in the desert heat and sand. Both our skills and our equipment—Guard and Reserve as well as active duty—are being seriously degraded in these operations.

The Iraqis were not beaten as badly as we thought. The two hundred thousand Iraqi casualties turned out to be more on the order of a fifth of that number, perhaps as low as eight thousand killed.⁴ Most members of the vaunted Republican Guard—with over half of the best armor in the Iraqi army and 70 percent of Iraq's troop strength, according to analysis by the Central Intelligence Agency

and the Defense Intelligence Agency—escaped north to Basra and were neither killed nor captured. Ammunition stocks were not seriously depleted in most ground units because little fighting occurred. Many items, save combat aircraft, destroyed in the war have been replaced over the years. Events since the war have shown that our knowledge of both the nuclear and chemical/biological weapons capability of Iraq proved woefully inadequate. Although these weapons remain under United Nations (UN) monitoring, they are far more extensive than we originally believed and have neither been destroyed nor decommissioned in their entirety.

Iraq did not win militarily, but it did not lose politically. It still has claims on Kuwait as its 19th province. Saddam Hussein is still in power. On his scorecard, he "won" by not losing politically. He survived and has less domestic opposition now than before August 1990. We have deployed large forces to the region three times since the end of the Gulf War. As for those people who thought sanctions would work—Colin Powell chief among them—nearly eight years have passed since they were established. With sanctions *and* the Gulf War itself, not much has happened to change Iraqi policies or the regime of Saddam, save to make him even more paranoid. The population, not the government, has felt the impact. Meanwhile, our support in the region has waned considerably compared to 1990.

We Won

Saddam defined victory as "defending ourselves until the other side gives up."

—Gen Perry Smith, USAF, Retired, *How CNN Fought the War*

We did not win politically or militarily, for we did not accomplish our objectives on either front. Saddam remains in power, and his vaunted Republican Guard was not destroyed. The casualty estimates, our success in destroying Iraq's nuclear capability, and the time it would take Iraq to reconstitute its

forces were all woefully miscalculated. We forced Iraq to withdraw from Kuwait and did so with very few casualties—even fewer than in the Spanish-American War. But all was not good, for 35 of the 146 US casualties were attributed to the oxymoronic term *friendly fire*.

We did not “play” it the way Americans have come to expect wars to be fought. It neither ended nor started in the ways we have come to think about war. US forces were not engaged for five and one-half months after the aggression occurred. The rhetoric proved far more heated than the actions for most of the period of confrontation. President George Bush likened Saddam to Hitler. When the war started, *we* decided when to pull the trigger, not the enemy. When the war ended, the Iraqis didn’t sue for peace; we just stopped it unilaterally and then had them agree to our terms. We didn’t seek unconditional surrender, confirmed by occupying the enemy’s country. We did not insist on reparations or complete prisoner-of-war exchanges. There were no war-crimes trials. There was no comprehensive settlement. Things just sort of stopped after the magic one-hundred-hour ground campaign. Gordon Brown—Gen Norman Schwarzkopf’s chief foreign-policy advisor at US Central Command (CENTCOM), on loan from the State Department—told interviewers, “We never did have a plan to terminate the war.”⁵

Although we scored lopsided military successes, we didn’t win in many ways. We reclaimed Kuwait, but Saddam remains. We did not change the leadership or the preferences of the regime that caused the war in the first place. And the degree of punishment that we thought we meted out proved in retrospect far less than we had imagined. For all the destruction visited on Iraq, it is questionable if Saddam is any more deterred by our “triumph without victory” or if the balance of forces in the area has been fundamentally transformed in our favor. We are the ones who have seen our military forces cut by roughly 40 percent. Saddam’s are building up, not diminishing. UN inspections notwithstanding, we cannot be



We might fight and win a Gulf War II ultimately, but we could not do so quickly and with few friendly casualties unless we used weapons of mass destruction.

sure of his capability to have or utilize weapons of mass destruction.

We Accomplished Our Objectives

Our military objectives are met.

—George Bush, 27 February 1991

They were not. Nor were our political objectives realized. This was in large measure because we terminated the war unilaterally—earlier than we should have—without realizing the more important of our political goals and military objectives. We failed to meet our own criteria and were confused as to the larger purposes of the struggle we waged in the Gulf. War termination was not well specified because we had no clear end state in mind.

President Bush stated four objectives for US involvement in the Gulf War: (1) withdrawal of Iraqi forces from Kuwait; (2) restoration of the legitimate government of Kuwait; (3) protection of Saudi Arabia and other states in the Gulf from Iraq (which implicitly guaranteed

the flow of oil from the Persian Gulf); and (4) protection of American citizens abroad.⁶ We accomplished the first two of these political goals. The third and fourth constitute an open-ended commitment that we may have to demonstrate again. According to the operations order, the military objectives for Operation Desert Storm were to "[1] Attack Iraqi political/military leadership and command and control; [2] Gain and maintain air superiority; [3] Sever Iraqi supply lines; [4] Destroy chemical, biological and nuclear capability; [5] Destroy the Republican Guard forces; and [6] Liberate Kuwait."⁷ We achieved items (2), (3), and (6). Item (1) proved a partial success at best, and we did not accomplish items (4) and (5).

Two divisions of the Republican Guard along with nearly seven hundred tanks escaped north to Basra, avoiding capture or destruction—likely outcomes, had Gen Frederick Franks and VII Corps moved faster at the outset and not turned as they did. Safwan was not even in our possession when we designated it the site for talks after a cease-

fire. We returned Iraqi prisoners without liberating captive Kuwaiti citizens in return and allowed the Iraqis to use helicopters to put down nascent rebellions among Kurds in the north and Shiite rebels in the south, both of whom we had encouraged in their efforts against Saddam. It was not our finest hour.

Technology (PGMs) Won the War

In 1991, approximately 85 percent of smart bombs hit within 10 feet of their aiming points.

—Richard Hallion, *Storm over Iraq* (1992)

In the Gulf War, we enjoyed a several-orders-of-magnitude improvement in aerial bombardment, compared to our previous experiences. The combination of stealth and precision-guided munitions (PGM) may provide a vast improvement in accuracy and capabilities. But there is more to it than that. The simplistic



The American public has little stomach for war and is becoming disenchanted with humanitarian missions as well.

image of a bomb going down an air vent, as replayed on CNN many times, is not an accurate reflection of the reality of aerial bombardment in the Gulf. It belies the true accuracy and frequency of use of PGMs. The great bulk of ordnance used—roughly 95 percent—consisted of “dumb” bombs, not “smart” ones. We are still far from the much ballyhooed “one target, one bomb” claim issued immediately after the war by defense contractors and Air Force leadership. A Government Accounting Office (GAO) assessment⁸ of the effectiveness of the Gulf War air campaign suggests that although the results were a great improvement over previous air campaigns, they were nowhere nearly as good as claimed.

High technology certainly did play a role in the Gulf War, but it had as much to do with communications, surveillance, navigation, and the use of space-based assets as with PGMs. The role of the Global Positioning System (GPS), secure satellite communications, night-vision devices, and massive aerial refueling and tanker operations was routinely more important than that of smart bombs, antiradiation missiles, cruise missiles, and Patriot missile defenses against Scud missiles. Things that didn't go “bang” were the more important technological accomplishments. But our lead in these areas of military technology is dissipating rapidly. One can buy GPS receivers commercially; contract with private companies to get overhead space imagery; and use notebook computers, cellular phones, and direct-broadcast satellite capability to run a war from virtually anywhere.

Effects are the important metric, and PGMs give us an order-of-magnitude improvement over bombing results in the past. This development makes modern war a very expensive proposition. The biggest problem in realizing the potential of PGMs with one-to-three-meter accuracy is that they require one-to-three-meter precision intelligence to enable them. We're not there yet.

The “Vietnam Syndrome” Is Over: US Military Might and Prestige Are Restored

When we win, and we will win, we will have taught a dangerous dictator and any tyrant tempted to follow in his footsteps that the US has a new credibility and what we say goes.

—George Bush, 1 February 1991

I guess Slobodan Milosevic, Raoul Cedras, Mohammed Farah Aidid, and the leaders of North Korea weren't watching the Gulf War or listening to President Bush. The half-life of this demonstration in military capability, at least in terms of conventional deterrence or diplomatic leverage, seems to have been very short—if it ever existed at all. We seem to have no more impact on events since the Gulf War than we had before it. Under the Clinton administration, amid the shambles of Bosnia, Rwanda, and Haiti, one could argue that we have considerably less to say about conflict in the world than we had during the bad old days of the cold war. Saddam Hussein still threatens Kuwait despite what we both say and do.

If anything, the United States is even less willing, or more reluctant, to go to war now than it was before the Gulf War. The unique aspects of the Gulf War set an unrealistic standard that we will likely never realize again. These aspects included a quick, high-technology, low-casualty, coalition war, all of which are unlikely to be repeated collectively again. Hence, to the degree that they represent the public's test of military success in the American democracy, the standard may prove too difficult to replicate. If it can't be replicated, it was an anomaly that says little about current or future US military performance in war. The American public has little stomach for war and is becoming disenchanted with humanitarian missions as well.

As mentioned above, the United States has approximately 40 percent fewer military forces to devote to fighting a war than it had in 1990. By 1997 the defense share of the gross



F-15s in the sun. Airpower did not win the war.

national product was the lowest since before Pearl Harbor. We will have a 340-ship Navy, down nearly 50 percent from the goal of the Reagan years, and an Army with significantly reduced manpower. The reserve components of the US armed forces have long outnumbered their active duty counterparts. Citizen soldiers are a proud part of America's military tradition, but we cannot fight a war without mobilizing the reserves, and there are political as well as economic consequences to doing so for long or with frequency. Given our propensity of late to shake first a fist and then a finger, the United States is even less effective in deterring would-be aggressors than in the past. More American lives were lost (18 killed and 76 wounded) in a single, violent firefight in Somalia—a peacekeeping operation—than during a single combat incident in the Gulf War.

We Can Do It Again If Necessary

On Alert for Desert Storm II

—*Newsweek*, 17 October 1994

We might fight and win a Gulf War II ultimately, but we could not do so quickly and with few friendly casualties unless we used weapons of mass destruction. Conven-

tionally, it would be very much more difficult. This is true for reasons that are political and economic as well as military. Politically, several factors have changed. Turkey now has a fragile coalition government as well as a growing Islamist movement and political party. Next time, that country may or may not grant us use of its airfields or permission to launch offensive operations—NATO member or not. Without Egyptian overflight rights and the use of Cairo West as a staging area, merely getting there may be difficult or impossible. In the future, given the strength of Islamic fundamentalism in the country, Egypt may not be able to support us as it did in the past. In addition, one senses that the aftermath of the Gulf War—not to mention Somalia, Bosnia, and Haiti—may have sapped American strength and will rather than bolstered them. Social Security has defeated national security as the main issue for the US body politic.

Given our peacekeeping experience (Somalia, Bosnia, and Haiti), the political instability of major allies (France and Germany), and the economic disruptions in the world economy (Japan and East Asia), the willingness to join in another international effort may be slim to nonexistent. Currency fluctuations, national-debt levels, inflation, high unemployment, sluggish world trade, and recessions in many allied nations make contributions to such an effort on the scale of the Gulf War highly improbable. Saudi Arabia now has huge debts and is borrowing to pay interest and make defense purchases. The oil glut means that most Middle East revenues have fallen and remain at very low levels. Japan can no longer contribute the financing of another Gulf War, and the turmoil in Asian stock and currency markets makes us all more fragile.

If things appear bleak on these fronts, they may well be worse militarily. Despite new materiel coming on-line, at the moment we do not have the excess stocks of munitions consumed in the Gulf War, the transport capacity, or the large numbers of personnel to do it again as quickly or easily. The services are rife with problems of recruitment, retention, and readiness. We do not have some bases in Europe from which to generate tank-

ers or provide ramp space to support the ferrying of combat aircraft to the Gulf theater. The downsizing of the US military establishment means that the United States now has eight fewer divisions in the US Army; 20,000 fewer active duty marines; 14 fewer fighter wings in the Air Force; and 182 fewer ships on active duty in the Navy than it did when Saddam invaded Kuwait.⁹

Others Paid for the Cost of the War

Estimated cost of the Gulf War as of 20 April 1991: \$100 billion.

—US General Accounting Office

Others did pay for the great bulk of the cost of the war. They paid for over \$49 billion of the total cost of \$56 billion. But the United States still put up \$7 billion for the effort and forgave Egypt \$7 billion in debt to have it participate in the 35-member coalition. We paid for fewer of the direct costs of this war than of any war we have ever fought as a nation. Although that may be good on one level, cartoons of a US GI with tin cup in hand in front of coalition members were not a positive commentary on our circumstances. GAO estimates of the direct costs of the war are more than double what we collected.¹⁰

Our total is closer to \$100 billion. But direct war costs to eventual war costs for the United States yield an average ratio of one to three. That is, the total cost of the Gulf War—after we factor in medical costs, pension costs, survivor benefits, and so forth—will be more like \$300 billion. This may sound far-fetched, but it is not. In 1990 when the Gulf War started, the US government sent out 51 checks for survivor benefits to relatives of veterans of the US Civil War! Thus, the monetary costs alone are far greater than we have led the public to believe. Budget difficulties caused by redeployments to the Gulf, a lack of supplemental funding for peacekeeping operations, and the battle between readiness and modernization have conspired to make things even worse.

But the US military is still feeling the real costs of the Gulf War. Medical and retirement costs will continue for a century. Equipment costs are also significant. Approximately one-third of the C-141 cargo-plane fleet was in depot maintenance during the year following the Gulf War. We are retiring C-141s three times faster than we are acquiring their replacement C-17s. The life of engines, airframes, onboard computers, control systems, wing spars, and so forth on nearly all the aircraft utilized during the Gulf War and the ensuing no-fly zones has been seriously degraded. Although operational readiness rates were maintained at an



American infantry platoon during Desert Shield exercises. Two divisions of the Republican Guard along with nearly seven hundred tanks escaped north to Basra, avoiding capture or destruction—likely outcomes, had Gen Frederick Franks and VII Corps moved faster at the outset.

average of 90 percent or better for nearly every type of aircraft used in the Gulf War, spare parts—together with the frequency and intensity of required maintenance—have a delayed cost of considerable magnitude. Mission-capable rates are down and still falling in many units, while cannibalization grows.

The United States is paying, and will continue to pay, for the cost of the Gulf War in increased maintenance, shortened life of weapons systems and platforms, and replacement of equipment expended from surplus stocks during the Gulf War. The last of the F-15Es from the 4th Wing at Seymour Johnson AFB, North Carolina, which were among the first to deploy in August 1990, didn't return home until July 1994, after supporting the no-fly zones in Iraq. They have many more hours on their engines, and the airframes have been badly degraded by sand, heat, and desert sun, as well as increased rates of use. This is just one example. Because of downsizing throughout the military, the United States will attempt to field a force with

fewer people; fewer reserves; less maintenance capability; fewer spare parts; more miles on aircraft, ships, and vehicles; and less margin for error and redundancy than was the case before the Gulf War.

Gulf War Represents an Almost Unblemished Record of Success, Superior Military Performance, and Accomplishment

Public confidence in the military has soared to 85 percent, far surpassing every other institution in our society.

—David Gergen, *US News and World Report*,
11 February 1991

Despite an overwhelmingly positive display of military prowess and accomplishment, the failures of the Gulf War are many, large, and of considerable significance. We

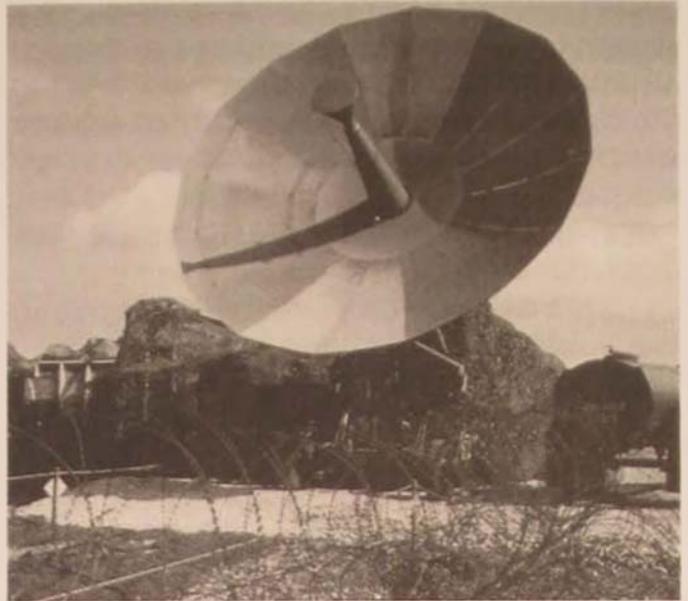


Bomb storage in the desert. The great bulk of ordnance used—roughly 95 percent—consisted of “dumb” bombs, not “smart” ones.

tend not to pay heed to them or give them the dissemination and discussion they deserve. Without seeking to take away from the very considerable accomplishments of our men and women in the armed services who performed admirably in the Gulf War, we must address some glaring failures. The bulk of these involved targeting—especially the failure to identify, locate, and destroy such salient targets as the key elements of Iraqi capability. Taking them out is serious business. We must improve our capacity to locate, identify, target, and destroy key targets—military and political.

The inability to locate and destroy Scud missile launchers (there is not a single confirmed destruction of a mobile Scud launcher during the Gulf War) is the most serious failure. As it turned out, the Iraqis had nearly double the number of mobile launchers we thought they had—some 220 total. We flew twenty-five hundred sorties against them.¹¹ Although we took out several fixed sites, we did not do well at all against mobile ones. Despite flying an average of 11 sorties per launcher, we left Saddam with many—and over two hundred Scuds as well. This is regrettable all the more because it is not a novel problem but an old one that we ignored. Scuds were reminiscent of V-2 missiles from World War II. We had no better solution for them in 1991 than we did in 1944. All we could do was bomb the launch sites, hope we got lucky, and eventually overrun them on the ground. We didn't.

But there were other failures that we must contemplate and correct as well. These constitute problems that we caused ourselves. Most important among these was the number of deaths caused by friendly fire. That reality remained hidden until postwar investigations uncovered the problem. During the war, we created too good an image of our military prowess on television and a tendency to claim more than was our due. Nearly every initial claim later proved overblown. This in turn led to an exaggerated faith in technology and, by extension, in our national security achieved through technological superiority. Alas, such is not the case. Many of the systems that



High technology certainly did play a role in the Gulf War, but it had as much to do with communications, surveillance, navigation, and the use of space-based assets as with PGMs.

appeared the most effective—for example, the Patriot antimissile missile¹²—have, upon closer scrutiny, proven to be almost militarily irrelevant in the war. Some very expensive weapons systems—notably the B-1B—didn't participate. We simply do not have the resources to afford the redundancies of the past or to procure systems we don't need or cannot or will not use.

The Promise of Airpower Was Finally Fulfilled

Gulf Lesson One is the value of airpower.

—George Bush, 15 June 1991

Airpower did not win the war. It made it much easier for us to achieve the appearance of victory, but since that eluded us, we cannot say that airpower won. No one in the ground forces or among our coalition partners would have wanted to fight that war without the tremendous contribution that airpower made to it. But neither could the US Air Force, the major custodian of airpower, have “won” or achieved what was accomplished without the

use of Navy, Army, and Marine air and surface assets, deployed or employed in the theater. Airpower came closer to being decisive in the minds of most people, but it did not achieve victory. Ironically, even its success was not unique.

To understand this point is critical. Democracies in general and America in particular have a fetish for firepower over manpower. We would far rather spend dollars than lives. Airpower is the quintessential way to have standoff power that risks fewer lives than sending in ground-combat forces. There is no disputing that. Airpower can punish, severely diminish, and destroy large portions of enemy forces. It can do so rapidly and globally. Was it decisive in the Gulf War? Maybe. If your definition is "critically important," the answer is yes. If it is "conclusive," the answer is no. But airpower came far closer to achieving its goals and accomplishing our military aims than ever before. We should have known that it would.

We think we learn from the past, profit from our mistakes, and learn from previous experience so we won't have to relearn painful lessons. Would that it were so. We have little sense of history. Hard lessons have a short half-life equal to about half a generation, let alone more. We often fail to learn what we should or forget what we think we have mastered. The following quotation is interesting in this regard:

What are the chief lessons with the strategic use of air power in the last war?

[1] One lesson is that the time we were given to make our preparations was an absolutely essential factor in our final success. . . . It is unthinkable that we should ever again be granted such grace.

[2] Air power in this war developed a strategy and tactic of its own, peculiar to the third dimension.

[3] The first and absolute requirement of strategic air power in this war was the control of the air in order to carry out sustained operations without prohibitive losses.

[4] We profited from the mistakes of our enemies. To rely on the probability of similar mistakes by our unknown enemies of the future would be folly. The circumstances of timing, peculiar to the last war, and which worked to our advantage, will not be repeated. This must not be forgotten.

[5] Strategic air power could not have won this war alone, without the surface forces. . . . Air power, however, was the spark to success. . . . Another war, however distant in the future, would probably be decided by some form of air power before the major surface forces were able to make contact with the enemy in major battles. That is the supreme military lesson of our period in history.¹³

That is an accurate assessment of the US performance in the Gulf War and sound advice for the future. It is a set of insights we would do well to heed. But it was not written about the Gulf War. It was written 45 years earlier by Gen Carl A. "Tooey" Spaatz as his assessment of the fulfillment of strategic airpower in World War II! If the promise of airpower was fulfilled, it was fulfilled in that war. The Gulf War was merely another demonstration of the effectiveness of airpower and the necessity for the United States to project power at great distance for strategic effect using the third dimension. Somewhere between World War II and the Gulf War, we either failed to learn or conveniently forgot these lessons. Why did airmen not understand what we had achieved over 50 years ago? How did they let these insights disappear from their understanding of war and the application of airpower? As Yogi Berra would say, "It's déjà vu all over again."

Epilogue

This list of myths of the Gulf War is not exhaustive. The image of prowess and success at very low cost that the public has of the Gulf War is a dangerous delusion. The myths reveal a gap between perception and reality. Unchallenged, they have distorted public perception of the Gulf War, our role in it, its significance, and the degree to which it should serve as a

reference for future engagements abroad. A poor model on which to base assumptions about future wars, it was unique in many ways. All wars are.

We should not repeat the mythical lessons of our experience in the Gulf as a policy guide. These unfounded "lessons" of the Gulf War are dangerous in the extreme. Misperceiving to such a degree something as momentous and fundamental as a large-scale conventional engagement of international significance is a serious matter in its own right. Basing ill-founded policies on fallacious assumptions about the past, our strengths, and our supposed accomplishments is a volatile brew. Similarly, not understanding the essence of airpower and its contributions to how wars may be fought and won risks disaster via another route. If airmen don't understand and articulate to others what airpower can do, who will? The implementation of Instant Thunder—the strategic air campaign plan for the Gulf War—was a very close-run affair, despite Spaatz's comments of 45 years earlier.

Misreading ourselves or the world flirts with failure. Doing both virtually guarantees it. We have seen American power erode steadily, the Gulf War notwithstanding. It is a matter of attitude as well as aptitude. It is not our military might that is in question. Rather, it is our political purpose and ability to lead that is suspect. We are less likely to act

unilaterally. Both our national security strategy and our national military strategy presume coalition warfare. We need others to permit, pay for, and participate in our wars. We have to have the approval of others to permit us to use military force abroad through UN sanctioning of our nascent crusades. We require others to pay for the use of our force abroad. And we wish others to participate in the application of that force, or we are reluctant to act.

The newfangled term *cooperative security* may be no less bankrupt than the *collective security* under the League of Nations in the 1920s and 1930s. Someone—usually the most powerful—must take the first step to intervene, whether it be to stop aggression, punish violators of human-rights standards, stop genocidal warfare, or save large numbers of lives amid the refugee crises of people fleeing famine and disease. Not doing some of these things may indeed be regrettable. But worse yet is to think we can handle all such problems, take the initiative to do so, and then find we are unable—even if not unwilling—to do so. That is likely to be the case, given the defense budgets and policies of the moment. The fact that this reality is at odds with public myths of the Gulf War represents a grave danger we should avoid. Understanding the myths of the Gulf War is a necessary antidote to having our moral and political reach exceed our military grasp. □

Notes

1. This is the title of one of the initial accounts of the Gulf War. U. S. News and World Report, *Triumph without Victory: The Unreported History of the Persian Gulf War* (New York: Times Books, 1992).

2. The average death rate for those personnel deployed in the Gulf was 69 per one hundred thousand. For males 20 to 30 years of age living in the United States during the same period, the death rate was 104 per one hundred thousand. These comparisons are based on statistics provided by the US Department of Defense and the Metropolitan Life Insurance Company and are presented in "Harper's Index," *Harper's*, May 1991, 17 and 70. One may find a more detailed study in James V. Writer, Robert F. DeFraitcs, and John F. Brundage, "Comparative Mortality among US Military Personnel in the Persian Gulf Region and Worldwide during Operations Desert Shield and Desert Storm," *JAMA: The Journal of the American Medical Association* 275, no. 2 (10 January 1996): 118-21.

3. Dan Priest, "Military Reduces Presence in Gulf," *Washington Post*, 27 May 1998, 1A.

4. For varying analyses of Iraqi casualties and captured troops, see US Department of Defense, *Conduct of the Persian Gulf War, Final Report to Congress* (Washington, D.C.: Department of Defense, April 1992); Thomas A. Keaney and Elliot A. Cohen, *Gulf War Air Power Survey: Summary Report* (Washington, D.C.: Government Printing Office, 1993); RAND analyses cited in James A. Winnefeld, Preston Niblack, and Dana J. Johnson, *A League of Airmen: U.S. Air Power in the Gulf War* (Santa Monica, Calif.: RAND, 1994), 159; studies by George W. S. Kuhn, Alfred Hashim, and Anthony Cordesman referenced in *Triumph without Victory*, 406-8; and John G. Heidenrich, "The Gulf War: How Many Iraqis Died?" *Foreign Policy*, March 1993, 108-25.

5. Michael R. Gordon and Gen Bernard E. Trainor, *The Generals' War: The Inside Story of the Conflict in the Gulf* (Boston: Little, Brown and Company, 1995), 461.

6. President George Bush, "The Deployment of US Armed Forces to Saudi Arabia," address, 8 August 1990, reprinted in *Military Review*, September 1991, 82.

7. Less the numbers inserted for reference, they come verbatim from CENTCOM Operations Order 91-101, dated 17 January 1991. Cited in Rick Atkinson, *Crusade: The Untold Story of the Persian Gulf War* (Boston: Houghton Mifflin, 1993), 20-21.

8. See United States General Accounting Office, *Operation Desert Storm: Evaluation of the Air War*, GAO-PEMJD 96-10 (Washington, D.C.: US General Accounting Office, July 1996). For a synopsis of the GAO report, see Tim Wiener, "'Smart' Weapons Were Overrated, Study Concludes," *New York Times*, 9 July 1996, A-1, A-7. For earlier reports of the inaccuracy of Gulf War munitions, see Vincent Kieman, "Gulf War 'Hits' Were Often Misses," *New Scientist* 139, no. 1889 (4 September 1993): 8.

9. Data comparisons are from figures provided in the 1990 and 1996 issues of *Defense Almanac*.

10. For a detailed breakdown of the accounting, see House, *Statement of Frank C. Conahan, Assistant Comptroller General, National Security and International Affairs Division, US General*

Accounting Office, before the Committee on the Budget: Cost of Operation Desert Shield and Desert Storm and Allied Contributions, 15 May 1991, GAO/T-NSIAD-91-34.

11. See the discussions in Winnefeld, Niblack, and Johnson, 132-34, 166-67, and 269.

12. A rather unseemly but terribly important private, then public, debate erupted between Dr. Theodore Postol of the Massachusetts Institute of Technology on the one hand and Raytheon (makers of the Patriot) and the US Army on the other, with a flurry of charges and countercharges. Raytheon was banking on some \$3 billion in Patriot sales, which Postol's analysis placed in jeopardy. The saga is recounted in Stephen Budiansky, "Playing Patriot Games," *U.S. News and World Report* 115, no. 20 (22 November 1993): 16; Seymour Hersh, "Missile Wars," *The New Yorker* 70, no. 30 (26 September 1994): 86-98; and Jock Friedly, "MIT Torn by Bitter Dispute over Missile," *Science* 271, no. 5252 (23 February 1996): 1050-52.

13. Gen Carl A. "Tooey" Spaatz, "Strategic Air Power: Fulfillment of a Concept," *Foreign Affairs*, April 1946, 394-96. (Paragraph numbers have been added for clarity.)

The quality of a person's life is in direct proportion to their commitment to excellence, regardless of their chosen field of endeavor.

—Vince Lombardi

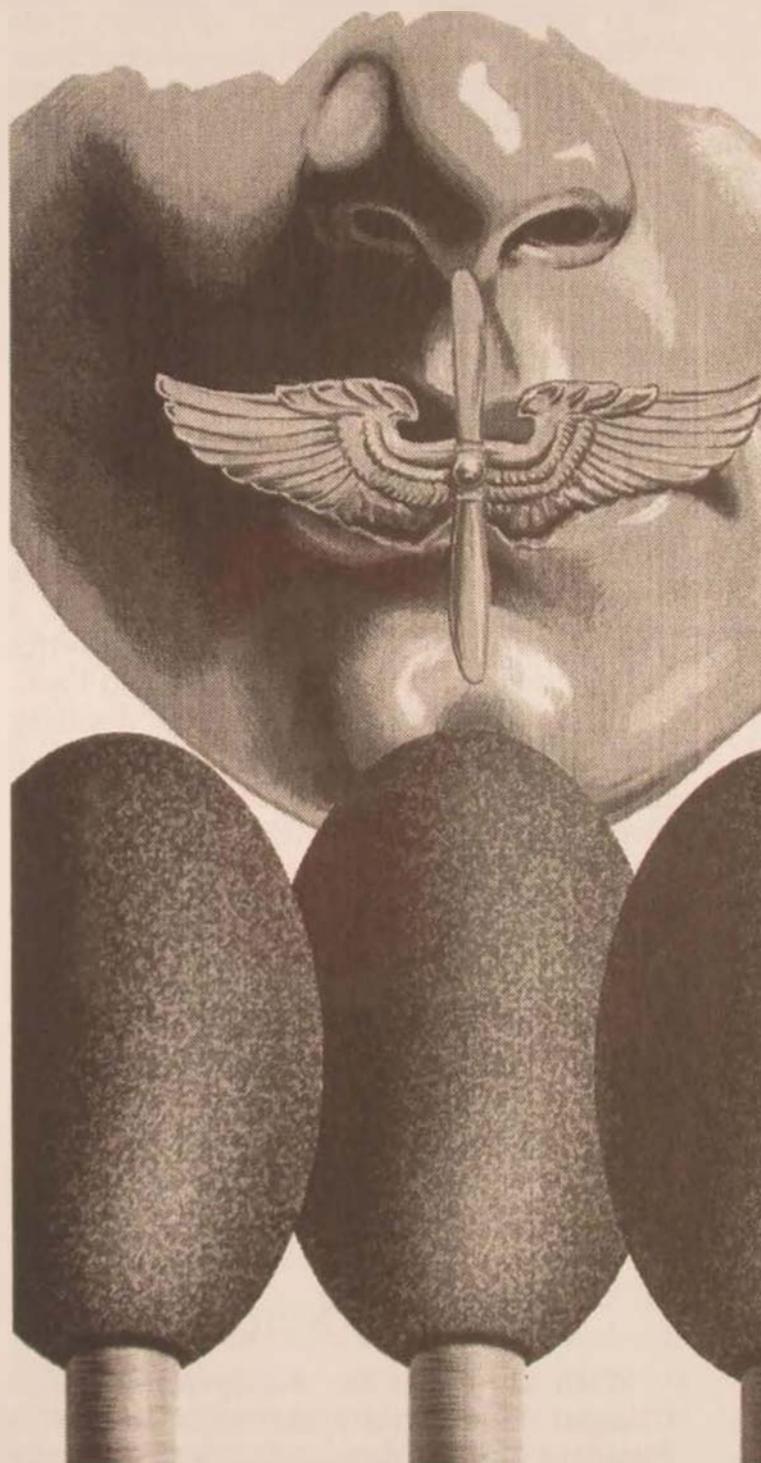
The Speech Rights of Air Professionals

COL LLOYD J. MATTHEWS, USA,
RETIRED

AMONG THE MOST sublime utterances in the rhetorical fabric of our nation's founding is Article 1 of the Bill of Rights: "Congress shall make no law . . . abridging the freedom of speech or of the press." For those American citizens wearing the uniform of our armed services, however, there have long been on the books laws passed by Congress that in practice do sanction the abridgement of speech rights of service members when military necessity so dictates.¹ Such laws flow from prudent constitutional provisions for Congress to make rules for the government and regulation of the armed forces (Art. 1, sec. 8) and for the president to act as commander in chief of those armed forces (Art. 2, sec. 2).

A serious problem ensues from the fact that in interpreting applicable law, the courts have never defined precisely how far military necessity should extend in sanctioning the infringement of speech rights guaranteed under the Bill of Rights. The courts have traditionally acted to protect operational security, and they have taken a disapproving view of soldierly speech that represents a genuine threat to good order and discipline. But the extent to which service members' speech can be censored solely for failure to conform with service or government policy—as it now frequently is—has never been confronted head-on and unambiguously resolved by the courts.²

This lack of clear limits on speech as defined by the ultimate judicial arbiters has



created a serious problem for military professionals, since they are most knowledgeable of national defense requirements and are potentially in position to make the most authoritative and credible contributions to the national defense dialogue. Detlev Vagts has presented the classic case for allowing the military officers of democratic nations to speak their minds publicly on matters of national defense policy:

In preventing unofficial opinions from competing in the military marketplace of ideas, we grant a dangerous monopoly to official dogma that may shelter a stagnation and inefficiency we can ill afford in these swift and perilous times. By preventing independently thinking officers from speaking their piece, we encourage mental laziness; deprive the Defense Department, Congress, and voters of valuable sources of data; and threaten to reduce even further the small roster of American officers who make lasting contributions to military thought.³

Yet, despite the broad professional obligation to make their expert views known among the polity, Air Force officers remain members of the executive branch of government, a position calling into play a host of powerful but narrowly centered obligations and loyalties of its own. How to resolve the resulting tension—between the internal demands of conforming one's speech to service on the commander in chief's national defense team, and the external obligation for honesty and candor before the nation, Congress, and the citizenry—is the subject of this article.⁴

Several notable free-speech cases illustrate how air professionals of years past have grappled with the question of when and when not to speak their piece. Their experience will put us in a position to draw some useful lessons for all Air Force officers who aspire to higher rank and responsibility.

Col Billy Mitchell

With the possible exception of Gen Douglas MacArthur's embroilments with President Harry Truman during the Korean

War, Billy Mitchell presents us with the most famous free-speech case in American arms.⁵ Mitchell emerged from World War I as a bona fide national hero, having been the first American in uniform under fire on the ground and the first US officer to fly over enemy lines. Later, he conceived, planned, organized, and led the giant massed Allied aerial attack against the Germans in the Saint-Mihiel salient, employing 1,481 aircraft of 49 squadrons.

Appointed assistant chief of the Army Air Service in 1919 and promoted to brigadier general a year later, Mitchell became an indefatigable advocate of the role of airpower and the need for greater independence of air forces. Working mainly within the system at first but finding his efforts thwarted by niggardly budgets and the archaic thinking of the General Staff, Mitchell gradually moved into the public arena, using letters, radio broadcasts, lectures, articles, books, congressional hearings, and dramatic operational exploits to make his case. Most spectacular of the latter were his demonstrations that warships could be destroyed by aerial bombing, as in the case of the captured German battleship *Ostfriesland* (1921) and the obsolete USS *Alabama* (1921), *New Jersey* (1923), and *Virginia* (1923).

Owing to unauthorized leaks of the results of the 1921 bombing tests against the warships, Secretary of War John Weeks ordered Mitchell to publish nothing further of military significance without prior War Department clearance. Mitchell complied for a while, but during the period December 1924 to March 1925, he published a series of five provocative articles on airpower in the *Saturday Evening Post*, having bypassed Weeks and gone for approval directly to President Calvin Coolidge, who gave a qualified OK to the undertaking.

Meanwhile, in his appearances before congressional committees, Mitchell began to ratchet up the seriousness of the charges he was making against the opposition camps in the Army and Navy, accusing them of muzzling pro-air officers, of neglecting the development of airpower, and of dishonesty in interpreting test data tending to support the positions of air advocates. Finally, in March

1925 with President Coolidge's approval, Secretary Weeks relieved Mitchell from his appointment as assistant chief of the Air Service, reduced him to his permanent grade of colonel, and banished him to the hinterlands of Fort Sam Houston, Texas, in the position of corps air officer. In Texas Mitchell continued to speak out on his familiar themes, publishing a magazine article and the book *Winged Defense*, despite the fact that Weeks's strictures on his public statements were still in effect.

The precipitating event in his final downfall, however, was the disastrous crash of the Navy dirigible *Shenandoah* in September 1925. Despite such ominous factors as the prevailing fall storms over the Great Lakes, adverse prior warnings from the dirigible's skipper, and a shortage of safety valves on board, Navy authorities dispatched the dirigible on a public relations jaunt to overfly state fairs in the Midwest. The dirigible encountered violent windstorms and crashed near Sharon, Ohio, killing 13 of the crewmen, including the skipper. The press went to Mitchell immediately for a statement, and he predictably accommodated them: "My opinion is as follows: These accidents are the result of the incompetency, the criminal negligence, and the almost treasonable negligence of our national defense by the Navy and War Departments."⁶ The complete statement, full of such charges, ran to 6,080 words. Four days later, on 9 September, he made another statement to reporters, even more inflammatory than the first, if that were possible—one amounting to a direct challenge to his civilian superiors as well as military. Mitchell at last had what he admittedly had been seeking—a splashy public confrontation with the highest authorities.

President Coolidge himself ordered a general court-martial. Under Article 96 of the Articles of War (the counterpart to today's Article 134 of the Uniform Code of Military Justice [UCMJ]), authorities charged that in making the statements, Mitchell had conducted himself "to the prejudice of good order and discipline," that he had been "insubordinate," and that he had been "highly

contemptuous and disrespectful" toward the War and Navy Departments and intended to discredit them. Mitchell's defense rested on the arguments that his right to make the statements was protected by the First Amendment and that his allegations against the authorities were true. Both arguments failed, and he was convicted on all charges on 17 December 1925. The sentence read, "The court upon secret written ballot, two-thirds of the members present concurring, sentences the accused to be suspended from rank, command, and duty with the forfeiture of all pay and allowances for five years."⁷

Rather than accept continued service in a suspended status, Mitchell resigned from the Army on 1 February 1926 and spent his remaining years stumping for airpower. He died on 19 February 1936, only six years before the Japanese aerial attacks on Pearl Harbor and Clark Field that he had predicted in detail in 1924.

In looking to the Mitchell case for a perspective on managing their own public utterances, officers today will need to keep several basic factors in mind. Mitchell was embroiled in a singularly historic cause—the emergence of airpower—and he approached it as a crusader, an evangelist, and ultimately a martyr. Moreover, he had the saving grace to be right. In 1957 Secretary of the Air Force James Douglas was petitioned to set aside Mitchell's court-martial verdict. He properly refused, noting that Mitchell, while remaining in uniform, had in full awareness challenged military and civilian authority in an unlawful way. But Douglas went on to affirm that "our nation is deeply in his debt. . . . Colonel Mitchell's views have been vindicated."⁸

Even if we grant that extraordinary high-voltage shock treatment is sometimes necessary to jolt a conservative military establishment into acceptance of a new and historic idea, we still need to recognize that some people managed successfully to administer the necessary shock while working within the system, though they may have trod on a knife-edge at times.⁹

Maj Gen Orvil A. Anderson

General Anderson won his wings in World War I and was later accorded numerous awards for service to aviation. He distinguished himself particularly in ballooning, having in 1935 piloted the *Explorer II* to a new world's-record altitude of 72,395 feet.

In the early fall of 1950, two full months into the Korean War, North Korean forces were knocking at the door of Taegu, South Korea, and feelings were running high in the United States against the Soviet Union. Some people felt that the Soviets, if not outright instigators of the war, were at least in a position to compel the North Koreans to desist. High administration officials began to talk of preventive war against the Soviet Union, and President Truman was determined to squelch it.

In this context, the outspoken General Anderson, then commandant of the Air War College (AWC) at Maxwell Air Force Base, Alabama, granted an interview on the subject of preventive war to a reporter from the *Montgomery Advertiser*. The published interview quoted General Anderson as follows: "We're at war, damn it. . . . Give me an order to do it and I can break up Russia's five A-bomb nests in a week. . . . And when I went up to Christ—I think I could explain to Him that I had saved civilization."¹⁰

On 1 September 1950, after reports of General Anderson's remarks reached Washington, Gen Hoyt Vandenberg, the Air Force chief of staff, suspended Anderson from his position at AWC; Anderson subsequently submitted his retirement papers. It is always risky for a military man to venture publicly into the field of war policy vis-à-vis a major national enemy, especially a nuclear-armed enemy. But to do so in apparent opposition to the commander in chief's own announced policy is very likely to be a career ender.

Secretary of the Navy Francis Matthews had made a public speech a week earlier advancing a similar thesis. In an interesting commentary on the differential treatments often accorded civilian and uniformed officials, a contrite Secretary Matthews was able

to survive the ensuing flap by convincing the president that he (Matthews) had been unaware of the full implications of the term *preventive war* for the administration's policy.¹¹

Maj Gen Jerry D. Page

The relief of General Anderson foreshadowed that of another AWC commandant, Maj Gen Jerry Page, 17 years later. During an AWC seminar for senior Air Force Reserve officers in December 1966 in which discussion was classified Secret and understood to be strictly confined behind the closed doors of the classroom, General Page was alleged to have revealed confidential bomb shortages in Vietnam and to have criticized some of the defense policies of Defense Secretary Robert McNamara.

The relief sent a shock wave not only through the AWC faculty but through the faculties of the nation's other senior service colleges (SSC) as well, for it struck at one of the sacrosanct tenets of SSC education—the marketplace theory of ideas, in which contending ideas of all stripes can compete freely in give-and-take academic discussion behind the closed doors of the college. Former senator Barry Goldwater later accused one of the seminar attendees, a Reserve colonel and politician recently defeated in his reelection bid for the governorship of Arizona, of having made complaints to the Department of Defense that led to General Page's relief and subsequent transfer.¹²

Gen John McConnell, Air Force chief of staff, offered the following explanation: "I personally reassigned him of my own volition because I was unhappy at some of the forums he conducted."¹³ The chief thus unintentionally raised the question of how he learned the contents of such closed forums in the first place. General Page was reassigned to air-division command in Okinawa, "without prejudice" according to the announcement. But he never received a third star despite his reputation as one of the "ablest thinkers" in the Air Force.

Gen Michael J. Dugan

Of all the freedom-of-speech cases involving high-ranking military leaders, that of General Dugan is, to me at least, one of the most troublesome. On taking up the reins as chief of staff of the Air Force in the summer of 1990, General Dugan announced publicly that he wanted senior Air Force officers to be more open with reporters: "I think that the leaders . . . need to be upfront, they need to take the gaff that goes with it."¹⁴

This policy of openness would prove his undoing. In September 1990 during a tour of US forces deployed in the Gulf preparatory to Operation Desert Storm, General Dugan took the risky step of making himself and five senior generals of the Air Staff available for press interviews focused on US strategy, with particular emphasis on the prominent role to be played by airpower. The resulting story made front-page news in the *Washington Post* on Sunday, 16 September 1990, with the headline reading "U.S. to Rely on Air Strikes If War Erupts."¹⁵

In his autobiography *My American Journey*, Colin Powell, chairman of the Joint Chiefs of Staff, summed up what he regarded as the objectionable positions expressed by General Dugan during the interviews: "Among the things Dugan was quoted as saying in the *Post* article were that 'airpower is the only answer that's available to our country'; that the Israelis had advised him 'the best way to hurt Saddam' was to target his family, his personal guard, and his mistress; that Dugan did not 'expect to be concerned' with political constraints in selecting bombing targets; that Iraq's air force had 'very limited military capability'; and that its army was 'incompetent.'¹⁶

The next day, Secretary of Defense Dick Cheney peremptorily relieved Dugan, charging the general with "lack of judgment" in disclosing "operational details" and in addressing "decisions that may or may not be made by the president in the future."¹⁷

I do not intend to defend General Dugan's comments other than to note that President George Bush himself, when queried by reporters, replied that he "was not concerned that

the revelations caused any increased danger to U.S. troops."¹⁸ He doubtless realized that combat-savvy General Dugan, whose airmen would literally live or die by intelligence and counterintelligence during the coming encounter, would have a far better appreciation of operational security than the secretary. Rather, my concern is the one expressed by General Powell to Secretary Cheney, when the secretary told him of the contemplated firing: "Let's make sure the punishment fits the crime."¹⁹ I don't believe it did.

General Dugan was anything but insubordinate or rebellious. He was a plain-spoken fighter pilot who, after earning a Silver Star and Purple Heart in Vietnam, toiled within the system and rose steadily through a succession of important staff and command billets to become the nation's top airman. As a relative newcomer—he had been Air Force chief for only three months at the time of the interviews—undercutting war preparations or bucking the secretary of defense and his commander in chief would have been the last thing on his mind. Once he became convinced that General Dugan had fouled up seriously in his public remarks, Secretary Cheney needed to do no more than take the general behind closed doors and read the riot act to him. It was not necessary to humiliate General Dugan before the world; it was not necessary to destroy an exemplary military career of 32 years.

We may close this sad episode by noting several ironies in Secretary Cheney's pattern of stewardship at the Pentagon. In Colin Powell's characterization, Cheney was a "man who had never spent a day in uniform, who, during the Vietnam War, had gotten a student deferment, and later a parent deferment." Yet, in March 1989, with no previous defense-related experience and less than a week on the job as defense secretary, Cheney at a televised press conference excoriated Air Force Chief of Staff Larry Welch for discussing MX missile deployment options with Congress. Had Cheney scrupled to discuss the matter with Welch before publicly dressing him down, he would have learned, according to Powell, that both Deputy Defense Secretary William Taft and National Security Advisor Brent Scowcroft had already authorized Welch to

speak with congressional members. In Powell's view, Cheney's touchy hyperreaction to perceived transgressions of authority by the brass was a reflex of his own private anxieties over his lack of direct experience in military affairs. He had to prove he could stand up to the generals.²⁰

A final irony in this problematic tale of excessive operational and politico-military candor emerges from allegations by Benjamin Schemmer, respected former editor of *Armed Forces Journal*. Schemmer claims that serious leaks of classified information contained in Bob Woodward's book *The Commanders* (Simon & Schuster, 1991)—an account of US military decision making during the two years prior to the Persian Gulf War—must have come directly from Secretary Cheney, among others.²¹

Moreover, people with long memories will recall that in April 1989 Secretary Cheney, after scarcely a month in office, angered President Bush by predicting during a television interview that Soviet president Mikhail Gorbachev's national reforms were doomed to failure, at the very time when President Bush was desperately trying to prop up the Soviet leader by taking a positive public view of his prospects.²² Secretary Cheney was fortunate to have a boss who was secure and understanding in response to his subordinate's public relations miscue. General Dugan was, of course, less fortunate. Those who followed Cheney's years in the Pentagon's top job will likely judge that he was an able and effective secretary of defense, and I believe they are right. But there is little denying that he carried psychological baggage into his position which obscured to himself his own fallibility and clouded his judgment in dealing with uniformed leaders like General Dugan who misstepped while negotiating the notoriously treacherous minefields of news-media relations.

Maj Gen Harold N. Campbell

Article 88 of the UCMJ reads as follows: "Any officer who uses contemptuous words against the President, Vice President, Congress, Secretary of Defense, or a Secretary of a Department, a Governor or a legislature of

any State, Territory, or other possession of the United States . . . shall be punished as a court-martial may direct."²³

As speaker at the 32d Fighter Group's maintainers-of-the-year awards banquet on 24 May 1993 near Soesterberg Air Base in the Netherlands, General Campbell referred to President Bill Clinton as "draft-dodging," "pot-smoking," and "womanizing," which were, of course, contemptuous words in anybody's lexicon. Campbell's remarks were apparently intended as a humorous preface to his prepared remarks, but some of the attendees thought they were anything but funny and reported them up the chain.²⁴

President Clinton told reporters he was not offended personally by the remarks, but that "for a general officer to say that about the Commander in Chief . . . is a very bad thing."²⁵ However, the White House was not anxious to see the public court-martial of a distinguished combat veteran on such charges—General Campbell's war record included one thousand combat flying hours in Vietnam plus award of the Silver Star and five Distinguished Flying Crosses. Offered nonjudicial punishment under UCMJ Article 15 in lieu of a court-martial, General Campbell decided to accept it, receiving a permanent written reprimand and a fine equivalent to a month's pay. Though told to put in his retirement papers, he retained his major general's rank.

Gen Ronald Fogleman

Late May 1997 was not a propitious time for senior Air Force officials to be appearing before a congressional committee seeking money, for the Lt Kelly Flinn sexual extravaganza was in full heat on all the nation's TV screens and newspaper front pages. When General Fogleman, Air Force chief of staff, appeared before the Defense Subcommittee of the Senate Appropriations Committee on 21 May to testify on proposed budget estimates for Air Force programs in fiscal year 1998, he was ambushed by Sen. Tom Harkin (D-Iowa), who, preferring to talk instead



Former secretary of defense Dick Cheney (seated, third from left). In Powell's view, Cheney's touchy hyperreaction to perceived transgressions of authority by the brass was a reflex of his own private anxieties over his lack of direct experience in military affairs.

about the Flinn affair, berated him for the "overly moralistic legal code in the Air Force."²⁶

This put General Fogleman in a real bind. The Air Force, worried about inciting charges of command influence like those afflicting the Army in the Aberdeen Proving Ground cases, had played by the rules and generally confined its public statements on the planned court-martial of Lieutenant Flinn to a few terse announcements by public affairs officials. Lieutenant Flinn, her family, and civilian lawyer, by way of stark contrast, had taken their case to the news media in the most aggressive manner possible, waging an increasingly successful campaign to woo public and congressional sympathies by portraying her as a victim. Political pressures were building to the point that it was becoming problematic whether the Department of the Air

Force would be allowed to dispose of the case independently.

Such was the setting when Senator Harkin challenged General Fogleman during hearings not remotely connected to the Kelly Flinn case. Under the rule of candor that Congress perennially urges upon military witnesses, General Fogleman responded frankly. Denying that the basic issue was adultery, he went on to state that "this is an issue about an officer entrusted to fly nuclear weapons who disobeyed an order, who lied. That's what this is about."²⁷

The response from Flinn's defenders was swift, sure, and absolutely predictable. Sen. Slade Gorton (R-Wash.), conveniently overlooking the mandate for candor normally applicable to military witnesses in their responses before Congress, went on NBC's Morning Show two days later to denounce

General Fogleman's testimony. In obvious high dudgeon, he complained that as a result of Fogleman's remarks, it was "impossible" for Lieutenant Flinn to get a fair trial. And how should General Fogleman have responded? According to Senator Gorton, "he should have kept his mouth shut!"²⁸ In other words, it was perfectly all right for Lieutenant Flinn to go outside the courtroom and try her case publicly and politically, but the Air Force chief must remain mute as a stone, even when pressed for the truth by one of Gorton's fellow senators.

The problem of command influence in military justice is real and must never be taken lightly. But General Fogleman's response to Senator Harkin, considering the unique circumstances, was not only necessary and proper—it was a laudable act of courage.

On 28 July 1997, some two months after the Kelly Flinn affair was put to rest by her resignation and a year before his normal four-year term would have expired, General Fogleman abruptly resigned his position as Air Force chief and announced his retirement. In a message to the troops explaining his decision, General Fogleman said simply, "I do not want the Air Force to suffer for my judgment and convictions." Most prominent among the reasons given for his resignation was his objection to the impending disciplining by Defense Secretary William S. Cohen of an Air Force commander in Saudi Arabia for failure to take adequate security precautions in advance of the terrorist bombing of the Khobar Towers housing complex in Dhahran. Another factor in the strained relations between the general and his civilian bosses was their unhappiness with what they viewed as his penchant for expressing his professional frustrations so openly that "they often found their way into news accounts."²⁹

The roster of Air Force officers discussed above by no means exhausts the list of US military leaders whose exercise of supposed First Amendment rights brought them into widely publicized conflict with their superiors. Among the celebrated cases of leaders from other services who took their knocks were Army generals Leonard Wood, Douglas

MacArthur, George Patton, Matthew Ridgway, Edwin Walker, and John Singlaub, plus Navy admirals Louis Denfield, Hyman Rickover, and most recently, Richard Macke.³⁰ Examination of such cases permits us to arrive at several commonsense axioms governing the public statements of career Air Force professionals. Although many of these axioms may strike the reader as self-evident, it is astonishing how often they have been violated, even by otherwise sophisticated leaders.

- *Follow the regulation on public information.* Hew faithfully to clearance procedures for speeches and publications set down in Air Force Instruction 35-205, *Air Force Security and Policy Review Program*. This instruction requires, among other things, that material intended for public release having high-level military, national, or foreign policy implications be reviewed for "security and policy consistency." Unlike the Army's review agency, the Air Force Office for Security Review does not review specifically for "propriety," but in practice, propriety issues fit well enough under the broad rubric of policy.³¹
- *Stick to the approved text.* Once a text is cleared, make sure you adhere to it in the presentation. Beware of off-the-cuff departures from approved text, flights of wit, or excursions into politically sensitive territory. Make the organizational public affairs officer an active partner and advisor throughout the composition-clearance-delivery cycle.
- *Know the ground rules.* Before speaking, personally establish or confirm ground rules between you and your audience or interviewer as to whether what you say can be attributed to you in the news media. If the rules of the primary presentation differ from those of the question-and-answer period, make sure that everyone present is informed of the distinction. Never assume that because the audience is mostly uniformed, you can safely flout the guidelines for public

discourse. The more publicly recognizable your name, the greater the likelihood a reporter will be present.

- *Don't answer inappropriate questions or those too hot to handle.* Never in your zeal to be honest and candid feel that it's somehow dishonorable or cowardly to refuse to tackle a question.
- *Stick to defense matters and your areas of expertise.* Confine your public utterances to defense matters, particularly those that lie specifically within your area of responsibility and competence. In practice, at the highest levels, it is often difficult to separate military issues from nonmilitary, but you must keep the ideal constantly in mind as you speak.
- *Never express contempt toward civilian higher-ups.* Keep in mind the existence of Article 88 of the UCMJ, which prohibits the use of contemptuous words against the president, vice president, Congress, the secretary of defense, and so forth. To violate this article, even lightheartedly or in jest, is simply to ask for trouble.
- *Avoid sensationalist prophecy.* Unless you own a certified crystal ball, resist the temptation to electrify audiences with horrific visions of future calamity or to seduce them with rosy prospects of impending nirvana. Prophecy can make fools of us all. Despite earlier demonstrations to the contrary by Billy Mitchell, Rear Adm Clark Woodward declared in 1939, only two years before Pearl Harbor, that "as far as sinking a ship with a bomb is concerned, you just can't do it." Adm William Leahy, mercifully behind closed doors, declared to President Truman in early 1945—the year of Hiroshima and Nagasaki—that the attempt to build an atomic bomb "is the biggest fool thing we have ever done. . . . The bomb will never go off, and I will speak as an expert in explosives."³²
- *Don't rely on your "rights" to protect you.* In contemplating making a risky public statement, don't occupy yourself overmuch with your legal rights or what the

courts might do in your behalf. Of all the US officers mentioned above whose careers were damaged or ruined by errant words, only Billy Mitchell was actually court-martialed. Save for the lucky few like Adm Hyman Rickover, who enjoyed a powerful constituency in Congress that protected him from reprisal, the bureaucracy can easily find other ways to take its revenge on an officer who ignores the rules.

- *As you rise in rank, your words attract correspondingly greater attention.* As a general rule, the higher officers rise in military rank and position, the more considered they must become in their public utterances. Peons rarely make news with what they say, but let a general misspeak, and reporters will beat a path to his or her door.
- *Don't wait until you need finesse in public utterance to begin acquiring it.* Related to the prior point, as part of your continuing professional preparation, consciously develop a sensitive ear for what you can publicly say and how to say it. If you wait until you're on the hot seat, it will be too late. It is astounding how great commanders vary in this regard. General Patton found it practically impossible to speak long to reporters without somehow generating an international contretemps. By way of contrast, Gen Norman Schwarzkopf could extemporize at length before daily internationally televised news conferences, maintaining this practice for an entire campaign without once losing his footing. Skill in communicating through the media without inflaming the world is not a mark of effeminacy or slick self-promotion. It is a plain, simple prerequisite for rising military leaders, no matter how much they covet their warrior image.
- *Distinguish between personal opinion and official policy.* If for whatever reason you choose to take a public position at odds with announced policy, *always* warn

your auditors that you are expressing a personal opinion, not an official position. Even then you are not necessarily on firm ground because if your rank and position are sufficiently high, you essentially have forgone the luxury of public independence of view. Once officers sign on to the joint chiefs or as military advisors to the National Security Council, for example, they have joined the administration "team" and will thereafter be expected to keep their dissents in-house.

- *Be frank with Congress but stress the administration's position.* Testifying before Congress presents the biggest challenge of all. The administration will want you to hew to its line regardless of your real convictions, while congressional committee members will want to know your real convictions regardless of the administration line. Despite the loyalist philosophy of respected World War II leaders like Gen Omar Bradley and Gen George Marshall, who chose as a matter of principle never to take public issue with their commander in chief, the demands of Congress in its legislative and investigative functions have led to a moderation of such hard positions. Though specific policies may vary with the administration, there has been a general gravitation toward the following approach: officers are expected to testify first as to established policy and their intention to carry it out; then, if asked for their personal opinion, they may express it but must note that it is their own and not the administration's.³³

The foregoing axioms, if applied with judgment and discretion, can enable today's air professionals to profit from the experience of their predecessors. It is important to realize, however, that no such set of rules can ever dissolve entirely the basic tension inherent in the dual identity of soldier-citizens. As members of the armed forces, they must continuously be mindful of the limitations upon their right to free speech, accepting infringements

necessary to protect classified information; assure operational security; promote good order and discipline; support the chain of command in accomplishing the assigned mission; and foster loyalty, cohesion, and team spirit in furtherance of the Air Force's institutional goals and those of the armed forces—in short, defend the Constitution and discharge the duties of their military office.

As patriotic citizens of a democratic country, however, they must be mindful of the surprisingly extensive areas in which they can exercise free speech, making the fruits of their special, professional expertise available to citizens at large so that Congress, which passes laws touching our national security, and voters, who elect the Congress, can act with the full benefit of the politically impartial and technically informed perspective of airmen.

In mediating the often conflicting impulses toward soldierly reticence, on one hand, and citizenly candor, on the other, air professionals may seek assistance to some extent in explicit official guidance—for example, security regulations and Article 88 of the UCMJ. But there remains a vast gray area of "policy" issues regarding which the service and the administration will naturally strive for conformity to their approved lines, as opposed to the individual member's natural bent toward his or her own line. The result can be a welter of conflicting interests, obligations, and values as reflected within the same individual: career advancement versus disinterested professionalism; service interests versus those of the nation and the people; loyalty to the administration versus obligation to Congress; service ideals versus joint ideals; and so forth.

In resolving such internal conflicts successfully, air professionals, each in his or her own way, must ultimately depart the realm of rules and enter the realm of conscience. They must set aside for the moment the ideal of physical courage and bring to the fore the ideal of moral courage. They must downplay the value of prudential insight and elevate the value of ethical clarity.

Paradoxical as it sounds, in order to guarantee the freedoms of all Americans, we as a nation must reduce the freedoms of some Americans—specifically, the favored few who bear arms to defend us. But reducing the freedoms of this favored few is a far cry from abolishing them, as the courts have consistently upheld. So far as freedom of speech is concerned, it is reduced for the service member only in particular contexts, and then only to the minimal degree essential for the successful performance of the military function. In other contexts, one should prize free speech for the service member just as highly as for any citizen.

It is free speech that permits vigorous debate among service members on the proper course of action up to the point when the decision is made. It is free speech that permits them to render honest professional military advice to their civilian masters in the chain of command. It is free speech that permits them to propound innovative professional ideas in military journals. It is free speech that enables them to provide to Congress and the American voters an expert and impartial profes-

sional military perspective. An air force that fails to make such liberal provision for free speech among its members will be a retrograde and regressive force, and the nation that hazards its security on such a force will be casting its lot with immobilized minds and imaginations.

As the case histories presented earlier clearly reveal, air professionals will seldom be able to reconcile completely the sometimes conflicting demands of free expression and institutional discipline. When such conflict occurs, they will face a choice between two courses: they can act according to service rules, accepting the resulting infringement of speech, or they can go ahead and speak out, accepting the resulting risk to their careers. In choosing between the two, they should be guided by the principle that their First Amendment rights to free speech can be properly infringed only by the compelling voice of military necessity. If during the course of their careers they have cultivated such qualities as moral courage, ethical clarity, and a robust professional conscience, they should have little difficulty in arriving at a proper decision. □

Notes

1. Michael A. Brown, "Must the Soldier Be a Silent Member of Our Society?" *Military Law Review* 43 (1969): 71-109 (particularly 72-75). See also Donald N. Zillman, "Free Speech and Military Command," *Utah Law Review*, no. 3 (1977): 423-56 (particularly 429); Cathy Packer, *Freedom of Expression in the American Military* (New York: Praeger, 1989), 81; Ronald N. Boyce, "Freedom of Speech and the Military," *Utah Law Review*, May 1968, 240-66 (particularly 253); and Felix F. Moran, "Free Speech, the Military, and the National Interest," *Air University Review*, May-June 1980, 106-13.

2. Boyce, 241; Brown, 80-81; Detlev F. Vagts, "Free Speech in the Armed Forces," *Columbia Law Review* 57 (1957): 187-218 (particularly 203); and Zillman, 438. *U.S. v. Voorhees*, 4 US Court of Military Appeals (USCMA) 509 (1954) and *U.S. v. Priest*, 21 USCMA 564, 45 CMR 338 (1972), establish and refine service members' speech rights under the First Amendment, but they do not define precisely how far the services can go in restricting speech on grounds of policy and propriety.

3. Vagts, 191.

4. For an excellent discussion of this tension, see Edward L. Katzenbach Jr., "Should Our Military Leaders Speak Up?" *New York Times Magazine*, 15 April 1956, 17, 36, 39.

5. The following sketch of Billy Mitchell's career and court-martial is based principally upon Burke Davis, *The Billy Mitchell Affair* (New York: Random House, 1967).

6. *Ibid.*, 218.

7. An interesting sidebar to the court-martial of Mitchell was the role of his friend and court-martial panelist Brig Gen Douglas

MacArthur, who would encounter his own free-speech problems with an American president 25 years later. MacArthur's vote on the question of Mitchell's guilt has become the focus of a great deal of scholarly and historical scrutiny. Most accounts allege that MacArthur voted for acquittal, as he himself suggested in a letter to Sen. Alexander Wiley of Wisconsin in 1945 and in his *Reminiscences*. But MacArthur also wrote in *Reminiscences*, "That [Mitchell] was wrong in the violence of his language is self-evident" (Davis, 327, note; and Douglas MacArthur, *Reminiscences* [New York: McGraw-Hill, 1964], 85-86). The issue may turn on the supposition that there were numerous votes—not just one—as the court dealt individually with the eight charges and the sentence. One might conjecture that MacArthur did vote against conviction on a charge or two and that during the sentencing deliberations, voted against outright dismissal. D. Clayton James provides the most balanced and judicious survey of the evidence, concluding, "In the final analysis, the only assertion that can be made with certainty about his vote is that it will never be determined for certain" (*The Years of MacArthur*, vol. 1, 1880-1941 [Boston: Houghton Mifflin, 1970], 310-11). In still another strange intertwining of fates, we may note the role of court-martial panelist Maj Gen Charles P. Summerall, a hero in three wars whose rank entitled him to be president of the court but who was challenged off by Mitchell's counsel, with much accompanying acrimony. He was later called as a prosecution witness, in which role his hostility to Mitchell became fully evident (Davis, 240-42, 315-16). As D. Clayton James observes, MacArthur would not have wanted to antagonize his old comrade

Summerall, who was a leading favorite to become Army chief of staff and in fact did so the following year (James, 309-10). In a delicious stroke of irony, Summerall, on becoming Army chief, was himself silenced by the resolute Coolidge for expressing vigorous public opposition to the president's proposed cuts in military spending. See "Gen. Summerall Is Dead in Capital," *New York Times*, 15 May 1955, 87.

8. Davis, 343.

9. Foremost among these was Mitchell's great Italian counterpart Giulio Douhet—often called the "Mahan of airpower"—who during World War I was court-martialed, imprisoned for a year, and then retired for his published attacks on the Italian general staff's air policies. But after the Italian defeat at Caporetto in 1917 revealed the truth of his criticisms, he was recalled to active duty as the head of the aviation service and later rose to the rank of major general (*Encyclopedia Britannica*, 1973 ed., s.v. "Douhet, Giulio"). Another example was Maj Henry Arnold. Mitchell's close friend "Hap" Arnold, whose bona fides as an aviation pioneer were more impressive even than Mitchell's, was also the author of several articles and books presenting the case for airpower. Not long after the court-martial of Mitchell, whom Arnold had supported during the proceedings at great professional risk, it was learned that Arnold had been feeding "airpower propaganda to friendly newsmen and radio commentators," in contravention of General Staff orders to the air spokesmen to cease and desist. His boss gave him the choice of court-martial or resignation, but when Arnold chose the former, he was instead exiled to Fort Riley, Kansas, then an obscure cavalry post. Chastened but wiser from this lesson in service politics, Arnold persevered, moving beyond the role of mere airpower advocate to that of institution builder. He eventually oversaw assemblage of the greatest air force in history and earned five stars. See Carl H. Builder, *The Icarus Syndrome: The Role of Air Power Theory in the Evolution and Fate of the U.S. Air Force* (New Brunswick, N.J.: Transaction Publishers, 1994), 51-54; and Thomas M. Coffey, *Hap: The Story of the U.S. Air Force and the Man Who Built It* (New York: Viking Press, 1982), 125-26. Or leap ahead some 40 years to 1959, when Gen Thomas Power headed Strategic Air Command during the feverous days of the cold war. In April of that year, he submitted for clearance his book manuscript titled *Design for Survival*, a powerfully argued advocacy of overwhelming nuclear strength as the best guarantor of peace. Secretary of Defense Neil McElroy forbade publication, however, so long as Power remained on active duty. Power complied, and not until 1964, following his retirement, did he proceed with publication of the book. See Thomas S. Power with Albert A. Arnheim, *Design for Survival* (New York: Coward-McCann, 1964), 11-12.

10. Austin Stevens, "General Removed over War Speech," *New York Times*, 2 September 1950, 1, 8.

11. Harry S. Truman, *Memoirs*, vol. 2, *Years of Trial and Hope* (Garden City, N.Y.: Doubleday, 1956), 383.

12. Hanson W. Baldwin, "Air War College Chief Ousted after Talks on Bomb Shortage," *New York Times*, 27 January 1967, 1, 3; and idem, "Shift of General Page Arouses Fear of War College Faculty," *New York Times*, 17 February 1967, 15. See also Timothy E. Kline, "Where Have All the Mitchells Gone?" *Airpower Journal* 11, no. 3 (Fall 1997): 74-75; "Goddard Disclaims Scoring of General," *New York Times*, 3 February 1967, 34; "Air Force Names War College Head," *New York Times*, 7 February 1967, 25; and "Pentagon Crackdown on a Critic?" *U.S. News & World Report*, 6 February 1967, 8.

13. Baldwin, 1, 3.

14. R. Jeffrey Smith, "Chief of Air Staff Fired by Cheney," *Washington Post*, 18 September 1990, A1, A25.

15. Rick Atkinson, "U.S. to Rely on Air Strikes If War Erupts," *Washington Post*, 16 September 1990, A1, A36.

16. Colin L. Powell with Joseph E. Persico, *My American Journey* (New York: Ballantine, 1995), 463.

17. Smith, A1, A25. For the most complete and authoritative accounts of General Dugan's relief, see Bob Woodward, *The Commanders* (New York: Simon & Schuster, 1991), 290-96; and Powell, 463-65. The idea for the dismissal and the final decision were Cheney's, though he obtained advance concurrence from the president.

18. Smith, A25.

19. Powell, 465.

20. *Ibid.*, 393. Still another irony lies in Cheney's contrasting style in dealing with a public relations gaffe by Army lieutenant general Calvin Waller, deputy commander of US Central Command during the Gulf War. Having been in-theater only a month, with little experience dealing with the media, General Waller, on being pressed by reporters, candidly told them at a news conference in Riyadh, Saudi Arabia, in December 1990 that ground forces wouldn't be ready to attack before mid-February, thus contradicting President Bush's emphatic public stance that US forces were prepared to attack at any time. The public affairs staff spent the entire night "exercising damage control." However, as Gen Norman Schwarzkopf tells the story, Secretary Cheney, who was in Riyadh at the time, seemed unconcerned, even quipping, "It's not always bad to send the enemy mixed signals." See H. Norman Schwarzkopf with Peter Petre, *General H. Norman Schwarzkopf, the Autobiography: It Doesn't Take a Hero* (New York: Bantam, 1992), 394-95.

21. Benjamin F. Schemmer, review of *My American Journey* by Colin L. Powell, in *Strategic Review* 44 (Winter 1996): 62.

22. "Cheney, Richard B(ruce)," *Current Biography Yearbook 1989* (New York: H. W. Wilson, 1989), 106.

23. As quoted in James Snedeker, *Military Justice under the Uniform Code* (Boston: Little, Brown, 1953), 751.

24. For details of the incident, see Neff Hudson, "General Is Forced to Retire over Clinton Comments," *Air Force Times*, 28 June 1993, 4; and Susanne M. Schafer, "Officer Who Blasted Clinton Disciplined," *Patriot-News* [Harrisburg, Pa.], 19 June 1993, A10.

25. Hudson, 4.

26. Elaine Sciolino, "Air Force Chief Has Harsh Words for Pilot Facing Adultery Charge," *New York Times*, 22 May 1997, 1.

27. *Ibid.*; and Dana Priest and Tamara Jones, "Ex-Wife Wants Court-Martial for Pilot," *Washington Post*, 22 May 1997, A3.

28. NBC Morning Show, 23 May 1997.

29. Bradley Graham, "Air Force Chief of Staff Abruptly Resigns Post," *Washington Post*, 29 July 1997, A1, A12. See also Eric Schmitt, "Citing Investigation, Top General Seeks to Leave Air Force," *New York Times*, 29 July 1997, 1, 13; Julie Bird, "Air Force Chief Fogleman Steps Down," *Army Times*, 11 August 1997, 10; and Jack Weible, "Cohen Faults Schwaller in Bombing," *Army Times*, 11 August 1997, 11.

30. For a comprehensive treatment of the important twentieth-century free-speech cases involving career professionals from all services, see my study *The Professional Officer and the First Amendment* (1997) in the holdings of the US Army Military History Institute, Carlisle Barracks, Pa. I adapted the present article from the portion of this study that deals with Air Force leaders.

31. Air Force Instruction (AFI) 35-205, *Air Force Security and Policy Review Program*, 25 February 1994, pars. 4 and 7. See also Air Force Policy Directive (AFPD) 35-2, *Public Communications Programs*, 12 November 1993; and Army Regulation 360-5, *Public Information*, 31 May 1989, pars. 3-1.a., 4-1.d. and e., and 4-2. a. (2).

32. Quoted by David Wallechinsky, in "Bad Predictions," *Parade Magazine*, 10 September 1995, 16.

33. See Vagts, 206-10; Zillman, 425, n. 12; and Moran, 112. AFI 35-205 does not address testimony by Air Force officers before congressional committees. Instead, see Department of Defense Directive 5400.4, *Provision of Information to Congress*, 30 January 1978; and AFPD 90-4, *Relations with Congress*, July 1993.

Who's in Charge?

Service Administrative Control

BRIG GEN JOHN L. BARRY, USAF

THE QUESTION OF WHO is in charge has always plagued military operations. In 1942 Gen George C. Kenney was in Townsville, Australia, where he found himself in a unit that was "another scrambled outfit of Australians and Americans, with so many lines of responsibility, control, and coordination on the organizational chart that it resembled a can of worms as you looked at it."¹ Today's military operations are often no exception. General Kenney solved his problem by ordering Gen Kenneth Walker to "take charge, tear up that chart, and have no one issue orders around there except himself. After he got things operating simply, quickly, and efficiently he could draw a new chart if he wanted."² The concept of having one person in charge with clear lines of authority has resurfaced once again with the advent of the *Presentation of USAF Forces Primer*, also known as the *Little Red Book*. This document delineates the command relationships for our air and space expeditionary forces and puts one person in charge of all Air Force forces. This concept is not new, but in order for it to work, everyone involved needs

to have a clear-cut understanding of service command relationships—that is, administrative control (ADCON).

Command authority has once again become a serious subject of discussion among commanders in the Air Force, especially now in light of the multiple contingency taskings our Air Force has responded to in the post-cold-war decade and the growing awareness of doctrine. Commanders, especially wing commanders, have repeatedly performed exceptionally well in military operations other than war (MOOTW) or what we are now calling small-scale contingencies (SSC). However, if one were to ask every wing commander in the Air Force what kind of command authority he or she has and where it comes from, those commanders would probably offer a wide variety of answers.

As a former wing commander, I know that confusion exists about what kind of command authority is exercised at the wing level. The correct answer to the question is that a wing commander exercises ADCON over the people he or she commands, and this authority comes from the service chain of command.



Table 1
Administrative Authority

<i>Definition: Authority for service responsibilities and authority necessary to fulfill military department statutory responsibilities. Some samples of administration and support follow:</i>	
ADMINISTRATION	SUPPORT
Organization of service forces	Building a tent city
Control of resources and equipment	Generators for a tent city
Unit logistics	Spare parts
Individual and unit training	Training sorties
Readiness, mobilization, and demobilization	Exercises
Discipline	Uniform Code of Military Justice (UCMJ)/Article 15
Personnel management	Assignment actions
Other matters not included in operational missions	Officer Performance Reports (OPR), Enlisted Performance Reports (EPR), awards and decorations

This article clarifies exactly what ADCON is and how commanders exercise it during everyday operations. The article also takes these concepts from the theoretical to the practical by examining a case study that uses the new Air Expeditionary Force Presentation Concept to support a contingency operation.

Table 1 includes the definition of service ADCON found in Joint Publication (Pub) 0-2, *Unified Action Armed Forces* (24 February 1995); the table's second column represents some practical examples of day-to-day functions that are performed as the services organize, train, and equip forces for employment by combatant commanders in chief (CINC). One should note that ADCON is not an operational authority like operational control (OPCON) or tactical control (TACON), but it is that degree of authority necessary to fulfill statutory responsibilities of the military department. Admittedly, some people might take exception to being limited to ADCON authority. An operational commander in

charge of an operational mission must have OPCON of his or her forces. Right? Well, not really.

Let's take a quick look at what Joint Pub 0-2 has to say about the chain of command. Actually, we have one chain of command with two distinct branches: operational and service administrative (fig. 1). As we proceed down the operational chain of command, we see that it runs through the combatant CINC, down to a combined or joint task force (C/JTF) commander, through the joint or combined force air component commander (CFACC, most probably a US Air Force officer who will be dual-hatted as commander of Air Force forces [COMAFFOR]), and then down to the air expeditionary forces that are assigned or attached to that C/JTF. These command relationships should be spelled out in implementing directives such as alert orders (ALERTORD), deployment orders, or operate/execute orders (OPORD/EXECORD).

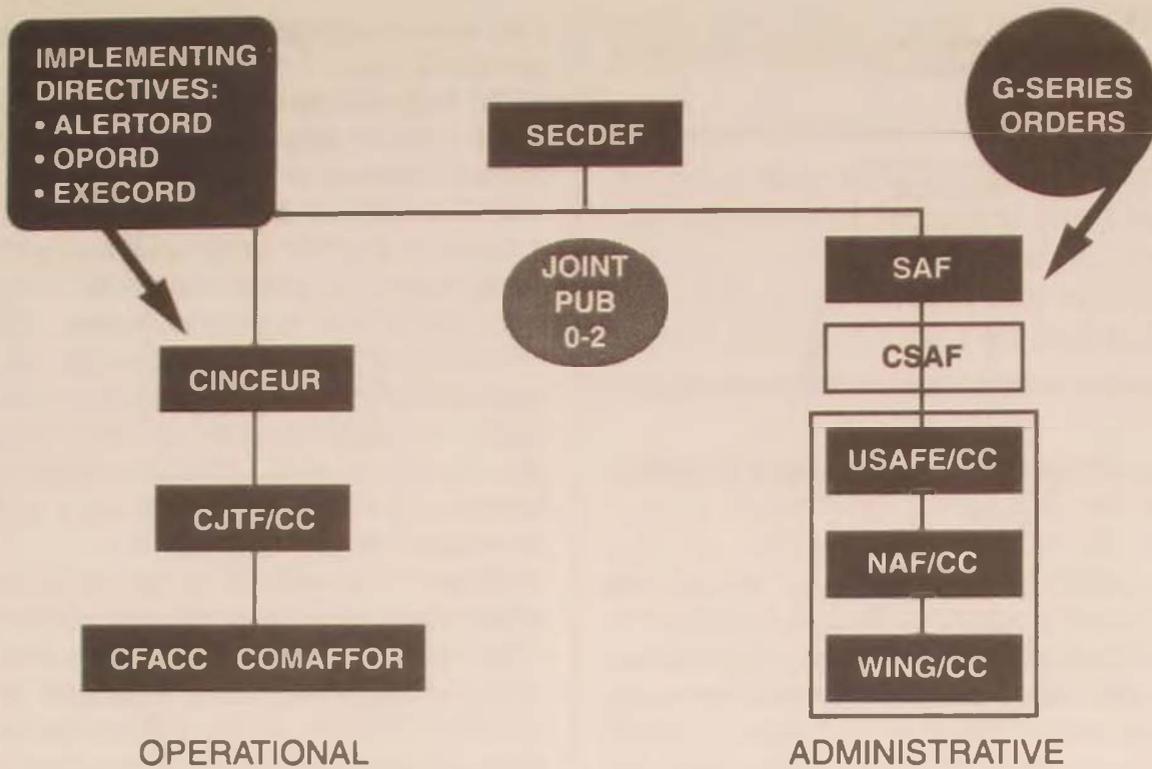


Figure 1. Single Chain of Command with Two Branches

The service ADCON chain runs from the secretary of defense (SECDEF) to the secretary of the Air Force (SAF). In the figure, a line runs through the chief of staff of the Air Force (CSAF), and his box is not highlighted because forces that are assigned to a combatant CINC in the "Forces for Unified Commanders" document do not have the service chief of staff in their ADCON chain. For those forces not assigned to a combatant CINC—Air Education and Training Command's, for example—the chief of staff is in the ADCON chain. The area inside the box from the major command (MAJCOM—here, United States Air Forces in Europe [USAFE]) through the numbered air force (NAF) to the wing is where we operate most of the time and where we routinely accomplish most of the ADCON functions from table 1. At home station, this relationship is clearly defined; however, at a deployed location, it sometimes becomes a little fuzzy. In such a situation, the implementing directives for ADCON—the special orders or G-series orders that create the expeditionary organization and appoint the commander—become vitally important.

Now, one might ask why a wing commander doesn't have OPCON of forces if he or she has the operational mission. But not having OPCON doesn't mean that a commander is not a war fighter. It just means that, in most cases, OPCON isn't delegated down to the wing commander level (as is the case with ADCON) because the definition of OPCON includes responsibility for *every* aspect of mission success. The commander with OPCON can move forces (not likely to be decided at the wing commander level), organize them any way that he or she deems necessary, and must make all the decisions necessary for total success of the mission. In most cases, OPCON stops for all practical purposes at the MAJCOM level, and the MAJCOM commander exercises that OPCON *through* his NAF and wing commanders. *Wing commanders still lead their troops in combat; they are operational commanders executing an operational mission assigned by a higher authority* (fig. 2). MAJCOM commanders, on the other hand, possess a robust operations-and-logistics staff that is able to make policy decisions and better allocate scarce resources.

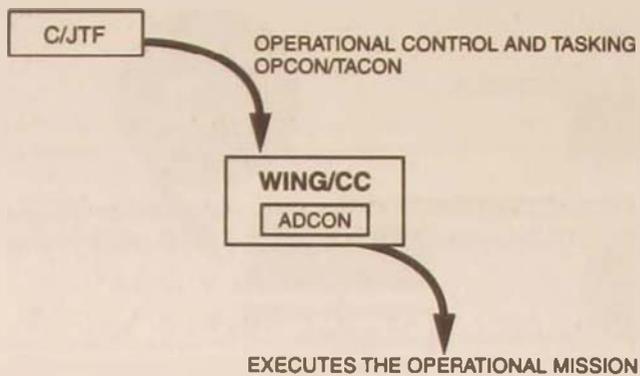


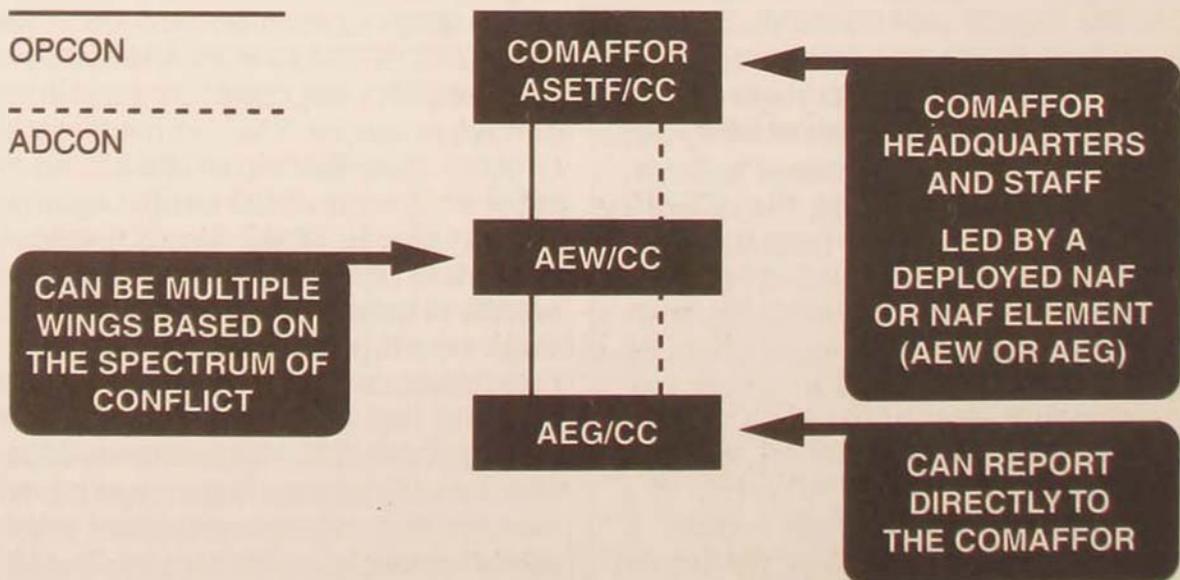
Figure 2. Wing Commanders Are Still War Fighters

The confusion really starts when one switches from branch to branch in this OP-CON/ADCON chain, something that occurs daily. If I'm a wing commander and my wing is flying in a contingency operation (or working a joint exercise), I'm operating under the operational branch of the chain of command. If, however, I'm just flying local training sorties, budgeting for next year, working personnel actions, or maintaining good order and discipline, then I'm operating under the administrative branch. Armed with a basic knowledge of these two branches, I should know whom I work for in any given situation

and who is responsible for helping me solve any problems.

To help clarify command relationships, the chief of staff approved the previously mentioned *Presentation of USAF Forces Primer*, which was a year in the making. The premise was that a CINC or a C/JTF commander should have to make only one phone call if he or she had a question about aerospace power. This single voice is the COMAFFOR, who exercises ADCON over all USAF forces assigned or attached to the C/JTF. An added benefit of this concept is that airmen will not be left scratching their heads wondering who is in charge—and neither will our sister services or allies.

Figure 3 shows how a typical air and space expeditionary task force (ASETf) is formed. The *Presentation of USAF Forces Primer* and, more recently, Air Force Doctrine Document (AFDD) 1, *Air Force Basic Doctrine*, state that NAF commanders are the senior war-fighting echelon for command. This means that whenever a joint force operation is contemplated, COMAFFOR duties will normally be assigned to the NAF commander who is responsible for the area of interest for the joint force. The NAF commander can either command the air forces or delegate COMAFFOR responsibilities to a lower level (air expeditionary wing [AEW]



ALL FORCES WILL BE ASSIGNED OR ATTACHED

Figure 3. Air and Space Expeditionary Task Force

or group [AEG]), depending on the size and scope of the operation.³ The COMAFFOR may have multiple wings or groups attached to his or her operation. By attaching ("chopping") all involved air forces to the joint operation, we almost eliminate questions/confusion about who has ADCON of these forces.

The ADCON picture becomes more complicated when units deploy to a contingency. Let's say that I'm the commander of a stateside (Air Combat Command) F-16 wing. What happens to my authority when I receive a Joint Chiefs of Staff deployment order to send 12 of my F-16s to Aviano, Italy, to support Operation Joint Guard? I've outlined the command lines in figure 4. This summer, USAFE created the 16th ASETF, consisting of the 31st AEW and the 16th AEW. The commander of the 16th ASETF is the Sixteenth Air Force commander, who is also designated the COMAFFOR for all Air Force forces assigned and attached to Operation Joint Guard. Administratively, all Air Force personnel are attached to the 16th ASETF commander, who further delegated ADCON down to the commanders of the 31st AEW and the 16th AEW. At this point, deployed F-16s are under the OPCON of the joint task force commander and under the TACON of the CFACC. Nor-

mally, the CFACC needs only TACON of the forces in order to operate effectively. Also,

As with any new doctrinal concept, the difference between the theory we draw on the chalkboard and what happens when the rubber meets the ramp can be substantial.

since the CFACC may not be an Air Force—or even a US—officer, he or she will normally only be delegated TACON of US Air Force forces.

Figure 4 actually becomes more complicated since Operation Joint Guard is a NATO-led combined task force. Therefore, the OPCON of our forces starts with the commander in chief of European Command (CINCEUR) and is then transferred to the supreme allied commander, Europe (SACEUR), then to the commander in chief of Southern Command (CINCSOUTH), and then to the commander of Allied Air Forces, Southern Europe (COMAIRSOUTH) as the operational command line transfers to the NATO channels.

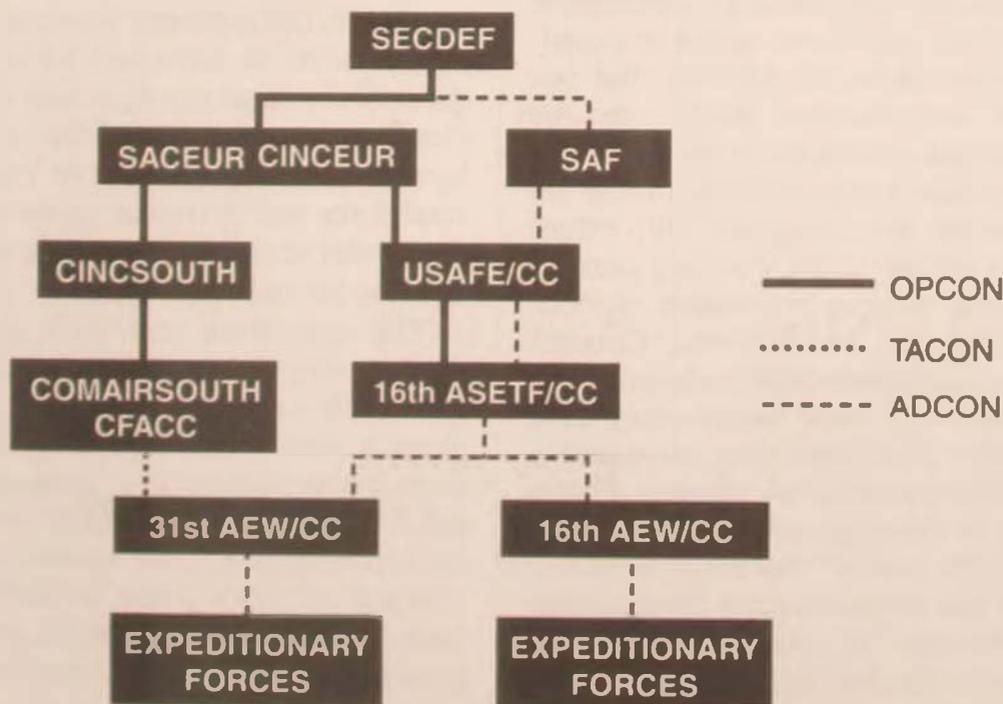


Figure 4. Operation Joint Guard

Administratively, my personnel now trace their service ADCON chain from the commander of my deployed expeditionary fighter squadron, through the expeditionary wing

We must strive to use the expeditionary-force concept every time we participate in a joint or combined exercise and in contingency operations worldwide.

commander, through the 16th ASETF commander, to the USAFE commander. Note that Air Combat Command is not in the service ADCON chain for the contingency operation—and neither am I as the home-based wing commander!⁴ When my forces are attached, it means that *some* authority for service ADCON transfers with them.

As with any new doctrinal concept, the difference between the theory we draw on the chalkboard and what happens when the rubber meets the ramp can be substantial. Although we really want to clarify who's in charge and give our expeditionary commanders all the authority they need to accomplish the mission, there are clearly some responsibilities in the definition of ADCON that our expeditionary commanders don't need—or want. For example, one of the responsibilities of ADCON entails programming future resources through the Program Objectives Memorandum (POM) cycle, working personnel assignments, writing evaluation reports, awarding decorations, and so forth.⁵ Combat contingency commanders clearly do not need to be concerned with these things—they have enough on their plate just being responsible for executing the operational mission. Therefore, we need to develop and standardize the degree of ADCON (call it "specified" ADCON) that we want the expeditionary commander to exercise. We need to clearly spell out this type of control in the deployment order or the

G-series order that activates the expeditionary unit. This way, there will be no surprises—our people will know whom they work for, and the expeditionary commander will know exactly what his or her responsibilities are.

With our total force, we must also address some statutory problems. For active duty units, ADCON transfers when the forces are attached to a C/JTF. But the Air Reserve Component (ARC) is a little different. Although the expeditionary commander exercises local UCMJ authority concurrently with the ARC, regardless of active duty affiliation, only under a full mobilization does the ARC transfer ADCON to a joint task force. This issue of exercising ADCON over deploying ARC forces is presently being worked, and guidance will appear in AFDD 2, *Organization and Employment of Aerospace Power*.⁶

The next step is to educate our people. We must emphasize these concepts in professional military education and in leadership schools; further, we should reinforce them by operating the same way when we deploy. We must strive to use the expeditionary-force concept every time we participate in a joint or combined exercise and in contingency operations worldwide. As an air force, we also must agree on how much ADCON authority we want expeditionary commanders to have and what they need to successfully meet the demands of the mission. Finally, we must work to define and standardize how the Guard and Reserve members of our total force will interface so we can apply the same rules across the board, creating a seamless fighting air and space force.

The next time you pack your bags and deploy, whether individually or with part of your unit or your entire unit, you will go expeditionary! Through diligence and adherence to the principles of command authority set forth in our Air Force doctrine, there should never again be a question of "who's in charge?" ADCON to the COMAFFOR—the *airman* in charge. *Remember, we are all one voice speaking for airpower and space power!* □

Notes

1. George C. Kenney, *General Kenney Reports: A Personal History of the Pacific War* (Washington, D.C.: Office of Air Force History, 1987), 41.

2. *Ibid.*

3. For example, the COMAFFOR (and the COMAIRSOUTH/CFACC/commander, 16th ASETF) in Bosnia for Operation Joint Guard is the commander of Sixteenth Air Force (O-9), while the COMAFFOR for Operation Northern Watch in Turkey is the commander of the 39th Wing (O-6). In view of the size and scope of the operation, an NAF commander may decide only to establish an AEG that reports directly to the COMAFFOR and not to an AEW (see fig. 3).

4. Even though the parent wing commander is not in the contingency ADCON chain, he or she will still perform those

ADCON functions that deal with budgeting, assignments, OPRs/EPRs, and other personnel actions. Expeditionary commanders may elect to process awards and decorations.

5. See note 4.

6. At the Combat Air Force commanders' conference in November 1997, the ARC did agree to the concept of specified ADCON to the COMAFFOR for its deploying forces and will use the Air Expeditionary Force Presentation Concept. Current Air Force Instructions (AFI) are being readdressed to further clarify and allow a seamless transfer. These concepts have been further codified in AFDD 1, *Air Force Basic Doctrine*, and AFDD 2, *Organization and Employment of Aerospace Power*. AFDD 1 is the Air Force strategic-level doctrine, and AFDD 2 is operational-level doctrine.

Prejudice against innovation is a typical characteristic of an Officer Corps which has grown up in a well-tried and proven system.

—Field Marshal Erwin Rommel



1997-1998
Academic Year
Ira C. Eaker
Award
Winners

First Place

\$1,000

Maj William C. Rynecki, USAFR
"Transformational Leaders and Doctrine
in an Age of Peace: Searching for a Tamer
Billy Mitchell" (Spring 1998)



Lt Gen Joseph J. Redden presents award
and \$1,000 check to Major Rynecki.

Second Place

\$600

Maj YuLin Whitehead, USAF
"Information as a Weapon: Reality
versus Promises" (Fall 1997)



Lt Gen Joseph E. Hurd presents award
and \$600 check to Major Whitehead.

Col David K. Edmonds, USAF

"In Search of High Ground: The Airpower Trinity and the Decisive Potential of Airpower" (Spring 1998)



Lt Col Dik Daso, USAF

"Origins of Airpower: Hap Arnold's Command Years and Aviation Technology, 1936-1945" (Fall 1997)



Maj Marc K. Dippold, USAF

"Air Occupation: Asking the Right Questions" (Winter 1997)

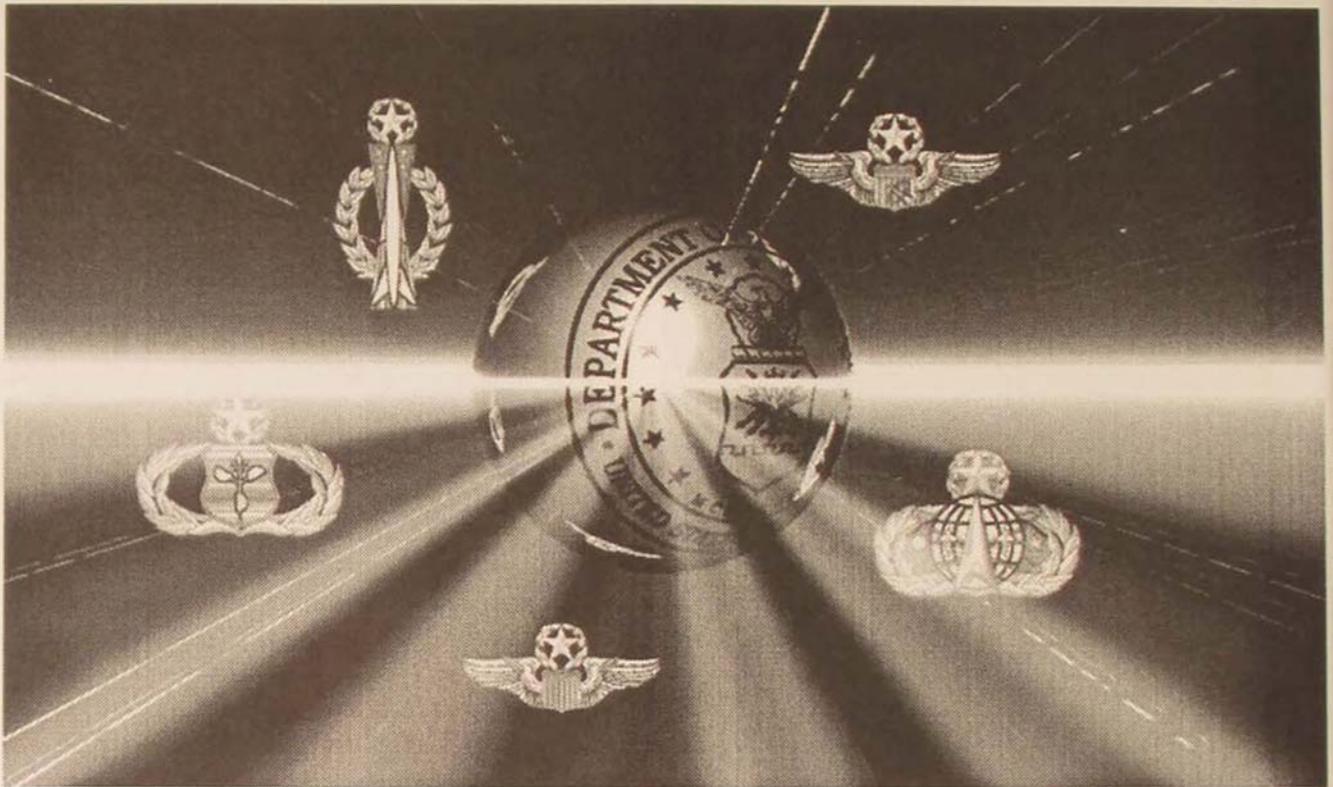


Maj Scott Walker, USAF

"A Unified Field Theory of Coercive Airpower" (Summer 1997)



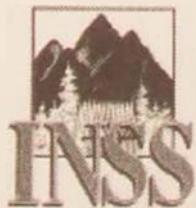
Congratulations to all of this year's winners! The award honors airpower pioneer Gen Ira C. Eaker and is made possible through the sponsorship of the Arthur G. B. Metcalf Foundation. If you would like to compete for the Ira C. Eaker Award, submit a feature-length article to the Editor, *Airpower Journal*, 401 Chennault Circle, Maxwell AFB AL 36112-6428 or via E-mail at editor@cadre.maxwell.af.mil. All US military personnel below the rank of colonel (O-6) or US government civilian employees below GS-15 or equivalent are eligible.



Air Force Culture and Cohesion

Building an Air and Space Force for the Twenty-First Century

LT COL JAMES M. SMITH, USAF, RETIRED



THE US AIR FORCE has a cohesion problem. Dr. Donald B. Rice, former secretary of the Air Force, complained that officers identified with their weapon systems, not with the Air Force or any concept of service mission or doctrine.¹ Carl Builder agrees. To Builder, the Air Force has no strong, unifying mission or vision, so loyalty has devolved to functions, technologies, and occupations.² Franklin Margiotta states that in his experience, he served in 30–40 different “air forces” that had in common only a single-colored uniform and a universal belief that each

member and faction was serving the cause of national defense. He too sees technology as the organizational essence of the Air Force.³ Frank Wood observes that the emphasis of today’s Air Force on high technology makes it most susceptible to specialization and occupational attachments, particularly when those Air Force specialties have civilian air and space equivalents.⁴ Indeed, our service has a cohesion problem, and it is firmly rooted in the culture, technical specialties, and organizational dynamics within the diverse, complex entity that is today’s Air Force.

This article analyzes the roots and current manifestations of the Air Force’s cohesion

problem, defining and developing the problem as a basis for some broad suggestions as to how the service can begin to mold itself into a more cohesive force for the twenty-first century. It briefly summarizes how organizational culture underlies organizational cohesion; presents a traditional cultural interpretation of the Air Force; expands on the traditional view to outline a cultural overview of current Air Force fragmentation; and examines the applicability of cohesion-building activities for the present and future Air Force.

Culture

"Every organization has a culture, that is, a persistent, patterned way of thinking about the central tasks of and human relationships within an organization. Culture is to an organization what personality is to an individual. Like human culture generally, it is passed on from one generation to the next. It changes slowly if at all."⁵ This statement captures the key points of organizational culture—a patterned way of thinking focused on the organization's central tasks (operations) and relationships (administration), passed on by generations and slow to change.

Any organization's patterned way of thinking reflects what is variously called its *essence* or the beliefs of the *corps* around its *core*. The central career professionals, those people most closely associated with the organization's core operation, define the mission and decide on the capabilities needed to carry it out.⁶ The elite group at the center of the organization's mission—the elite profession (or the corps at the core)—stakes out the boundaries of the organization (its roles and missions). It also controls the operations of the organization (with spillover influence on the policies that direct that operation), as well as the personnel system for that core operation and its supporting operations, and establishes a career system to institutionalize that control. Within even the most complex organization, a single professional elite possesses knowledge, skills, and orientations identical to the mission and activity of the

organization. This is the corps elite—the elite profession within the organization—and it defines the essence, sets the culture, and determines the vision that exemplifies the organization.⁷

In large organizations, or those with complex missions, secondary elites emerge around their particular sub-mission or mission segment. The organization can exhibit tensions and conflict across these elites as each espouses its own organizational vision based on its particular experience and focus. Thus, a rank ordering often develops among the core elites, with resultant intraorganizational mission competition, making analysis of the relationships among these various elites key to a full understanding of the organization.⁸

If the culture is shared and endorsed across the various subgroups that comprise the organization, then a sense of *mission* exists, and the organization is relatively cohesive, both internally and in its approach to the outside world. Able leaders attempt to shape the culture toward that cohesive sense of mission, but this often becomes a very difficult bridge-building exercise.⁹ A RAND study agrees, stating that a "collective, shared sense of a distinct identity and purpose appears to be a hallmark of the most successful institutions." The RAND study calls this phenomenon *organizational vision* and further states that such a shared vision lends the organization relevance, clarity, realism, inspiration, and a positive internal and external public image.¹⁰

The organizational cultures of the US military services are particularly strong because they employ a career system based on the "closed career principle." These organizations recruit personnel upon completion of basic education, and those personnel spend their career almost exclusively in their particular organization. They are educated, trained, and advanced by the organization, based on its internal rules and priorities; almost no lateral entry into the organization exists, except at the entry level—career personnel enjoy protection from outside competition.¹¹ The services recruit and indoctrinate new members into their core mission and its requirements. They provide their own professional education pro-

grams to prepare career officers to move up the chain of responsibility for that mission. Further, they promote these career personnel into the decision- and policy-making levels within their career elite with only limited external veto and no real external competition. The service culture is institutionalized by the organization and internalized by its members.

Organizational culture has significant impact on organizational behavior. To the extent that such behavior spurs excellence in mission accomplishment through competition, it is seen as positive. However, sometimes it leads to dysfunctional results, and no easy or immediate solution exists. Organizational culture changes slowly and primarily in response to internal pressures to adapt to a changed operational environment, not in response to external direction. True organizational change requires a cultural transformation—not simply accommodation and incremental modification but changed organizational output in terms of structure, professional incentives, and changed professional behaviors. The reorganization option, implying organizational (cultural) change, consists of several steps: recognition of pressures due to changes in the organization's external environment, perception that existing performance is inadequate, formulation of a new organizational strategy (planned outputs, goals, and objectives) to meet the changed environment, modification of the organization's structure to accommodate new tasks and relationships, transformation of the organization's culture to meet the realigned elite professions and their relative priorities, and, finally, changed output in terms of organizational performance and product as a result of the new strategy, structure, and culture.¹²

Alternatively, one can view the "problem" of completing change and building cohesion within the system of subcultures that are today's military service—changing organizational culture—as a function of creating shared values and legitimacy leading to a common "theory of victory" (or vision), aligning new or changed tasks with "critical"

tasks identified and ranked, realigning the distribution of power within the organization reflecting the new hierarchy of missions, and creating new or changing old career paths to groom organizational members for future leadership positions at all levels.¹³ So the existing organizational elite struggles hard to protect its turf, budget, mission, and self-identity against emerging challengers for as long as it can. Transitions are painful to the organization, and this is a time of transition for the US military.

Air Force Culture

Traditional Air Force essence evolved around strategic bombing, particularly the aerial delivery of nuclear bombs against the Soviet Union. Internally, the primary contender for influence was the group advocating tactical airpower—from close air support (CAS) to the Army to the delivery of tactical nuclear weapons on the battlefield. Another challenge to primacy within the service came from advocates of missileborne nuclear weapons in lieu of the manned bomber. The strategic corps proved powerful enough to prevent the emergence of another power center from the airlift community. Even after the success of the Berlin airlift, the airlift mission remained secondary—removed from the core of nuclear bombing.¹⁴

The challenge of the missile community to the domination of bomber pilots forced the Air Force to adapt to external demands and incorporate missile technology, even to advocate missile development and procurement. However, the bomber elite never dropped their demand for at least coequal attention and money for bombers, and the expanded nuclear mission—bomber- or missile-delivered—remained at the core of Air Force culture during much of the cold war.¹⁵

Air Force promotion rates to the rank of colonel from 1954 through 1971 reflect the assertion that senior leaders define organizational culture and that the organization rewards and promotes core elites at a higher rate than peripheral officers. But the Air Force core

elite was changing. First, the promotion potential of officers assigned to the core strategic mission—including both bomber pilots and missileers—declined during this period. From a high in 1954–55 of promotion rates three times that of the rest of the Air Force, Strategic Air Command (SAC) officers steadily declined to promotion rates below the Air Force average by 1966. This trend continued through 1971. Observers also have traced the “below the zone,” accelerated promotion rates for SAC officers from 1962 through 1971. For those officers identified for early, “fast track” promotion to colonel, SAC remained above the Air Force average in 1962 and 1963 but fell below the average for all but one of the subsequent years of the study. For all flyers—strategic, tactical, and transport—within the Air Force, however, promotion rates to colonel remained above the Air Force average for all but one year from 1956 to 1971. The core of the Air Force might be turning away from the strategic mission from 1966 on, but flying airplanes remained the focus of the Air Force.¹⁶ From the 1960s on, the Air Force adapted its culture to accept a primary role for the aerial delivery of tactical nuclear and non-nuclear weapons, but strategic-bombing pilots remained at the top of the Air Force until the early 1980s, when for the first time a tactical pilot became Air Force chief of staff.

Builder describes this shift from strategic elements at the center of the Air Force’s core to tactical dominance in largely negative terms, noting that the service has lost its guiding vision (strategic airpower theory) and thus its cultural cohesion. According to this view, the cohesive core around decisive, strategic airpower through World War II gave way to nuclear deterrence shortly after the founding of the independent Air Force. This wedding of the Air Force to nuclear deterrence gave entry to the missile and space community, which accelerated the shift to a focus on technologies over missions. The lack of a strategic role in Korea and Vietnam gave rise to the tactical subculture as well, splitting the Air Force core and leaving only weapon systems as a focal point.¹⁷ James Mowbray attributes this shift to the replacement of aerospace

power at the heart of Air Force doctrine with less defined “national objectives,” thus leading to a devolution to sub-mission identities around these diverse objectives.¹⁸

By the late 1980s, then, the primary Air Force internal divisions reflected a technological bent, creating splits between pilots and all other airmen (as space began to claim a piece of the core) and between the types of systems the pilots flew: between fighter and bomber pilots; transport pilots and “combat” flyers; and even among air-to-air, deep-interdiction, and CAS fighter pilots. The Air Force essence began to center on the technology of the flying machine, even to the extent that Builder could describe the change in religious terms:

The Air Force could be said to worship at the altar of technology. The airplane was the instrument that gave birth to independent air forces; and the airplane has, from its inception, been an expression of the miracles of technology. . . . There is a circle of faith here: If the Air Force fosters technology, then that inexhaustible fountain of technology will ensure an open-ended future for flight (in airplanes and spacecraft); and that, in turn, will ensure the future of the Air Force.¹⁹

Builder offers a grain of truth here. For example, cannon and shell—instruments of war—abound around the periphery of the West Point plain, but the central area—the one closest to the cadets who will lead the future Army—is reserved for statues of military leaders of note: Washington, MacArthur, Eisenhower, and even Patton. At the Air Force Academy, busts of air leaders, from the Wright brothers through Hap Arnold, surround the central area, but upon that field one also finds static displays of the F-4 and F-105 from Vietnam and the F-15 and F-16 from Operation Desert Storm. The technologies of flight take center stage.

Given that “worship” of technology, the Air Force core measures itself in terms of aerospace performance and technological quality—the clear emphasis is on quality over quantity, and the self-identity is with platforms flown or launched. Given its future orientation and attachment to technology,

the Air Force still remembers its struggle with the Army for independence, and it is sensitive to challenges to that independence or to its attachment to the ground-combat mission. It continues to assert its autonomy as a service by emphasizing the strategic dimensions of aerial combat over ground-support roles.²⁰ The Air Force is "the keeper and wielder of the *decisive instruments of war—the technological marvels of flight* that have been adapted to war" (emphasis added).²¹

The Air Force was best positioned of all the services for Desert Storm but not necessarily for the end of the cold war. The traditional core mission of the Air Force had been strate-

gic deterrence of the Soviet Union. That mission continued after the end of the cold war since Russia and three other republics still had strategic nuclear weapons, but it dwindled as Russian weapons drew down toward Strategic Arms Reduction Talks (START) II limits. Foreseeing this loss of mission, the Air Force issued a new vision statement—Global Reach, Global Power—that promoted conventional, long-range power projection and precision bombing against regional threats.²²

This vision reflected a continuation of changes that had been occurring within the Air Force since Vietnam. Advances in conventional technology, precision, and lethality



Traditional Air Force essence evolved around strategic bombing, particularly the aerial delivery of nuclear bombs against the Soviet Union.

had accompanied the takeover of Air Force leadership by the "fighter mafia." Tactical pilots had supplanted bomber pilots, and Global Reach, Global Power gave voice to their vision of how airpower should (would) be employed in the new world order. This was a significant shift in the Air Force elite, but it happened gradually and deliberately, thus limiting its major disruptive effects within the service.²³ Today, the transition is complete. As of June 1997, nine of the 11 active Air Force four-star generals were fighter pilots, and the remaining two were bomber pilots.²⁴ By September 1997, one of the bomber pilots had retired and was replaced by yet another fighter pilot. (Note that all of the generals were pilots.)

Whatever its purpose and genesis, Global Reach, Global Power gave voice to exactly the rapid, lethal airpower that the Air Force employed in the Gulf War. The precise, decisive airpower employed in the Gulf gave the Air Force the upper hand over the other services in the force-cutback debate that followed Desert Storm. The Air Force was developing a clear vision of its future and demonstrating that it was ready to carry out that vision. While the other services struggled to define themselves after the Gulf War, the Air Force pushed for its faster, higher, stealthier future.²⁵ That push emphasized technology and rapid force projection, as well as expansions in the roles that space and information dominance would play in future conflicts.²⁶

The Air Force may have seen its traditional strategic core mission reduced, and it may have seen its core elite shift from the bomber mafia to the fighter mafia with its increasing shift from a strategic to an operational focus, but it maintains its attachment to the future technologies of air and space combat—the decisive instruments of future war—now codified in *Global Engagement*.²⁷ As this vision matures—and if it can withstand the push toward a narrower, surface-warfare orientation from the Army and Marine Corps, as embodied in the *Joint Vision 2010* process²⁸—the transition to a high-end, operational (theater), decisive airpower and space power vision may become complete, allowing

the Air Force culture to complete the transition toward its preferred role in the twenty-first century.²⁹

The Air Force in the Late 1990s

Studies of the Air Force from the 1970s and into the 1980s indicate that we should expect it to represent a spectrum of attachments to both the institution and to its many occupations, in many cases leaning fairly heavily toward the occupations. The Air Force should be a confederation of technical specialties—this fractionalization a function of the technical nature of the service, of its resulting close and continuous contact with civilian contractors and specialists from equivalent occupations, and of its bureaucratic management practices dating from the 1970s.³⁰ Distinctive uniforms, flight jackets, badges, and pay bonuses have helped retain critically skilled officers, but they have also helped to deepen individual identification with subcultures and splits between those various factions at the higher (service) level. The occupational orientation resulting from the emphasis on technology and skill is deepened by the pursuit of skill-related higher education so characteristic of the Air Force officer corps.³¹ This set of occupational factors places the Air Force apart from the ground-combat services, which are more institutional in their orientation. The Marine Corps, for example, is the most institutional of the services.³² The lack of direct civilian equivalents for many of the Marines' core skills becomes a factor here.

An initial profile of Air Force officers points to a continuation and perhaps even a deepening of some of the factors that contribute to the service's occupational orientation and fragmentation. Education remains a primary indicator of continuing Air Force attachment to technology and to a continuing occupational orientation. For example, 96 percent of all Air Force generals have earned at least one graduate degree.³³ These data remind us that the Air Force is by far the most educated of the services and that Air Force line officers,

over half of whom hold graduate degrees, are clearly a well-educated group. By comparison, in 1997 the Navy was reported to have only 77 serving line officers with doctoral degrees, compared to the smaller Air Force's nine hundred.³⁴

In 1996 Air University conducted two surveys of almost two thousand of its staff members, faculty, and students at Maxwell Air Force Base (AFB), Alabama, to support the development of a curriculum for the proposed Air and Space Basic Course (ASBC). The results of those surveys indicated that the Air Force officer corps recognizes that its members display careerist attitudes and identify primarily with their technical specialties.³⁵ In summarizing the results of the Airman's Basic Course Curriculum Structure Survey and the Shared Institutional Values Survey, one analyst states that "the responses indicate that officers value unit cohesion, identify with technical specialties and do not persuasively articulate airpower doctrine."³⁶ This observation seems to indicate that in the absence of a shared vision or sense of mission, Air Force officers turn to their occupations and the immediate units built around those occupations for their primary identification. This tendency is symptomatic of a fractionated confederation of subcultures rather than a cohesive military service.

Beyond these "snapshot" descriptive data and the Air University survey results, the author surveyed 1,030 Air Force officers, representative of the service's culture and cohesion, to find more detailed answers to questions about what the Air Force looks like today—how it is oriented, where its main fracture lines lie, and what the intensity of its fault lines might be across specialties and ranks.³⁷ Specifically, the survey addressed institutional/occupational (I/O) orientation, mission/priority/allegiance rankings, and attitudes toward technology and space to determine the sources and depths of differences on these factors across the Air Force. Only students entering professional military education (PME) courses at Maxwell in the late summer of 1997 participated in the survey. Members of the three schools sur-

veyed—captains at Squadron Officer School (SOS), majors at Air Command and Staff College (ACSC), and lieutenant colonels at Air War College (AWC)—form a representative cross section of the middle ranks, specialties, ratings, sources of commission, levels of PME completion, genders, and joint experience found across the entire Air Force.

Students participated in the survey at the very beginning of their PME studies, when they had just arrived from Air Force field assignments and before any leveling of attitudes could take place as a result of cross-specialty contacts within these programs. The survey targeted active duty line officers—members of the culture-setting corps-elite segments and primary supporting segments, which best represent the core culture and primary subcultures of the service. Further, SOS captures a broad cross section of Air Force junior officers, but ACSC and AWC remain very selective, offering only the "top" selectees for midcareer and senior ranks the opportunity to attend. This situation actually produces a sample that best represents the culture and its adherents, according to the closed-career model.

Almost 90 percent of current Air Force generals completed intermediate service school (ACSC or another service's equivalent), and 98 percent completed senior service school (AWC or another service's equivalent or a national program).³⁸ Other studies indicate that completion of a service's professional education programs is highly correlated with selection for Air Force command assignments (in December 1990, 97 percent of Air Force wing commanders were graduates of intermediate service schools)³⁹ and for senior-level promotion (from 1976 to 1983, 93 percent of Air Force officers selected for promotion to colonel were graduates of senior service schools).⁴⁰ Further, the services' professional education programs should deepen their students' attachment to service values and culture.

One would expect the survey to show that in 1997 the Air Force was a fractionated body lacking a common vision, having thus devolved into functional, technical, and occupa-



The B-2. The airplane was the instrument that gave birth to independent air forces; and the airplane has, from its inception, been an expression of the miracles of technology.

tional communities with little integration among them. Moreover, the Air Force should be largely occupational in its orientation, with the high levels of mission technology combining with high levels of officer education to further this occupational orientation. Finally, the Air Force should be a complex mix of communities with no integrating vision and little glue to hold them together as a cohesive entity.

But the findings of the survey, although consistent with many of those expectations, are not quite as bad as one might think, based on the results of previous studies. Certainly, today's Air Force is a highly technical force with a complex mix of specialties across a wide range of core and secondary missions. Certainly, today's Air Force is much more highly educated and involved in ongoing educational efforts than the other services. And just as certainly, differences and fracture lines exist across the large and complex Air Force, some of them pronounced. But the survey also indicates the presence of a common foundation underlying the gaps (which may not be as wide as some people may think), upon which the service could build a more cohesive air and space force for the future.

As regards I/O orientation—a continuum of attitudes, not an absolute choice between institution and occupation—the survey revealed significant differences based on rank, occupation, rating, PME completion, and joint experience. Higher rank, completion of more PME, and joint experience were characteristic of officers who were relatively more institutional in their orientations. Also displaying more institutional attitudes were support officers and members of the scientific and engineering community, as well as nonrated officers. Most noteworthy is the fact that in only one subcategory and for a single question did the mean response move over the centerline of the continuum and into the occupational side.

Although earlier reports stated that this or that group remained more or less occupational in its orientation, this survey reports relative degrees of institutional orientation. That in itself should provide a bit more optimism as to the possibility of at least bridging the I/O gaps within the Air Force officer corps. Only a question on non-mission-related duties, the omnipresent military "Mickey Mouse," brought a series of mean responses over three on a five-point scale. And only the most junior operational officers surveyed (captains in rated, missile, and space special-

ties) registered a mean score over the 2.50 midpoint (a 2.51) on the pool of "occupational" questions. Thus, the Air Force retains an "institutional" foundation.

On the relative ranking of alternative missions, priorities, and allegiances, the survey found higher degrees of agreement across the Air Force. Mission choices revealed few differences, and only senior scientific and engineering officers elevated "team" efforts over operational air combat as their top mission of choice. The instrument noted no differences in rankings for allegiances. Only the matter of selecting priorities showed some differences, with several subgroups ranking operational mission over people and more senior officers generally reversing those two priorities. In the end, the technology-oriented officer corps put technology last in its rankings, behind operational-mission and air-combat priorities in every case.

Finally, the responses regarding technology and space revealed some significant differences, but one can bridge most of the gaps here. More senior officers, operators, rated officers, and officers with higher levels of PME looked more positively on the role technology plays in the Air Force. But the key differences concerned space. Senior officers, support and scientific/engineering officers, nonrated officers, officers with more PME and a joint assignment, and female officers all had high regard for the role of space. Most noteworthy, again, was the response of rated officers, which indicated a lower regard for space, thereby creating a distinct gap between them and the rest of the Air Force on this issue. Further, the range and degree of difference within all of the subcategories of focus proved greatest on this issue of the air and space force. This prominent fracture line is significant to the future of space within the Air Force, as opposed to space as a separate force. Although *Global Engagement* states that "we are now transitioning from an *air* force into an *air and space* force on an evolutionary path to a *space and air* force" (emphasis in original),⁴¹ Air Force officers are, overall and particularly within the rated community, not yet ready to make that transition. The space force

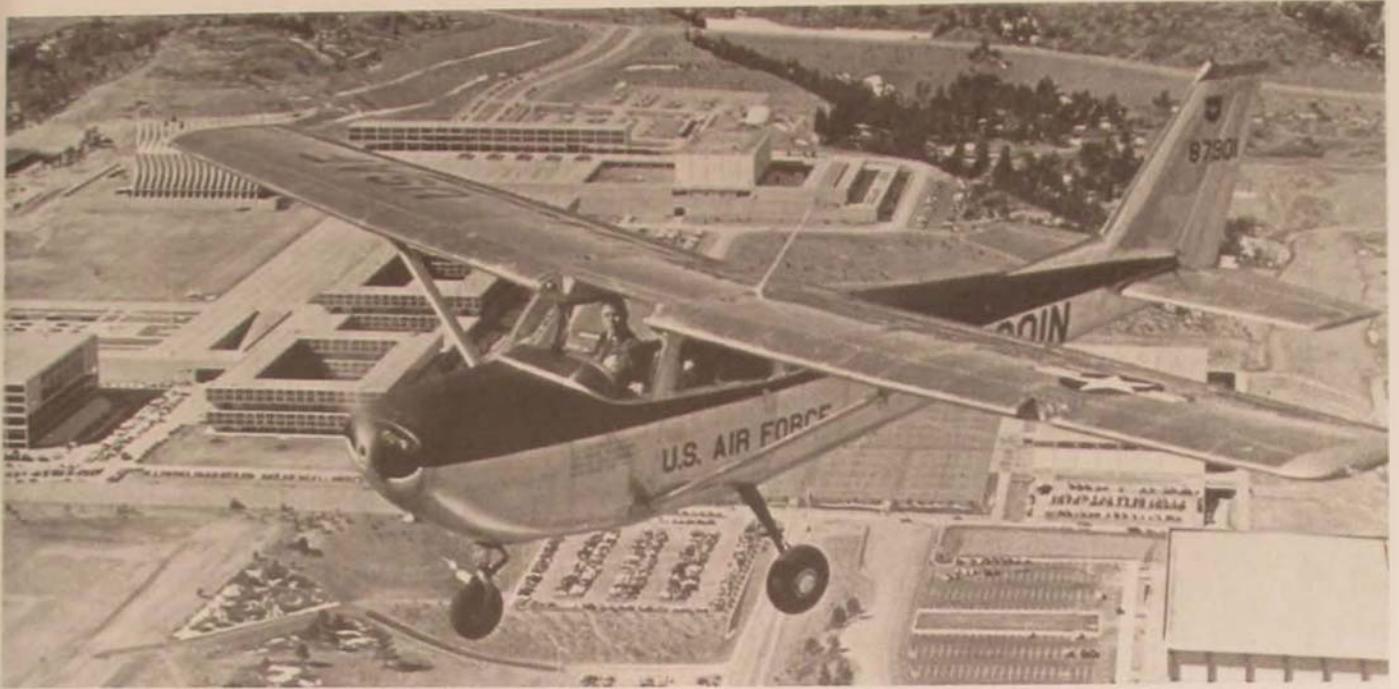
may find itself in the same position in which the Air Corps found itself as a part of the US Army. That is, independence becomes the only viable alternative unless the Air Force accepts and supports a key space role within the existing force.

So the survey found fractionalization on the basis of rank, occupation, and rating but found lesser degrees of difference for level of PME completion, joint experience, and for rank within the occupational categories of operations and support officers. It revealed few differences on the basis of gender or source of commission and few within the scientific and engineering community. For the most part, the differences were perhaps not as striking as were some of the areas of similarity. Operational and occupational focus will lead to some degree of difference in reaction to various areas surrounding Air Force culture and mission, but the gaps appear bridgeable. The service's line-officer corps appears to provide a basic infrastructure upon which the Air Force can build cohesion.

Building a Cohesive Force

Building or fostering cohesion within a complex organization is a difficult task, but it is one that has been and can be successfully accomplished. We must remember that culture change and cohesion are products of senior leadership acting in concert with leaders reaching down into the organization. The process is internal, active, and top-down. It must begin with the clear definition of a single, unifying mission or vision statement, one that is attuned to the task orientation of the organization and one that all key, elite segments of the organization can embrace. One must then actively disseminate that vision across the diverse subcultures and fractionated specialties before it can begin to take effect.

Completing an organizational transformation of the Air Force requires completing its cultural transformation, remaking the service into its twenty-first-century vision.⁴² First, this process requires a careful alignment of the Air



At the Air Force Academy, busts of air leaders, from the Wright brothers through Hap Arnold, surround the central area, but upon that field one also finds static displays of the F-4 and F-105 from Vietnam and the F-15 and F-16 from Operation Desert Storm. The technologies of flight take center stage.

Force conception of its task environment with the perception of that environment held by general, political elements (the national security bureaucracy, especially the Department of Defense and the Joint Chiefs of Staff). This is the clear vision required from senior leadership at the top of the corps elite. The Air Force's *Global Engagement* vision and its core competencies, especially insofar as they are consistent with the *Joint Vision 2010* process (*Joint Vision 2010*, the *Concept for Future Joint Operations*, and the *Joint Vision Implementation Master Plan* for the moment), provide a solid first step to building this mission/vision identity.

Second, one must realign Air Force strategy and structure to achieve the critical operational tasks, roles, missions, and functions at the heart of the vision. This requires unified, active leadership reaching down to reshape the service through clear and cohesive guidance. Air Force Doctrine Document (AFDD) 1, *Air Force Basic Doctrine*; AFDD 2, *Air and Space Power Organization and Employment* (forthcoming); and the developing air-dominant strategy all are key parts of this strategic effort. Analysis of the survey for this article indicates

that the role of space within the Air Force must be a central feature of this revised strategy and structure in order to retain space as a force within the organization. Otherwise, space may be forced to seek an independent identity in order to survive and prosper as a distinct mission element.

Third, the changed culture, realigned and reinforced elites, and revised priorities must be socialized across the organization. The key to this process lies in creating a cohesive and encompassing team focus around which diverse subcultures and specialties can (and want to) coalesce. Rewards and incentives, promotions, and training must all be brought into alignment with this team concept to provide the "glue" it needs to hold the reshaped service together until it fuses into a common whole. The new culture and team must be socialized from the beginning of one's entry into the closed-career system, either via pre-commissioning education, initial specialty training, or a common Air Force orientation. This culture and vision must then be reinforced across one's career, not just in formal PME programs but also via active mentoring by leadership at every level.



Gen Merrill A. McPeak, USAF, Retired. Advances in conventional technology, precision, and lethality had accompanied the takeover of Air Force leadership by the "fighter mafia." Tactical pilots had supplanted bomber pilots, and Global Reach, Global Power gave voice to their vision of how airpower should (would) be employed in the new world order.

The ASBC and the PME process under study at Air University may be steps in this direction, and the joint-education, cradle-to-grave career progression suggested in Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 1800.01, *Officer Professional Military Education Policy*, may prove a viable template for the Air Force program. However, the informal dimension will be key to the broadest success of this socialization effort, and it rests in Air Force leaders' active mentoring of their juniors—a difficult process to institutionalize and standardize. ASBC curriculum-support surveys conducted by Air University in 1996 indicate that the focus for the socialization of junior officers should address core values, ethics, teamwork, and Air Force missions. One should place secondary emphasis on Air Force history and doctrine—or air-mindedness.⁴³ The Air Force must note that shared values are certainly a foundation upon which to begin to build cohesion but that one must

also define and promulgate a clear and unifying vision—a sense of shared mission in which each member can see a direct and important stake—before a unified service can arise. The final result must take the form of changed output in terms of the performance and cohesion of the Air Force team within and across the twenty-first-century battle space, and simple or singular attempts at solution may not be enough.

As the Air Force completes this transition, it must also remember not to use the perceived coherence of the other US military services as the basis for a direct "fix" of unique Air Force issues and problems. The Air Force is simply not the Army, Marine Corps, or Navy, none of whose programs will automatically transfer unchanged to the Air Force. One must analyze, evaluate, and adapt each one for Air Force applications.

Earlier research points to the differences among service cultures and cohesion.⁴⁴ The Army is the most closely integrated of the larger services, a fact one may attribute to interbranch mobility across careers, with many officers serving one or more tours in different branches of the service. Multibranch bases also contribute to cross-branch understanding and communication—and ultimately to cohesion. In fact, the Army operates as an interdependent, combined-arms team, with each specialty area interacting with and depending directly on others for support. The operational Army is a team. It lives as that team on its bases, deploys to the field to live even more closely together in that team, and lives or dies in combat, based on direct linkages and mutual support among the members of that team. The experience of the National Training Center in the 1990s reinforces this team concept. The Army is built for cohesion.

That same research does not address the Marine Corps, but this service has all of the cohesive elements found with the Army, plus the additional advantages of a narrow mission set and a small size. Marines are organized into an organic whole—the Marine Air-Ground Task Force—and they live in that integrated organization, deploy at sea for extended periods in that structure, and face both

their operational and political environments as a singular team. The corps is focused and challenged as a unit and sees itself in that light. Marines embody a cohesive warrior entity. They have much in common with the "model" cohesive unit—the US Forest Service—which is small, remotely stationed, field oriented, and institutionally cohesive.⁴⁵

The Navy is the second most cohesive of the three largest services. Navy skills are more distinct and diverse than those of the Army, but the naval task force is also an interdependent operational organization. This operational interdependence provides a binding force across weapon systems and specialties, and this cohesion is reinforced through multispecialty interaction in the ports and wardrooms of the fleet. As with the Army, operational deployments and combat interdependencies mold the force into a fairly cohesive whole.

The Air Force is the least cohesive of the services. One may attribute its fragmentation to the specialized nature of its technologies, the specialization of its wing structure, and the relative isolation of one specialized unit from the others. The basis of the problem is Air Force technologies, which are diverse and specialized; both efficiencies and effectiveness come from organizing around those unique technical assets. The operational Air Force mixes assets within operations, but units live apart and work in isolation until they join up en route to the operational target. Further, direct-support technologies that are integrated into the actual operation may be continents away at the time they are "interoperating" with a force. The Air Force mission also mixes several operational foci, from surface-warfare support through airlift (both theater and global) to strategic operations and into space. There is much less "glue," less single-mission simplicity, and less combined physical contact than one finds in the other services. The Air Force cannot be the Marines, and Marine answers may not even begin to address Air Force questions.

Perhaps the Air Force should look outside the military into other complex government agencies and civilian organizations for mod-

els. High-technology enterprises in the non-military sector might offer relevant inputs for Air Force cohesion issues. One might certainly consider the National Aeronautics and Space Administration (NASA), which can offer at least as much relevant experience as the other services. NASA also faced a period of transition leading up to the *Challenger* disaster, and it is now facing an institutional renewal at least as fundamental as that facing the Air Force. Observers outline issues of culture and cohesion in the confederation of cultures known as NASA, finding that the integrative, cohesive matrix culture that characterized the Apollo era gave way to bureaucratic entropy and disorder, leading up to *Challenger*. The political environment decreased its support for NASA, bureaucratic pressures became paramount, and "conservers" pursuing a survival mentality replaced "innovators" at the core of the organization.⁴⁶ Today, NASA is attempting to reinvigorate its high-tech, multiple-subculture matrix team around new missions and goals, and the Air Force should take note of those efforts.

Regardless of the models examined, the Air Force must find its own answers within its own set of cultures and pressures: it must define, build, and sustain its own team within and against its own mission and vision. The officer corps is the key to that effort. Military officers lead the various units at all levels, and through that leadership they set the example and climate of the primary groups with which Air Force members identify. Those same officers provide the linking mechanism, the glue, that binds those individual units into a force, both across the functions and up and down the Air Force.⁴⁷ The officers set, disseminate, and perpetuate the culture, and they must all become involved in reinventing the Air Force team. The Air Force officer corps must share essential values, define the service core mission(s) within the operational and political environments, create a unifying vision, and undertake strategic planning and action to promulgate that vision.

A start should come from clearly defining an Air Force team, one that includes both decisive and supportive airpower and space

power functions within the operational context of the twenty-first-century battle space; we must build on *Global Engagement* to define that inclusive Air Force team of the future. But such a team concept must be real, and it must be backed tangibly through policy and incentives (promotion and status) from the top down. The team and its vision must be disseminated at all levels, not just through formal means but through active, continuous involvement of all commanders. It must be a formal/informal cradle-to-grave continuum of Air Force *corps* concepts, not just *core* concepts. That team must be built, reinforced, and employed—as a team, not just its parts—and the Air Force incentive system of recognition and advancement must be aligned with that team concept. High-tech, complex matrix teams can be productive, loyal, unified, and effective, and the Air Force can and should expect or accept no less.

True, the Air Force has a cohesion problem, but it also has a common infrastructure upon

which it can begin building its future, inclusive, more cohesive team. It needs to define that team; consolidate its missions around that team; and actively promulgate, reward, and support its vision into the twenty-first-century air and space future. The effort must be extensive and pervasive, incorporating formal education and training but focusing also on day-to-day, unit-level efforts to live the team concept. It must come from the top, but it must reach down to and through commanders at all levels in a continuing, cradle-to-grave effort across each airman's career. The fracture lines are real, and the technological and mission-diversity pressures tend to pull the Air Force apart. For those reasons, it must put real, focused effort into pulling together—not as a single entity but as a team coming into harmony around shared missions and common goals. A team effort is possible, even if a single, unified entity is not, and we must make the effort to bring that team onto the field. □

Notes

1. Reported in Col Edward C. Mann III, *Thunder and Lightning: Desert Storm and the Airpower Debates* (Maxwell AFB, Ala.: Air University Press, April 1995), 163-64.
2. Carl H. Builder, *The Icarus Syndrome: The Role of Airpower Theory in the Evolution and Fate of the U.S. Air Force* (New Brunswick, N.J.: Transaction Publishers, 1994), 6-8.
3. Franklin D. Margiotta, "Changing Military Manpower Realities: Implications for the Next Decade," in *Changing U.S. Military Manpower Realities*, ed. Franklin D. Margiotta, James Brown, and Michael J. Collins (Boulder, Colo.: Westview Press, 1983), 22-24.
4. Frank R. Wood, "At the Cutting Edge of Institutional and Occupational Trends: The U.S. Air Force Officer Corps," in *The Military: More than Just a Job?* ed. Charles C. Moskos and Frank R. Wood (Washington, D.C.: Pergamon-Brassey, 1988), 27-30.
5. James Q. Wilson, *Bureaucracy: What Government Agencies Do and Why They Do It* (New York: Basic Books, 1989), 91.
6. Morton H. Halperin, *Bureaucratic Politics and Foreign Policy* (Washington, D.C.: Brookings Institution, 1974), 28.
7. Frederick C. Mosher, *Democracy and the Public Service* (New York: Oxford University Press, 1982), 122-23.
8. *Ibid.*, 130-33.
9. Wilson, 95-96.
10. John K. Setear et al., *The Army in a Changing World: The Role of Organizational Vision*, RAND Report R-3882-A (Santa Monica, Calif.: RAND, June 1990), 67-80.
11. Frederick C. Mosher, "Some Observations about Foreign Service Reform: 'Famous First Words,'" *Public Administration Review*, November/December 1969, 605.
12. Wallace Earl Walker, *Changing Organizational Culture: Strategy, Structure, and Professionalism in the U.S. General Accounting Office* (Knoxville, Tenn.: University of Tennessee Press, 1986), 3-13.
13. Stephen Peter Rosen, "New Ways of War: Understanding Military Innovation," *International Security* 13 (Summer 1988): 141-43.
14. Halperin, 28-32.
15. Wilson, 105-6.
16. Arnold Kanter, *Defense Politics: A Budgetary Perspective* (Chicago: University of Chicago Press, 1979), 102-11.
17. Builder; see also *idem*, "Keeping the Strategic Flame," *Joint Force Quarterly* 14 (Winter 1996-1997): 76-84.
18. James A. Mowbray, "Air Force Doctrine Problems: 1926-Present," *Airpower Journal* 9, no. 4 (Winter 1995): 31-32.
19. Carl H. Builder, *The Army in the Strategic Planning Process: Who Shall Bell the Cat?* (Santa Monica, Calif.: RAND, April 1987), 26.
20. *Ibid.*, 22-48; and *idem*, *The Masks of War: American Military Styles in Strategy and Analysis* (Baltimore: Johns Hopkins University Press, 1989), 31-43.
21. Builder, *The Army in the Strategic Planning Process*, 47.
22. Peter D. Feaver and Kurt M. Campbell, "Rethinking Key West: Service Roles and Missions after the Cold War," in *1993 American Defense Annual*, ed. Joseph Kruzel (New York: Lexington Books, 1993), 166-68.
23. James F. Dunnigan and Raymond M. Macedonia, *Getting It Right: American Military Reforms after Vietnam to the Persian Gulf and Beyond* (New York: William Morrow and Company, 1993), 224-33; and Larry Grossman, "Air Force: Streamlining for Leaner Times," *Government Executive*, December 1991, 15.
24. *Air Force Library: Biographies*; on-line, Internet, 9 June 1997, available from <http://www.af.mil/lib/bio/index.html>.
25. James Kitfield, "The Drive for 'Global Reach,'" *Government Executive*, December 1991, 10, 18-20, 40; and Charles M. Westenhoff, "Why We Need an Air Force," *Joint Force Quarterly* 6 (Autumn/Winter, 1994-1995): 65-66.
26. Merrill A. McPeak, "Ideas Count," *Joint Force Quarterly* 1 (Summer 1993): 24; and Sheila E. Widnall and Ronald R.

Fogleman, "Global Presence," *Joint Force Quarterly* 7 (Spring 1995): 94-99.

27. Ronald R. Fogleman and Sheila E. Widnall, *Global Engagement: A Vision for the 21st Century Air Force* (Washington, D.C.: Department of the Air Force, 1997).

28. See Paul K. Van Riper and Robert H. Scales Jr., "Preparing for War in the 21st Century," *Parameters* 27 (Autumn 1997): 4-14, for a coherent summary of the Army and Marine Corps focus on surface warfare and a conception of airpower as a surface-support function.

29. See Benjamin S. Lambeth, "The Technology Revolution in Air Warfare," *Survival* 39, no. 1 (Spring 1997): 65-83, for one description of what that Air Force future might look like.

30. Margiotta, "Changing Military Manpower Realities," 22; Wood, "At the Cutting Edge," 27; and John H. Johns, ed., *Cohesion in the US Military* (Washington, D.C.: National Defense University Press, 1984), 56.

31. Franklin D. Margiotta, "A Military Elite in Transition: Air Force Leaders in the 1980s," *Armed Forces and Society* 2 (Winter 1976): 155-84; and Johns, 58.

32. Johns, 56-57.

33. *Air Force Library: Biographies*.

34. Scott Wilson, "Instructors at Academy Fear Changes," *Baltimore Sun*, 17 July 1997.

35. Cheryl E. Monday, "Executive Summary: Air and Space Basic Course Surveys," Headquarters Air University (HQ AU), Maxwell AFB, Ala., n.d.

36. Lieutenant Colonel McCoy, "Talking Paper on Analysis of Basic Course Surveys," HQ AU/XOP, 12 December 1996.

37. See James M. Smith, *USAF Culture and Cohesion: Building an Air and Space Force for the 21st Century*, USAF Institute for National Security Studies Occasional Paper 19 (Colorado Springs, Colo.: USAF Institute for National Security Studies, June 1998).

38. *Air Force Library: Biographies*.

39. Maj Ronald L. Stevens, "An Analysis of the Effects of Intermediate Service School Professional Military Education Completion on the Careers of United States Air Force Officers" (thesis, US Army Command and General Staff College, 1991).

40. Lt Col James H. Brown, William B. Davitte, and Kenneth E. Roth, "Promotion Success of Resident Air War College Graduates," research report (Maxwell AFB, Ala.: Air War College, May 1984).

41. Fogleman and Widnall, *Global Engagement*, 7.

42. Walker, 7-13.

43. Monday; and McCoy.

44. Kanter, 18-20.

45. Wilson, *Bureaucracy*, 107.

46. Howard E. McCurdy, *Inside NASA: High Technology and Organizational Change in the U.S. Space Program* (Baltimore: Johns Hopkins University Press, 1993). See also Diane Vaughan, *The Challenger Launch Decision: Risky Technology, Culture, and Deviance at NASA* (Chicago: University of Chicago Press, 1996), for a sociological discussion of NASA culture and the problems of integrating high-technology-oriented subcultures.

47. See Johns, 8-9, 43, and 91-93, on the officer role in building military cohesion.

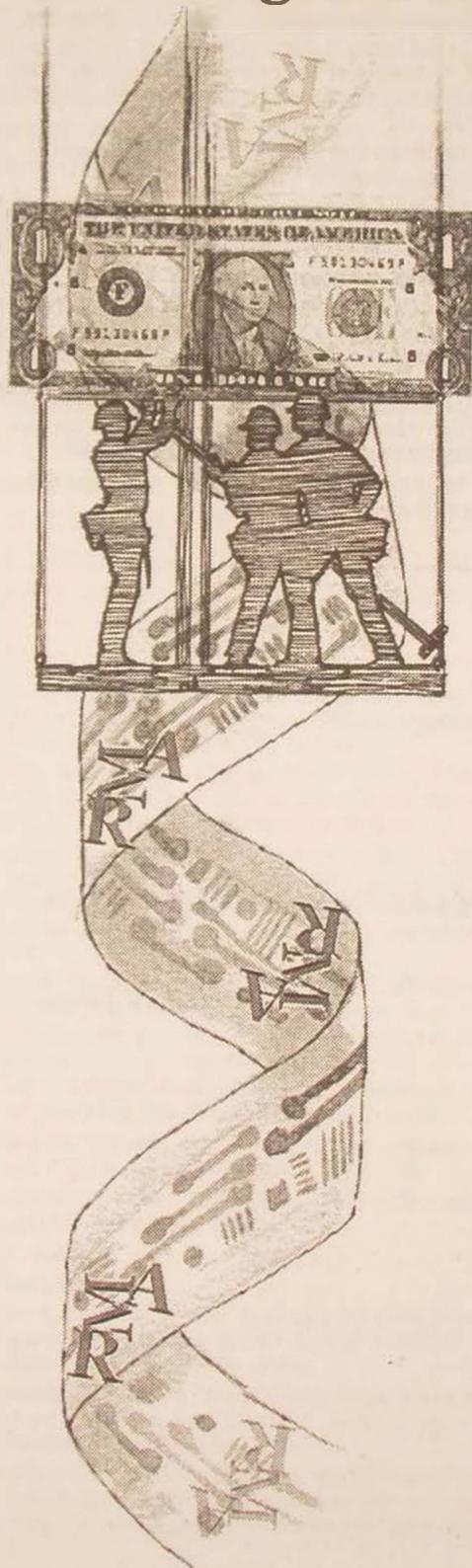
The man who does not read good books has no advantage over the man who can't read.

—Mark Twain

Campaigning for Change

Organizational Processes, Governmental Politics, and the Revolution in Military Affairs

LT COL KATHLEEN M. CONLEY, USAF



THE 1990s HAVE USHERED in an era of rapid change, both in America's employment of its military forces and in its sense of its defense needs for the next century. A revolution in military affairs (RMA) looms: some observers claim that Desert Storm's strategic air campaign heralded advances in technology and doctrine that will fundamentally reshape future warfare. Today, the RMA is an explicitly stated goal, enjoying the full support of Secretary of Defense William Cohen. However, its successful implementation is not foreordained. Similarly, there was no guarantee that a single air commander would direct the Desert Storm air campaign, despite the concept's endorsement by senior leaders. The reasons for this gap between stated policy and certain implementation are twofold. First, just as the air campaign's organizational enabler, the unified air commander, was not ingrained in military doctrine and practice prior to Desert Storm, neither is the RMA guaranteed to take hold throughout today's defense organizations. Second, unless the rational basis for the strategy is translated into an overarching vision, the RMA faces obstacles in the form of powerful, change-resistant bureaucratic forces.¹

This state of affairs should concern us, because even if pursuing the RMA reflects a rational choice (as US defense leaders claim),

past experience casts doubt upon their ability to implement such sweeping changes. This article employs the example of the Desert Storm air campaign to illustrate those aspects of organizational processes and governmental politics that tend to inhibit the adoption of innovative technology and doctrine. Its methodology employs insights gained from the three models developed in Graham T. Allison's *Essence of Decision*, his seminal work on government decision making—the rational actor, the organizational process, and governmental politics models. This article first demonstrates how the policy choices in question, while not entirely predictable, nonetheless resulted from explicitly rational means. Its purpose is not to argue that the policy choice is the correct one (in the sense of being optimal); rather, it aims to show that a rational process led to the selected course of action. Next, for the case of the air campaign, it examines how organizational processes and governmental politics combined to alter this rationally chosen course of action. Finally, these findings will be combined to suggest an actionable set of recommendations aimed at enhancing RMA implementation by explicitly incorporating organizational and political factors from the start.

Admittedly, the two cases are dissimilar in important ways. The air campaign originally known as Instant Thunder was a strategy for the attainment of national objectives through the innovative use of existing forces and doctrine, while the RMA entails protracted innovation and implementation processes.² Further, selection of the Instant Thunder strategy was largely a discrete decision made by Gen. H. Norman Schwarzkopf and endorsed by his superiors, whereas the RMA involves multiple decision makers charged with selection, procurement, and integration of advanced weaponry throughout (and even beyond) the US military. Yet, both cases share a common thread in that both address the application of technology to warfare in new ways. Therefore, effects present in pre-Desert Storm planning may find parallels during RMA implementation. Furthermore, if organizational processes and governmental politics had a

significant impact upon Instant Thunder, we should expect the RMA to magnify these effects due to the vastly greater number of players and time horizon.

Analytical Framework: The Rational Actor, Organizational Process, and Governmental Politics Models

Many of the post-Gulf War analyses of airpower assumed that the air campaign was the result of a rational choice, which is a clearly compelling supposition. General Schwarzkopf asked for and received a strategic air campaign plan, an apparently rational course of action in that it played a coalition strength against an Iraqi weakness. However, this assumption fails to explain why the military was able to fight a war that ran counter to its basic assumptions about the proper role of air forces. US military leaders believed strongly that they should train as they were going to fight, and the US military in 1990 was thoroughly prepared to employ air forces in support of ground forces and in simultaneous, not sequential, fashion. Furthermore, our explanation must account for the influence of governmental politics. Despite the fact that the joint force air component commander (JFACC) concept was grounded in joint doctrine, it was extremely controversial.³ Services whose leaders disagreed with this concept had not taken steps to enable integration of their air forces under a unified air commander. We thus must examine not only the rational basis of this innovative strategy, but also the organizational and political dynamics that altered it and could have rendered it ineffective.

Graham Allison's study of the Cuban missile crisis, *Essence of Decision*, provides a useful framework for this analysis.⁴ In that work, Allison examined the events of October 1962 using three different conceptual models. The first, the rational actor model, treated governmental action as the result of rational choice.

The second, the organizational process model, built on concepts from organizational theory and economics to assert that such actions can be described as the output of organizational processes. Finally, the third, the governmental politics model, held that governments act in ways that reflect bargaining by players with different stakes and objectives. Allison makes the point that all three levels of analysis are useful. However, he claims that the second and third models provide the analyst with greater explanatory and predictive power.

These models lead to several insights into the decision making that led to an innovative air strategy against Iraq. Model 1 clearly applies, insofar as the plan which Schwarzkopf took forward was based on Col John A. Warden's strategic approach to planning an air campaign.⁵ In rational fashion, air planners began with national objectives as their starting point, identified complementary military objectives, and then chose targets to support those objectives according to Warden's theories of "inside-out" warfare. Next, applying Models 2 and 3 will permit us to understand how organizational processes and governmental politics influenced the air campaign plan. Organizational factors explain why the Air Staff's concept of operations was doctrinally distinct from that of US Central Command (CENTCOM) and the other services, and bureaucratic forces are responsible for the debates over the air campaign's linchpin, the JFACC.

Moreover, Allison's models have increasing levels of predictive and even normative power. The action taken by an organization at time $t + 1$ is partially determined by its existing processes at time t . Thus, governmental actors who took a certain position towards airpower during Desert Storm may adopt a like stance during current RMA-associated efforts to operationalize technology in innovative ways. Further, knowing which elements of a bureaucracy are ascendant gives important clues as to the likelihood that defense officials will succeed in transforming the military, or whether the future will be much like the present. This article advocates neither In-

stant Thunder nor the RMA; it merely aims to predict the success of the latter by analyzing the development of the former. The conclusions do have normative value, however, in that they point to some key ways in which defense policy can enable the US military to better leverage doctrine, organization, and technology. As Allison points out, systematic analysis holds the promise of better implementation of a preferred alternative by explicitly considering organizational and political factors at the outset.⁶

The Path to the Air Campaign

Graham Allison's framework of three models—the rational actor, the organizational processes, and governmental politics—provides a helpful insight into the conception and implementation of the innovative air campaign strategy in the Gulf War.

Model 1: Rational Actor

Using Model 1, the rational actor model, US goals and objectives are the most important factors influencing strategy selection. Although the United States acted as a member of a coalition, the air campaign was conceived, planned, and largely executed under US auspices. Therefore, for the sake of simplification, the United States will serve as the "rational actor" in this analysis.⁷ As President George Bush made clear, US goals included forcing Iraq's withdrawal from Kuwait, restoring Kuwait's legitimate government, securing the stability of the Persian Gulf region, and protecting US lives.⁸ The United States faced two alternatives: using force or relying on economic sanctions. A sanctions-only policy would have called for the coalition to build up its forces in-theater only enough to defend Saudi Arabia from invasion. Backed by this defensive posture, diplomacy would have been the chief means of reaching national objectives. Although this approach had clear advantages, the Bush administration ultimately decided that sanctions were unlikely

to compel Iraqi president Saddam Hussein to accede to US wishes.⁹

Another rational strategy was to rely on some combination of ground and air forces to threaten and, ultimately, to force Iraq to comply with US and coalition objectives. Possible alternatives included (a) an air attack on strategic targets in Iraq, (b) a combined air/ground offensive against Iraqi forces in Kuwait, or (c) a phased air/ground offensive in both Iraq and Kuwait. Ultimately, the United States chose the third option because it was most likely to bring about US objectives at an acceptable cost. Although option (a) was what Warden and other airpower advocates had in mind when they designed Instant Thunder, they took a considerable risk: the expectation that airpower alone would induce an adversary to give up territory lacked historical grounding. The second alternative, option (b), was consistent with then-current AirLand Battle doctrine. Of the three options, it was widely expected to produce the most casualties because it did nothing to diminish Iraqi opposition before a counterattack by ground forces. Iraqi forces were dug into their positions in Kuwait, expected the coalition to attack Kuwait, and were prepared to exact high numbers of coalition casualties. In addition, it would have been problematic to perform the "left hook" maneuver without first paralyzing Iraqi command and control at its source in Iraq proper.

On the other hand, combining air and land power in turn (option [c]) had historically been an effective means of applying military might while minimizing casualties. This approach had the additional advantage of giving commanders sequential options: for example, they could proceed with the air campaign (as per option [a]), and then decide later whether to go forward with the ground attack. If the air campaign did not achieve the desired degradation in Iraqi combat effectiveness and if casualty forecasts remained unacceptably high, the air campaign phase could be prolonged or the ground phase could be canceled. Note that option (c) is not Instant Thunder as Colonel Warden originally conceived it; the impact of the initial Instant

Thunder plan on this option is its massive parallel attacks on targets in Iraq proper.

While there is no record of decision makers explicitly weighing or rank ordering these three options, Allison claims such a record is not required: "Predictions about what a nation will do or would have done are generated by calculating the rational thing to do in a certain situation, given specified objectives."¹⁰ Thus Allison's Model 1 suggests that we merely logically connect the national objectives with the means chosen. The above Model 1 analysis, focusing on the strategic choice of actors, thus leads to an unsurprising outcome: it suggests that the United States chose to conduct a strategic air campaign in the context of a phased air/ground offensive (option [c]) because it was the most effective means of reaching US goals. Although option (b)'s conformity with AirLand Battle doctrine might have favored its selection, the expectation of high coalition casualties was enough for a rational actor to rule it out.¹¹ Overall, then, the choice of option (c) seems rather straightforward and provides few insights not already apparent to students of the Gulf War. But this is what we would expect, given Allison's observation that much strategic thinking falls within the confines of Model 1. As we shall see in the next sections, there were important organizational forces at play, both before and after the policy choice was made, that could have brought about a different course of action. Thus, the policy makers who chose option (c) had taken a necessary—but not sufficient—step towards the events of January 1991.

Model 2: Organizational Process

Taking a Model 2 organizational process approach, the decision—the strategic air campaign—becomes an output of organizational processes. We thus focus on which organizations were responsible for generating the air campaign plan and examine how their perceptions, priorities, and standard operating procedures (SOP) (as well as sets of SOPs which Allison calls programs) combined to shape the outcome. The chief organizations

to be concerned with here are CENTCOM and the US Air Force. Organizational processes help explain how these organizations produced two very different plans in the early days of the crisis.

The starting point for CENTCOM's August 1990 crisis response had roots in cold war plans and thus incorporated many of the underlying assumptions of that era. Military planners had anticipated that, in a regional contingency, the United States would be highly dependent on airpower but not in the sense of a strategic air campaign.¹² While CENTCOM's contingency plan for combating aggression in the Persian Gulf underwent extensive changes after the cold war, airpower was still cast in a decidedly supporting role on the eve of Desert Storm.

In addition to the planning process, the organization had an additional program at its disposal to help reduce uncertainty: simulated warfare in the form of exercises. However, diplomatic sensitivities and the lack of troops stationed in the region limited CENTCOM's capacity to conduct full-scale exercises. Command post exercises such as Internal Look 90 were the next best choice. While these exercises were valuable (for ex-

ample, they identified the need for a strategic air option), their defensive focus further habituated CENTCOM's and its air force component's (CENTAF) organizational processes.

CENTCOM's organizational processes thus actually limited its options by carrying forward assumptions without allowing for fresh thinking, especially about contentious doctrinal issues such as an independent air campaign. This is not to suggest that CENTCOM or CENTAF planners were intellectually lax, because it would be unreasonable *not* to build on previous experience. Starting each time with a clean slate would both prolong the planning process and discount the considered judgments of past strategists. However, it does underline how systemic factors—inherent in an organization's programs—can influence outcomes in ways difficult for policy makers to foresee.¹³

The second organization whose actions shaped the air campaign was the US Air Force, specifically the Air Staff. In contrast to CENTCOM's precise application of the military's prescribed planning process as outlined above, the Air Staff's input was quite ad hoc. In part, this reflects the reality of crisis action planning; still, it represents a significant de-



Some observers claim that Desert Storm's strategic air campaign heralded advances in technology and doctrine that will fundamentally reshape future warfare.



parture from the usual procedures. Led by Colonel Warden, a group of officers in a planning cell known as Checkmate came up with a plan for a strategic air campaign. This process was unhampered by the intellectual limitations imposed by years of devising defensive theater plans. The Checkmate plan was distinct from previous CENTAF thinking in that it attempted to render enemy leadership ineffective by disabling Iraq's information and communication capabilities. In addition, it focused on using force to create desired effects rather than to attrit. Eventually, Checkmate's planning efforts were incorporated into CENTAF's in the form of the "Black Hole" planning group in Riyadh.

In addition to planning and exercises, another key organizational process was the development of service and joint doctrine. The Air Force's doctrine had been shaped by the wars in Korea and Vietnam, both of which saw geographic and organizational division of airpower by service and even within services. Consequently, the Air Force's doctrine manual, AFM 1-1, *Basic Aerospace Doctrine of the United States Air Force*, was vague on a unified, independent role for airpower. As Col Edward Mann observed, "The main sections of the manual seem carefully to skirt this issue, stressing instead the interdependence of air, land, and sea forces."¹⁴ Joint doctrine likewise failed to mandate unified control of the air war.

Thus, the US military entered the Gulf crisis lacking an ingrained routine that ensured centralized control of strategic conventional air operations. In addition, the doctrine of the US Army, known as AirLand Battle, envisioned airpower as an integrated but subordinate element to the ground scheme of maneuver.¹⁵ Army doctrine did not view airpower as having an independent, strategic role. Further, naval forces lacked interoperability with the US Air Force; for example, the air tasking order (ATO) could not be transmitted automatically but had to be flown to the carriers daily. Marine commanders were likewise unfamiliar with the ATO process and preferred not to rely on it.¹⁶ However, Schwarzkopf's choice of organization and the

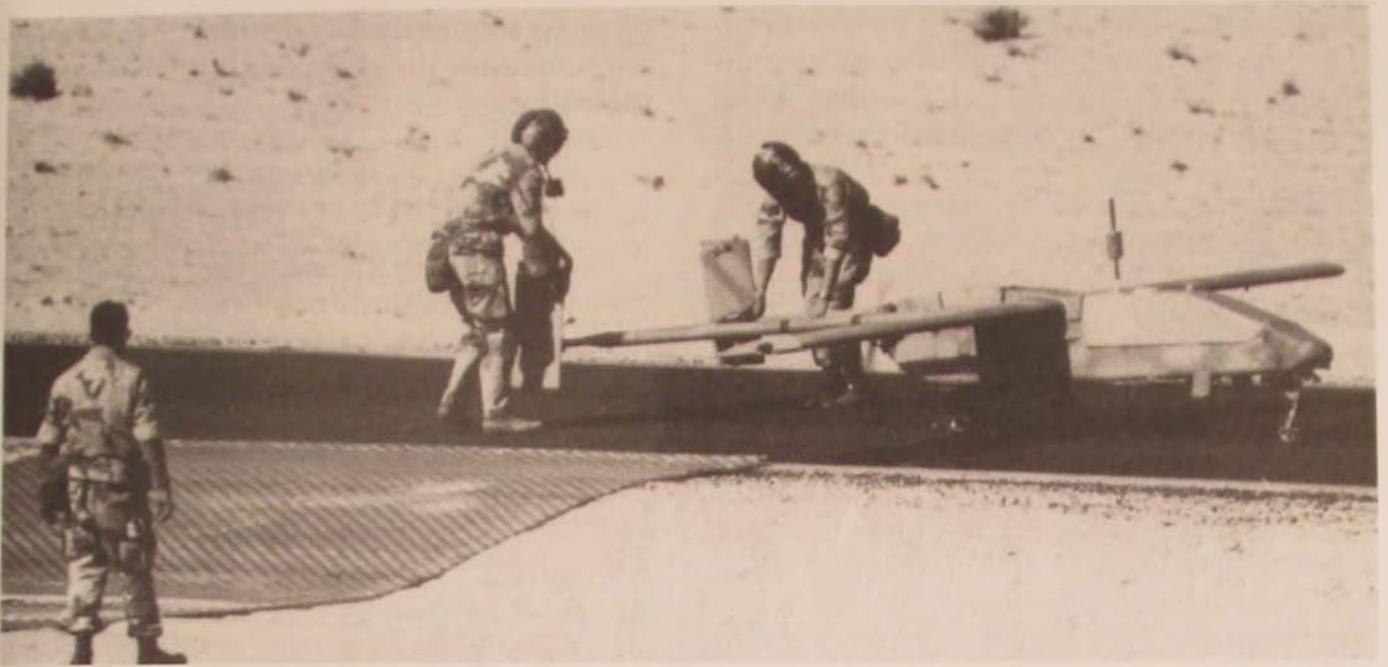
six-month buildup allowed enough time for planners and operators to overcome many of these challenges.

Model 2 produces several insights into the organizational processes behind Instant Thunder's development. First, CENTCOM's habitually defensive thinking from past planning processes initially restricted its range of options. Second, the Air Staff organization proved flexible enough to allow an ad hoc planning group to form, to develop a revolutionary plan consistent with political imperatives, and to communicate that plan to field commanders. An organizational problem—the lack of organic ability to plan a strategic air campaign—found an organizational solution—the melding of Checkmate and CENTAF's planning efforts. Finally, shortcomings in organizational processes and doctrines were resolved during the buildup phase.

In addition, the Air Force's partial acceptance of John Warden's ideas about parallel warfare represents a rare instance of peacetime organizational innovation. As Stephen Peter Rosen has pointed out, peacetime innovation generally requires more than a maverick who challenges the prevailing doctrine.¹⁷ According to Rosen, military innovation succeeds when senior officers enable younger officers favoring the innovation to gain a voice.¹⁸ Seen in this light, Gen Michael Dugan, Air Force chief of staff, took a critical step towards innovation when he put Warden in charge of Checkmate. An alternate organizational source of innovation was the CENTCOM planning staff. If the Air Staff's effort had not met his needs, Schwarzkopf could have turned to his planners and directed them to plan a strategic air campaign. However, as discussed earlier, past planning procedures may have inhibited CENTCOM planners from fully exploiting airpower's strengths.

Model 3: Governmental Politics

Allison's governmental (or bureaucratic) politics model posits that the various players within governments take positions that will tend to enhance their power, both laterally



An unmanned aerial vehicle in Desert Storm. The major limits on exploiting long-available technologies are not inadequate research, development, and procurement but rigid and parochial organizational systems within and among the military services.

and vertically. Because “where you stand depends upon where you sit,” Model 3 analysis causes us to identify the channels in which an issue arises, is decided upon, and finally implemented. These channels can have a major impact on governmental decision making by determining which players will be involved in a decision and how much power each will be willing to stake on the outcome. Decisions are the result of “pulling and hauling” between the various entities and cannot be understood without an appreciation of the forces that animate the participants. Furthermore, Allison points out, it is important to recognize that participants’ options fall within a range of acceptable actions, constrained by custom, doctrine, and past policy pronouncements.¹⁹

Allison’s emphasis on the importance of channels in determining outcomes is illustrated dramatically in the genesis of the air campaign. As discussed earlier, General Schwarzkopf chose to request a strategic air campaign plan from the Air Staff. Reintegrating Instant Thunder into CENTAF channels was predictably problematic; fortunately, General Schwarzkopf gave Lt Gen Charles A.

Horner, commander of CENTAF, wide latitude to modify the Instant Thunder plan, and there was time to overcome the “not invented here” objection. Moreover, constant communications between Checkmate and the Black Hole planners accounted for the strong continuity between Instant Thunder and the final plan for Desert Storm’s air campaign.²⁰ Thus, Model 3 analysis lends support to the conclusion that channels of communication can strongly influence outcomes.

Schwarzkopf’s choice of the Air Staff as the source for the campaign plan also had the effect of putting the Air Force in the bureaucratic driver’s seat with Warden at the controls. Although planners from all services contributed to the Instant Thunder plan, it was Warden who took the plan to the other services. Thus, his ideas about airpower were embedded in the plan from the start—including, critically, the value of an air campaign plan.²¹

Model 3 analysis also considers the impact deadlines can have in forcing decisions. During the Gulf crisis, deadlines played an important role. On three separate occasions, Gen Colin Powell discussed with the president the

deadline for making a decision to commit to an offensive strategy rather than to rely on sanctions. Therefore, in late October 1990, President George Bush decided to augment the initial, defensive force with a much stronger, offensive force. Without Powell's insistence, Bush may not have recognized the exact point in time when he had to choose between indefinitely prolonging sanctions and developing an offensive capability.²²

Why an Air Campaign?

The three models each lead to important insights into the strategic decision making culminating in Desert Storm's air campaign. We find that the air strategy is consistent with a rational actor theory and that it is clearly the product of organizational processes and bureaucratic politics. The continuity among these analyses cannot be wholly unexpected. If in Model 1 we had decided that a rational actor would have chosen a completely different strategy, it would lead us to seek, in Models 2 and 3, to uncover those organizational and political processes that may have led decision makers astray. As it happens, however, Models 2 and 3 have allowed us to identify several characteristics that enabled the military to produce new operational capabilities by combining existing technology with enabling doctrine.

First, it is useful to have a well-considered, overarching vision that is shared throughout the chain of command. Schwarzkopf's support for Instant Thunder's core concepts enabled disparate organizations to collaborate on the end product. Second, the vision should be made actionable by adopting organizational programs to guide all agencies responsible for planning and implementation. In the case of Desert Storm's air campaign, this meant the centralization of air operations under the JFACC using the air tasking order process. Last, decision makers must have a means of perceiving the cascading impacts that their decisions often have. The presence of these same attributes—an actionable, clear vision combined with a transparent mecha-

nism for implementing decisions—might notably increase the prospects for RMA implementation.

The Path to the RMA

In undertaking the RMA, the US military is choosing the most difficult of possible paths to the future. Singleness of vision and linear paths to strategy implementation are not the strong suits of the US military. Rather, Allison-style "pulling and hauling" amongst roughly equal actors—the services among themselves and the legislative and executive branches above them—better characterizes the milieu in which this revolution will play out. This brings us to our objective, which is to assay the prospects for the RMA by extrapolating the insights gained from the above air campaign analysis. Here, Allison's models can be expanded to suit our purposes. Using Model 1, we will expose the rational basis for the decision to pursue the RMA. An essential question here is whether the decision process has furnished the Department of Defense (DOD) with a clear vision that can unite disparate organizations. Model 2 then leads us to consider the relevant organizations involved in implementing the RMA. Is it likely that these agencies, by employing their existing programs, can combine their efforts to produce a true transformation? Finally, using Model 3, we can predict the impact of governmental politics on the RMA. Given the decision-making and implementation channels, will leaders have a clear picture of how each alternative either contributes to or detracts from the overall objective? Further, will the parochial interests and past stances of the players subvert the intended transformation?

Model 1: Rational Actor

Both the Quadrennial Defense Review (QDR) and the National Defense Panel (NDP) reports relied upon rationally based analyses which led each to recommend that the US military should actively seek to transform itself. The analyses differ primarily in the speed with



Gen Charles A. Horner. Fortunately, General Schwarzkopf gave General Horner wide latitude to modify the Instant Thunder plan, and there was time to overcome the "not invented here" objection.

which they advocate adopting the RMA. The QDR is the more conservative of the two because it focuses more on current threats; the NDP emphasizes future dangers. In classic rational-analytic fashion, the QDR first states national goals and objectives; it then identifies alternatives, evaluates likely consequences, and recommends actions that hold the greatest promise of meeting the objectives. A key assumption of the QDR is that political and military engagement overseas will continue and that American military superiority will be maintained. Further, the QDR strategy calls for the United States to be able to undertake two overlapping major theater wars while defense resources remain

constant. Taken together, these factors produce the QDR's central trade-off between speed of adoption of the RMA and preservation of current force structure.

Since the RMA presumably would be realized in part through buying new systems, the QDR's procurement budget is a partial reflection of the speed with which the United States feels it can exploit the RMA. One alternative was to maintain the current trend, in which procurement was expected to rise from \$42.6 billion in fiscal year (FY) 1998 to \$50 billion by FY 2001. Using force-structure cuts to achieve more procurement spending, the QDR entertains alternative increases in procurement to \$60 to \$65 billion.

Ultimately, the QDR chose to hedge against uncertainty by taking the middle ground, maintaining that a \$60 billion procurement budget would permit "increasing new systems and technologies at a reasonably aggressive rate, with modest room for new program starts. The goal for this path is to begin transforming the force to meet future challenges, while also shaping and responding to meet near-term challenges."²³ The \$60 billion QDR's procurement budget, however, only brings it in line with what was originally planned in the president's FY 1998 budget. As documented in the QDR, procurement spending declined 63 percent between 1985 and 1997. The goal of \$60 billion still represents a 50 percent drop since 1985.

Model 1 analysis brings us to the conclusion that the United States has chosen to pursue the RMA because it wants to be able to dominate in future battles. It weighed the importance of continuing current commitments against the risks of being slow to transform. In sum, the United States has elected to pursue the RMA as quickly as fiscal constraints permit, while simultaneously maintaining the ability to respond to interim security challenges.

The second Model 1-style analysis of the impact of the RMA on US defense strategy came from the NDP. The essential difference between the NDP and the QDR is that the NDP's analysis discounted the probability of two nearly simultaneous major theater wars and focused instead on future threats. Since the panel differs with the QDR in its assessment of the strategic environment, Model 1 correctly predicts that it arrives at a different set of recommendations. The panel decided that "selecting a strategy appropriate for twenty years hence was not possible or desirable." Instead, the NDP argued that the United States should embark upon a transformation strategy. This is a fundamentally different approach from the QDR's, but it still conforms to Model 1 in that it assumes the United States can select and pursue a strategy through rational choice.

The panel embraced the RMA, stating, "We are on the cusp of a military revolution stimu-

lated by rapid advances in information and information-related technologies." Like the QDR, the NDP perceived a risk inherent in sacrificing force structure to pursue the RMA. "If we transform ourselves too quickly, we may inadvertently dismantle elements of our military that have kept us safe all these years and still have to play a role."²⁴ However, the panel also discerned a risk associated with tarrying: "If we do not lead the technological revolution we will be vulnerable to it."²⁵ Along with recommending several reorganizations and shifts in roles and missions among the active and reserve components, the NDP identified a need for \$5 to \$10 billion annually to pay for "initiatives in intelligence space, urban warfare, joint experimentation and information operations."²⁶

Despite their differences, both the QDR and the NDP concluded after rational analysis that the nation should pursue the revolution in military affairs. More importantly, there are indications that they add up to a shared strategic vision. For example, Gen Charles Krulak, Marine Corps commandant, has advocated "literally rebuilding our strategy-making process, rebuilding the way we look at national security, in order to capitalize fully on all of our national strengths." Krulak says his vision extends "beyond interagency, beyond jointness."²⁷

Model 2: Organizational Process

As our earlier analysis of Desert Storm's air campaign suggests, however, the rational strategies outlined in the QDR and the NDP do not foreordain the progress of the RMA. One observer, contending that focusing on procurement funding misses the key issue, wrote that "the major limits on exploiting long-available technologies are not inadequate research and development and procurement, but rigid and parochial organizational systems within and among the military services."²⁸ Enunciating a policy in the QDR is one thing; translating the goals into actionable capabilities is another altogether.

The DOD's policy-making repertoire relies upon many planning and programming or

ganizations, well practiced in the art of assessing the impact of different funding levels on acquisition programs within functional areas, as well as in the employment of an arsenal of analytic tools. Like CENTCOM on the eve of the Gulf crisis, the DOD's ability to generate alternatives is heavily reliant upon existing organizational structures and programs. For example, the process of assessing the worth of new technology often employs models and simulations, such as the Deep Attack Weapons Mix Study, which was used to evaluate the effectiveness of various weapons mixes in nominal scenarios. These models, because they use data from past conflicts, are better at modeling operational capabilities of attrition-oriented doctrines and force structures than those of information-based future war.

The Department of Defense's key program for ensuring that the DOD budget reflects policy priorities is the planning, programming, and budgeting system (PPBS). Instituted by Secretary of Defense Robert S. McNamara in the 1960s, the PPBS comprises inputs from the secretary of defense, the Joint Staff, the combatant commanders, and the services. However, the PPBS is inherently limited when it comes to implementing innovations such as the RMA. For example, although it is possible to identify total procurement spending, gauging the amount of that spending which is being devoted to the RMA is more difficult. Because of previous commitments to purchase existing systems, those systems stand a far better chance of being funded than do RMA technologies. Thus, the organizational process is much more likely to come up with the targeted spending level of \$60 billion for procurement than it is to ensure that those funds are devoted to exploiting the most promising new technologies.

The NDP suggested giving RMA programs better visibility by creating a Joint Forces Command that would be the locus of joint innovation and experimentation. Further, it advocated giving the joint forces commander budget authority to ensure that the experimentation program was fully supported.²⁹ This organizational mechanism proved successful when deficiencies were perceived in

special operations forces in the 1980s, so the NDP recommendation seems to reflect an attempt at organizational learning.

Another expectation we can derive from the pre-Desert Storm period is that the inability to realistically rehearse new doctrine can leave contentious issues unaddressed and logical flaws undiscovered.

Rather than create a new Joint Forces Command, however, Secretary Cohen recently decided to designate the US Atlantic Command (USACOM) as the executive agent for conducting joint war-fighting experimentation. To ensure visibility at the DOD level, Secretary Cohen charged the Defense Resources Board with conducting periodic reviews of USACOM's activities as part of its RMA oversight role. Significantly, USACOM will not have budget authority; instead, the chairman of the Joint Chiefs of Staff, in coordination with the services and the Office of the Secretary of Defense, will establish levels of funding support.³⁰

The individual services will thus continue to play an important role in RMA implementation. The evidence suggests that they are already responding to the strategic vision through organizational routines. The advanced concept technology demonstration (ACTD) program is one example. The DOD developed this program to inject innovation rapidly into the field. According to Secretary Cohen, "The ACTD is our approach to capturing and harnessing technology and innovation rapidly for military use at reduced cost."³¹ Some ACTD programs have succeeded; for example, Portal Shield, an automated warning system that can detect chemical and biological attacks, was deployed in 1998, only two years after development began at the Naval Surface Warfare Center.³² Others have met with more resistance. The Navy canceled

the arsenal ship, a much more costly ACTD, after a funding cutback by the Congress.³³

The platforms also developed constituencies in Congress, whose members saw the continued production of the platforms as ensuring jobs in their states or districts.

Another expectation we can derive from the pre-Desert Storm period is that the inability to realistically rehearse new doctrine can leave contentious issues unaddressed and logical flaws undiscovered. The services are addressing this by supporting efforts such as the battlelab concept. Battlelabs are an attempt to put creative thinkers in an environment where they can experiment with and quickly incorporate new operational and logistic concepts. Focusing on concepts such as unmanned aerial vehicles, battle management, and space, these battlelabs span the spectrum of technological, organizational, and functional innovation. Battlelabs, together with war-fighting experiments, joint exercises, and simulations, represent organizational routines aimed at developing what sociologists call organizational intelligence. These efforts could have the same impact that Checkmate and the Black Hole planners had on Instant Thunder if they are nurtured by senior leadership.

As sociologists Barbara Levitt and James G. March point out, however, there are several obstacles to learning from experience. First, it will be difficult for the battlelab experiments to remain relevant in the face of rapidly changing technology and threat uncertainties. Second, during the process of experimentation, the battlelabs may develop routines that themselves may become barriers to innovation. Finally, the lessons learned from experimentation may be ambiguous since the causal factors may be complex. According to Levitt and March, learning can be counterproductive in terms of organizational intelli-

gence if it leads to erroneous inferences. Thus, although the DOD's experimentation program is an impressive indicator of organizational commitment, it is not a guarantee that the RMA will succeed.³⁴

Furthermore, while ACTDs and battlelabs may assist the department as it attempts to elevate the priority of the RMA, budgeting processes may continue to delay it. The PPBS itself inserts a two-year delay between identifying a need for change and providing the required funding. In addition, the budgeting process creates pressures that can work against innovative technology. In recent years when the cost of operations exceeded planned levels, the shortfall resulted in cuts to research and procurement accounts. This is because operations funds come out of current appropriations, while modernization involves both current and future spending. Money cut from research and development, and to some extent procurement programs, usually results in only a small percentage of the cut becoming available for spending in the current year. As the QDR points out, the result has been "a yearly postponement of modernization goals."³⁵ Furthermore, since acquisition of legacy systems has also received a higher priority in the past, Allison's Model 2 leads us to expect that organizational tendencies will tend to perpetuate this pattern. Overcoming the inertia of continuing to modernize existing forces even in the face of a recognized need to invest in new technology is an ongoing organizational challenge.

The organizational lens reveals both barriers and the enablers for the RMA. Organizations are responsible for its lack of visibility in the budgeting process, absence of ownership and advocacy by any one segment of the defense establishment, and an acquisition process that can increase the cost of innovation by focusing on procurement rather than prototyping. On the other hand, organizational changes are taking place; senior officials have become involved in promoting technology development, and routines now exist to bring advanced technology and the institutions that nurture them into the organization. Still, it remains to be seen whether

these organizational changes can overcome barriers to real innovation. The success or failure of RMA efforts may turn, not solely on organizational factors, but also on the characteristics of governmental politics.

Model 3: Governmental Politics

Using the governmental politics model reveals that the services largely control key action channels for injecting discontinuous change into military forces. Desert Storm's dramatic technologies were available to all the services, but each assessed those technologies differently and thus exploited them at different rates. Often, existing action channels tended to incorporate the technologies into certain platforms, whether or not it was the best way to exploit the technology. Each platform—aircraft carrier, fighter aircraft, and main battle tank—had a community that had grown up around it and sought to enhance that platform's capability. The services became committed to those platforms, which were seen as central to each service's ethos. The platforms also developed constituencies in Congress, whose members saw the continued production of the platforms as ensuring jobs in their states or districts. Therefore, the surest channel for fielding RMA technologies is to build them into and around carriers, manned aircraft, and heavy armor. The difficulty is that this approach is unlikely either to produce the most defense capability or to engender rapid adoption of RMA capabilities.

One of the means of overcoming this bureaucratic inertia is to develop a consensus among the end users, in this case the combatant commanders, that an innovation will help them perform their mission. This would create a powerful governmental advocate to push for new capabilities, just as Schwarzkopf's insistence on a strategic air campaign was critical to its success. US Space Command, for example, sends teams to work with the unified commanders to ascertain their needs. Eventually, as new capabilities are fielded, it helps ensure that operational plans incorporate them.³⁶ This creates re-

quirements "pull" which can accelerate procurement.

Another counter to bureaucratic inertia is simply to bypass it, as Schwarzkopf perhaps did when he approached the Air Staff directly. This was also the case with the development of the F-117A, according to Paul G. Kaminski, the former undersecretary of defense for acquisition and technology. He credits the successful acquisition of the F-117A to the program's highly classified status during development. Thus, it "was not in visible competition with other Air Force programs. Had it been in competition with other programs . . . we might not have done the program at all."³⁷ Security was also helpful to the F-117A effort in that it shielded the plane from criticism during development and it "facilitated open and non-adversarial relationships with the Congress."³⁸ However, secrecy is a high price to pay; it can mask inefficient practices, it is expensive to maintain, and it can make field commanders reluctant to exploit new capabilities.³⁹

Moreover, the United States has now moved from a threat-driven resource allocation environment to a cost-driven one. As obvious threats vanish, it will become more difficult to develop requirements "pull." Finally, as Kaminski observes, current cost constraints can induce decision makers to shy away from taking risks, thus inhibiting technological advances. ACTDs may counteract this tendency. By actively seeking out new concepts "before their time," they may alert threatened constituencies who could then work to thwart them.

Even if new technologies are funded and injected into platforms where they can have maximum effect, they must be incorporated into established doctrine before being built into force structure. The battlelab concept provides only a partial answer to this issue. Between successful demonstration of new concepts in a battlelab and their codification in new doctrine lies another treacherous path, fraught with bureaucratic obstacles. Joint doctrine threatening to particular platforms or services can become contentious, as the JFACC experience makes plain. The battlelabs

are service creatures, as are many future-oriented war games. Until new concepts are built into the joint analytical models used to study

Organizational processes and governmental politics hold the key to military innovation, whether on the eve of battle or at the dawn of a revolution in warfare.

alternate force structures, they will have limited impact on operational plans and acquisition priorities.

The services have two limitations that inhibit their ability to serve as action channels for implementing change. They lack both the authority to conduct the joint experimentation which will fully test their visions and the credibility to present the outcomes of field tests in terms that would not be seen as parochial. The joint innovation concept advocated by the NDP attempted to address this shortcoming. In short, this concept included joint field testing by a new Joint Force Command, integrating service battlelabs under a Joint Battlelab, and joint national training centers. This concept offered a means of institutionalizing innovation by giving the joint force commander the ability to combine the innovation programs of each of the services. Joint exercises and experiments would gain credibility because they would no longer be conducted under the auspices of commanders in chief (CINC) with their regional focus or the services with their limited scope. However, this approach would have made the joint force commander a powerful arbiter of the direction of the RMA. Thus Secretary Cohen's recent decision to designate USACOM as the focus of joint experimentation, while leaving the services fully empowered to experiment within their core competencies, is an attempt to both enhance and preserve multiple routes to transformation.

Still, joint implementation of USACOM's experimental outcomes presupposes coop-

eration from the services in their traditional roles of organizing, training, and equipping the armed forces. Since the services will be giving up control over the scenarios in which the new concepts will be tested, the outcomes may fail to gain service support. To the extent the services reach different conclusions over the results of joint experimentation, they will disagree on the advisability of force structure and doctrine changes. Furthermore, the acquisition process introduces a powerful, service-centered action channel that can frustrate needed innovation. As Allison points out, "When a governmental or Presidential decision is reached, the larger game is not over. Decisions can be reversed or ignored. . . . For after a decision, the game expands, bringing in more players with more diverse preferences and more independent power."⁴⁰ Joint experimentation combined with service implementation thus runs the risk of uneven integration of revolutionary capabilities.⁴¹

Conclusion and Recommendations: Whither the RMA?

We have seen several indications of the probable course of the RMA by applying observations gleaned from Instant Thunder. On the rational-actor level, Desert Storm's air campaign and the future trajectory of the RMA seem like logical, even predictable, courses of action. On the organizational level, they look much less inevitable. Instead, they become the products of organizations moderating each other, as demonstrated by the cooperation between CENTAF and Checkmate on the one hand, and the proposed leveraging of service initiatives to produce joint innovation on the other. In addition, on the governmental-politics level, the cases raise our awareness of the clashes among parochial entities.

This analysis has highlighted the forces at work as the military attempts to come to terms with the RMA and points the way toward better implementation. First, at the rational-actor level, the military is constrained by lim-

ited defense dollars and by the need to balance the opportunities for transformation with the risks of abandoning current commitments. While a shared vision of a transformed US military is emerging, it is not enough. An authoritative leader, whether it be the JCS chairman or some other official, must champion its implementation. Only then will it gain support among the unified CINCs and the services. Second, the services have instituted organizational processes that can lead to innovation, but again, a true RMA might not result. Traditional budgeting processes must not be allowed to subvert attempts to prototype revolutionary new capabilities. By designating the Defense Resources Board to oversee USACOM's joint experimentation efforts, Secretary Cohen took an important step

in this direction. However, the intellectual underpinnings of defense decisions must be rigorously scrutinized as well; outdated assumptions must be excised lest they undermine the validity of models and simulations. Finally, if USACOM is to become an effective force for joint experimentation, it will need strong support as it contends with existing action channels—namely, the services' traditional provinces of training and equipping combat forces. Governmental-politics analysis indicates the need to prevent seemingly unconnected service decisions from impeding coordinated implementation. Seen in this light, organizational processes and governmental politics hold the key to military innovation, whether on the eve of battle or at the dawn of a revolution in warfare. □

Notes

1. In this article, the RMA refers to advances in precision weaponry, stealth, and information technology, combined with enabling doctrine, which the DOD asserts will fundamentally change future war.

2. Instant Thunder refers to the strategic plan for the Desert Storm air campaign against Iraq. Instant Thunder was developed by the Air Staff in Washington, D.C., for Gen H. Norman Schwarzkopf in August 1990 and then transferred to Gen Charles Horner and his staff in Riyadh, Saudi Arabia.

3. According to joint doctrine, the service with the preponderance of the air assets (not necessarily the Air Force) was normally appointed JFACC. See Joint Publication 3-01.2, *Joint Doctrine for Theater Counterair Operations (from Overseas Land Areas)*, 1 April 1986, III-4, quoted in Edward C. Mann III, *Thunder and Lightning: Desert Storm and the Airpower Debates* (Maxwell AFB, Ala.: Air University Press, April 1995), 56.

4. Graham T. Allison, *Essence of Decision: Explaining the Cuban Missile Crisis* (Boston: Little, Brown, 1971). Interestingly, one of the questions Allison treats in *Essence of Decision* is why the United States chose to blockade Cuba as opposed to initiating air strikes. Although the circumstances of the Cuban missile crisis and Desert Storm are clearly quite different, and air strikes against Cuba were in the offing had the blockade failed to reach its objectives, the divergent strategies chosen during the two crises are striking.

5. See John A. Warden III, *The Air Campaign: Planning for Combat* (Washington, D.C.: National Defense University Press, 1988). At the time of the Gulf War, Warden was the Air Staff's deputy director of plans for war-fighting concepts.

6. Allison, 268.

7. This is not to say that allies were uninvolved in the choice of strategy; rather, it is to suggest that because the preponderance of the resources ("means") came from the United States, the "ends" of the United States were critically important in adducing the strategy which connected the ends to the means. In this formulation, allied concerns can best be expressed as constraints rather than causal factors.

8. Thomas A. Keaney and Elliot A. Cohen, *Gulf War Air Power Survey: Summary Report* (Washington, D.C.: Department of the Air Force, 1993), 27 (hereinafter referred to as *GWAPS*). The very

existence of clear, militarily achievable objectives may have been a decisive factor in the coalition's ultimate success, in contrast to the US experiences in Vietnam and Korea. The devotion of Schwarzkopf and his planners to keeping these objectives explicit throughout the planning process is a second clear lesson of Desert Storm.

9. Bob Woodward, *The Commanders* (New York: Simon & Schuster, 1991), 341.

10. Allison, 5.

11. It does not follow that AirLand Battle doctrine was flawed. Particularly in the context of its primary aim of countering a Soviet offensive in Europe, AirLand Battle was an effective strategy.

12. *GWAPS*, vol. 1, pt. 1, 17.

13. Allison points out that standard scenarios can be slow to change. Allison, 84.

14. Mann, 173.

15. *Ibid.*, 29.

16. *GWAPS*, vol. 1, pt. 2, 50-54.

17. Stephen Peter Rosen, *Winning the Next War: Innovation and the Modern Military* (Ithaca, N.Y.: Cornell University Press, 1991), 12.

18. *Ibid.*, 105.

19. Allison, 171.

20. *GWAPS*, vol. 1, pt. 1, 87.

21. Warden, 128.

22. Colin Powell, interview, *Frontline: The Gulf War* (WGBH: Show no. 1407T, 9 January 1996); on-line, Internet, 19 March 1998, available from <http://www.pbs.org/wgbh/pages/frontline/gulf/oral/powell/2.html>.

23. *Report of the Quadrennial Defense Review* (Washington, D.C.: Department of Defense, May 1997), 27 (hereinafter referred to as *QDR*).

24. National Defense Panel, *Transforming Defense: National Security in the 21st Century* (Arlington, Va.: National Defense Panel, December 1997), 1 (hereinafter referred to as *NDP*).

25. *Ibid.*, 8.

26. *Ibid.*, vii.

27. John Donnelly, "Top Marine: Bring Bankers and Greenpeace on as Planners," *Defense Week*, 24 November 1997, 9.

28. William E. Odom, "Transforming the Military," *Foreign Affairs* 76, no. 4 (July/August 1997): 63.

29. NDP, 70.

30. News release, Office of the Assistant Secretary of Defense (Public Affairs), no. 252-98, 21 May 1998.

31. William S. Cohen, Secretary of Defense Response to the National Defense Panel Final Report, 15 December 1997; on-line, Internet, 19 March 1998, available from <http://www.dtic.mil/ndp/comments/secdefcom.pdf>.

32. John Donnelly, "Bases in Korea and Mideast to Get Bio-Warning Networks," *Defense Week*, 26 January 1998, 1.

33. It should also be noted that the contrast between success and failure for ACTDs such as these can have many root causes which themselves are microcosms of Allison's three models: *rational* (costs of program do not justify gains discounted by probability of success), *organizational* (radical technologies call for more flexible acquisition processes than do incremental improvements), and *bureaucratic politics* (programs which could lead to force structure changes are more likely to threaten a constituency base in Congress and to lack an experienced corps of military officers who appreciate their value).

34. Barbara Levitt and James G. March, *Annual Review of Sociology* 14 (1988): 333-35.

35. QDR, 20.

36. Thomas S. Moorman Jr., "The Space Revolution," in Jacob Neufeld, George M. Watson Jr., and David Chenoweth, eds., *Technology and the Air Force: A Retrospective Assessment* (Washington, D.C.: United States Air Force, 1977), 261.

37. Paul G. Kaminski, "Low Observables: The Air Force and Stealth," in *ibid.*, 307.

38. *Ibid.*, 308.

39. For example, prior to Desert Storm, planners had to trust in the F-117's purported capabilities. Their lack of direct experience with the F-117, fully three years after it had begun to emerge from being a "black" program, introduced an element of increased risk.

40. Allison, 172-73.

41. One promising means of avoiding this outcome has been developed by the Net Assessment Office within the Office of the Secretary of Defense. These so-called Transformation Games, which allow decisions to play out over a simulated period of several years, give decision makers a means of perceiving the cascading effect of their actions on RMA implementation.

Education makes a greater difference between man and man than nature has made between man and brute.

—John Adams

To Kill a Stalking Bird

Fodder for Your Professional Reading on Air and Space Superiority

DR. DAVID R. METS*



SINCE THE EARLIEST DAYS of aviation, the most important and probably least controversial of the Air Force missions has been air superiority—and now air and space superiority.¹ In fact, most of the initial impetus for the development of the capability to control the air came from the ground generals in World War I. Air reconnaissance and artillery spotting had become so important to ground battle that the generals wanted to prevent enemy interference with their own reconnaissance and spotting and deny those functions to the adversary. By the middle of the Great War, that led to the genesis of air units specialized to command the air.² It is clear enough that although airpower had not been decisive in that war, soldiers and airmen alike predicted that in future campaigns, it would be necessary to control the third dimension before other

goals could be achieved there—on the ground or at sea.

Hopefully, the reader and Harper Lee³ will indulge my play on words in the title. My excuse is that most of the time, American air combat has taken place not in defensive roles but on the offensive—to protect our attacking air-to-ground birds that themselves were being stalked by Fokkers, Messerschmitts, Mitsubishi, and MiGs. The purpose of this article, then, is to give the reader a survey of the way that our theory, doctrine, and technology for air and space superiority have evolved. Hopefully, that will be a stimulant for additional professional reading on the subject. To facilitate that, I shall include a starter list of readings I recommend to midlevel professional air warriors/scholars for the enhancement of their grasp of the primary Air Force core competency. Finally, the article reviews

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A Shoestring Primer on the Evolution of Air and Space Superiority Theory and Doctrine

World War I, 1914–18: *There had been stray thoughts about the need to command the air even before the outbreak, but as of 1914 air units had not been specialized according to function. Air combat did begin even in 1914, but it was not very effective then. However, technological gains in engines and armament made it more important to specialize squadrons intended to command the air—both engine power and the development of synchronizers were important here. Air superiority swung from one side to the other because of advances in air combat, and there was even an early example of what we would call offensive counterair (OCA)* today when the British had to withdraw several fighter outfits from the front to respond to the German air attacks on London—which yielded an advantage to the Germans over the front.*

Interwar Period, 1919–39: *In general, most airmen emerged from the war with the notion that the key to air superiority was air combat between fighters. In the United States, for example, the 1st Pursuit Group was thought of as the elite unit of the Air Service and early Air Corps until the late 1920s. However, the march of technology and the arguments of Giulio Douhet made the notion of air superiority through attacks on enemy airpower on the ground ever more attractive. Billy Mitchell thought that air superiority might be achieved through some mixture of air combat and ground attack, but Douhet thought that the latter would be by far the more important element. As the 1930s wore on, though, Air Corps thinkers were increasingly won over to an OCA approach.*

World War II, 1939–42: *Radar had been little anticipated before World War II, yet it did much to weaken the potential for OCA and strengthen the air defense. The Luftwaffe achieved some marvels by opening its attack on Poland and France with assaults on enemy airpower on the ground—and then again against the Red Air Force in 1941. But in the interim in 1940, in large part because of radar, the attack on the Royal Air Force (RAF) and its infrastructure on the ground failed. The US Eighth Air Force made a major effort to wreck the German air force and its supporting aircraft industry on the ground, but the results were disappointing to say the least. Though the shortage of oil (in part due to US air attacks on synthetic plants) weakened the Luftwaffe, Gen Carl Spaatz and many others emerged with the conclusion that the air battle between the escorts and the stalking Focke-Wulfs and Messerschmitts had been essential to the winning of air superiority. Up to that point, practically all of the air-to-air kills had been done by guns (and unguided rockets). Although most other countries were moving to cannons toward the end of the war, the United States stuck with the .50-caliber Brownings.*

Dawn of the Cold War, 1945–65: *A combination of things made the Air Force increasingly specialized in long-range nuclear attack during the late 1940s while the rest of its functions were sadly underfunded. Nuclear weapons, jets, and long-range missiles were coming on strong, and the thought was that any war would be short and total. However, we got into*

*OCA refers to offensive operations intended to destroy enemy airpower on its bases or in its factories, or through air battles over its own territory. Defensive counterair refers to winning air superiority through air defense over one's homeland as with the Royal Air Force in the Battle of Britain.

Korea, and because the unanticipated political limits prevented a true OCA attack across the Yalu River, most of the job was done with air-to-air combat in the extreme northern reaches of the peninsula. It was the first great campaign among jets, but the weapons were still guns—50-caliber Brownings on the US part and cannons on the Communist side. The technical virtues of the MiG-15 were a nasty surprise to us, but we decided that crew experience and training had been decisive. After the Korean War, the United States returned to its emphasis on strategic nuclear attack although it was still introducing new jet fighters at short intervals. By then, the United States was going over to cannons, the 20 mm appearing first in the late models of the F-86 and the now-standard M-61 of the same caliber first appearing in 1958 in the F-104 and F-105. By the end of the 1950s, the United States led the way to the air-to-air missile (AAM), the first kill being made by a Sidewinder off a Chinese Nationalist F-86 in 1958. Toward the end of the period, a portent of things to come was the downing of a US U-2 over the USSR in 1960 by a surface-to-air missile (SAM). The greater part of Eighth Air Force losses in the last year of World War II had been to antiaircraft artillery (AAA), but the surface element of the air superiority battle nevertheless received little thought before Vietnam.

High Noon of the Cold War, 1965–82: There had been substantial enthusiasm for AAMs before Vietnam, but their kill ratios turned out to be disappointing, and it was deemed necessary to go back to a gun installation in fighters where it had been omitted. The ground defenses in North Vietnam turned out to be more formidable than had been foreseen, and that stimulated the building of a suppression of enemy air defenses (SEAD) capability that had not been much anticipated. There was a synergy between the North Vietnamese fighters, SAMs, and AAA that had been underestimated. Most of the US fighters had not been optimized for the air battle, and that was costly. All the same, the greater part of the kills were done by infrared and radar missiles, and in the Arab-Israeli wars, the trend was duplicated. The Israelis achieved a classic victory with an OCA attack in 1967, but the air battle was much more important in 1973, and there, too, the missile kills were becoming a greater part of the whole. By 1982 all of the British kills in the Falklands War were done with missiles, and almost all of the kills in the Israeli operation in the Bekaa Valley that same year were by the same method.

Twilight and Sunset of the Cold War, 1982–Present: The Air Force reacted to the frustrations of Vietnam in part by designing three new fighters: one optimized for air combat (F-15), one for close air support (CAS) (the A-10), and one swing-role bird (F-16) for both ground attack and air combat. Later, it moved to create a follow-on to the F-15C with the F-22, originally optimized for air-to-air combat. Unlike the F-4C, all these aircraft except the A-10 came equipped with the M-61 20 mm cannon plus missiles, although most of the F-16s had only infrared Sidewinders. The F-15 came with both Sidewinder and semiactive radar missiles (AIM-7, Sparrows), and later when the AIM-120 active radar missile proved successful, both aircraft were retrofitted with it. Again in the Gulf War, almost all of the kills were by missiles, and the United States seems to have suffered only one loss to the stalking birds—a Navy airplane that may have fallen to a MiG missile. All the rest of the losses were to SAMs and AAA. By then, though, stealth had entered the equation to weaken the SAM threat, and SEAD also helped greatly. At the end of the day, many airmen hoped that the US dominance of the Gulf War air battle might be continued by the coming of the F-22 with all the advantages discussed above plus stealth, supercruise (sustained supersonic speed without afterburner), and an ever increasing information edge.

an important new work on the subject, Col Marshall L. Michel's *Clashes: Air Combat over North Vietnam, 1965-1972*.⁴

The Current Conceptual Framework: Air and Space Superiority

The current, official vision of the way in which superiority in the third dimension—the air and space regime—should be achieved and maintained is contained in Air Force Doctrine Document (AFDD) 1, *Air Force Basic Doctrine*, of September 1997. It is signed by the current USAF chief of staff, Gen Michael E. Ryan.⁵ Doctrine is said to emerge from history and from speculative thought, and there is much in the current concept that has come down to us from the earlier manuals and experience in war. The new document asserts that the offensive is often the more effective way to foster air superiority. That has been a strongly held notion among airmen from the very beginning.⁶ Thus, the function is divided up into OCA and defensive counterair (DCA), with the airman's preference usually being the former. For a time, the Air Force was proposing that the conceptualization of the function include yet another mission area—SEAD—but it was unable to persuade our allies to go along with that to make it a part of NATO doctrine.⁷ So in that context, SEAD has remained a part of OCA, and that practice is now also carried into the new Air Force basic doctrine manual.

One of the ideas inherited from the past has to do with air superiority as an objective. Douhet thought that the mere achievement of command of the air would make the enemy case so hopeless that it might even be enough to impose one's will on him without the need to punish his civilian population and wreck his economy.⁸ But it did not turn out that way in World War II, and by the time the US Army Air Forces (USAAF) set to writing its scheme to defeat Germany in the summer of 1941 (Air War Plans Division, Plan 1 [AWPD-1]), it was clear to the authors that air superiority was

instead a means to an end. It was not a final objective but an intermediate one that would take priority in point of time to enable the achievement of later goals.⁹ It is the later concept that is in the current Air Force doctrine manual, asserting that the struggle for air supremacy, or at least air superiority, usually has to be the first call of the air commander. It does recognize, however, that sometimes in desperate ground emergencies, it may be necessary to divert air forces to the support of ground units. It also allows that sometimes the battle for air superiority may be conducted simultaneously with other operations—parallel attack, to use the modern vernacular.¹⁰ As noted, it does distinguish between air supremacy and air superiority and laments that sometimes the achievement of the former may simply be too expensive. It also warns against premature relaxation of the pressure because of the possibly huge penalties of even a temporary revival of enemy ability to contest the command of the air. Finally, in its discussion of the "core competencies," the new manual unifies the effort to achieve space superiority with the battle for air superiority. In a later chapter, when discussing the functions of airpower and space power, it creates separate categories for counterair and counterspace.¹¹

In its discussion on functions and elsewhere, the 1997 version of basic doctrine continues the traditional Air Force emphasis on the centralization of command—especially for the sake of the battle for control of the air. Both OCA and DCA must be under the command of a single airman in order to implement the idea of centralized control and decentralized execution for the most efficient accomplishment of those functions.¹²

The Genesis of Air Superiority Theory and Doctrine

Central to the very definition of professionalism is the requirement that the members have a specialized expertise and a system of schools to develop it. In America, at first, it was a technical expertise: civil engineering for

the Army and mechanical or steam engineering for the Navy. But after the Civil War, the technical dimensions were reduced, and the education systems focused more on the professional officer as a military rather than technical expert. As with other professions, the history of the development of this expertise was a vital part of the professional's understanding.¹³ So, one can argue that anyone who would understand the current conceptual framework for the primary Air Force core competency must know something of its evolution.

It is not at all surprising that the idea that people must control the medium in which they operate should come to the fore in the very earliest days of aviation. At the outbreak of World War I, we were emerging from the heyday of Alfred Thayer Mahan, during which his argument was that if a state gained command of the sea, then all else would follow. Even Douhet was explicit in the notion that the concept should be expanded from the sea to the air.¹⁴

The machine gun is often given the major credit for the World War I defensive stalemate when it should really be more widely shared with many other factors. Artillery was one. The Civil War round used to fragment into two or three pieces. However, by World War I, artillery projectiles could be made to reliably burst above the surface and to shower thousands of high-velocity fragments on those in the open below. On the defensive, the infantryman was in a trench; on the offensive, he was in the open. Another factor was the presence of prying eyes above, some in balloons but many more in aircraft. It was then the rule that the offensive had to have a numerical advantage of three or four to one to have any chance of overcoming a prepared defensive line. But how was a general to accumulate that kind of mass when aircraft were warning his adversary in plenty of time to undertake countermeasures? So it happened that a cry came up first from the ground commanders that one must have air superiority over the battlefield. Ground generals must have a free ride for their own observation aircraft; enemy generals must be denied a free ride for theirs.¹⁵

But how could an air force achieve this? Immediately after the guns of August spoke their piece, aviators began casting about for methods of gaining air superiority. Some of the things tried seem pretty bizarre now. The Russians actually achieved an air-to-air kill with a towed grappling hook. The British flew above attacking zeppelins to drop flaming darts onto their hydrogen-filled envelopes. Booby traps were set up in the baskets of captive observation balloons by filling them with explosives. When an attacking fighter rolled in on them, the observer would parachute out of the basket, and the operator on the ground would detonate the charge when the enemy was near the balloon.¹⁶

But the problem was gradually overcome by a combination of more conservative measures. First, engine power was increased rather rapidly as propulsion was still on the steep part of its development curve. Also, the Lewis gun was adapted to aerial combat, and it was only about half as heavy as the Maxims and Vickers of older design—and it did not need a water jacket. But if one added a second crew member to man the gun, then the weight increase would certainly prevent overtaking enemy aircraft and therefore defeat the purpose. Putting the guns outboard of the propeller arc was tried, but neither they nor their ammunition was yet reliable enough to place them out of the reach of the pilot. Finally, means were found to fix the gun to the aircraft and fire it through the propeller arc without shooting one's self down. Thus, pilots were then able to aim their whole aircraft at the target without trying to fly and manipulate a gun at the same time.¹⁷

But technology alone was not enough. By the middle of the war, general-purpose aviation units were supplemented by specialized squadrons. On both sides of the line, organizations optimized for air combat were built. On the German side, a defensive policy was generally followed—usually the aviators were instructed to give combat only over their own territories. In the British case, Hugh Trenchard—at the head of the Royal Flying Corps for much of the war—consistently ordered an offensive approach. This led to many combats

over the German lines and considerable losses. The role of the dogfight in all this has been romanticized in the popular literature. The vast majority of kills were done on crews who did not know they were under attack until they were hit—one pass and away was already a good tactic.¹⁸ By midwar, formation flying for the sake of both mass and situational awareness was common practice on both sides.

In general, it is probably fair to say that most aviators carried away the idea that air superiority is the most important mission and that it is best achieved in an air battle. Air-drome attack had been tried but was not all that successful. No one had given much thought to AAA before the war, and it was held in disdain by most of the aviators coming home.¹⁹

Most airmen and soldiers realized that airpower had not been a decisive factor in the outcome, but most of those were predicting that command of the air would soon become necessary to the success of all other operations on land, at sea, and in the third dimension. In the words of Billy Mitchell himself, "The principal mission of Aeronautics is to destroy the aeronautical force of the enemy, and, after this, to attack his formations, both tactical and strategical, on the ground or on the water. The secondary employment of Aeronautics pertains to their use as an auxiliary to troops on the ground for enhancing their effect against hostile troops."²⁰

The Interwar Air Superiority Thought

Mitchell was undoubtedly speaking for the majority of airmen in the early twenties in insisting that air superiority was the first mission and a prerequisite of everything else. Those were austere times, and only three groups were allowed in the Air Service, organized along functional lines. The fighters (then called pursuits) were brought into the 1st Pursuit Group, and clearly that was *the* elite organization. There was one bomb group, the 2d, and one attack unit, the 3d

Attack Group. It was clear enough that Douhet then thought that command of the air in the future would be achieved by massive attacks on enemy air forces and their supporting structures on the ground. But in America, the thought was that a part of the contest would take place in the air. Douhet contended that bomb units might well be all that was required, but Mitchell in the early twenties argued that a balanced force of fighters and bombers as well as ground-attack and observation aircraft would be necessary.²¹

Mitchell was court-martialed and convicted in late 1925, and he resigned from the Army in early 1926. From about that time forward, he moved away from his original balanced-force approach toward Douhet's concentration on strategic attack.²²

There can be no doubt that the strategic bombing mission was further elaborated and emphasized at the Air Corps Tactical School in the years that followed. However, one must also note that it has often been exaggerated into an obsession in the literature. Neither the attack nor the air superiority mission was ignored, and both were in the curriculum throughout the interwar period.²³

At the school, a heated debate went on in the early and mid-1930s between Claire Chennault and a few other pursuit advocates versus the prevailing majority of bomber enthusiasts.²⁴ He questioned the "Big Sky" concept and the notion that the bomber would always get through, asserting that an air defense system was practical, given a competent early warning network. The bomber advocates, however, arguing in the absence of any knowledge or anticipation of radar, rejected the Chennault argument. Not only did Chennault agree with the bomber people that the escort fighter was probably an impractical concept, but also he asserted that such use of fighters yields their most precious asset—the initiative.

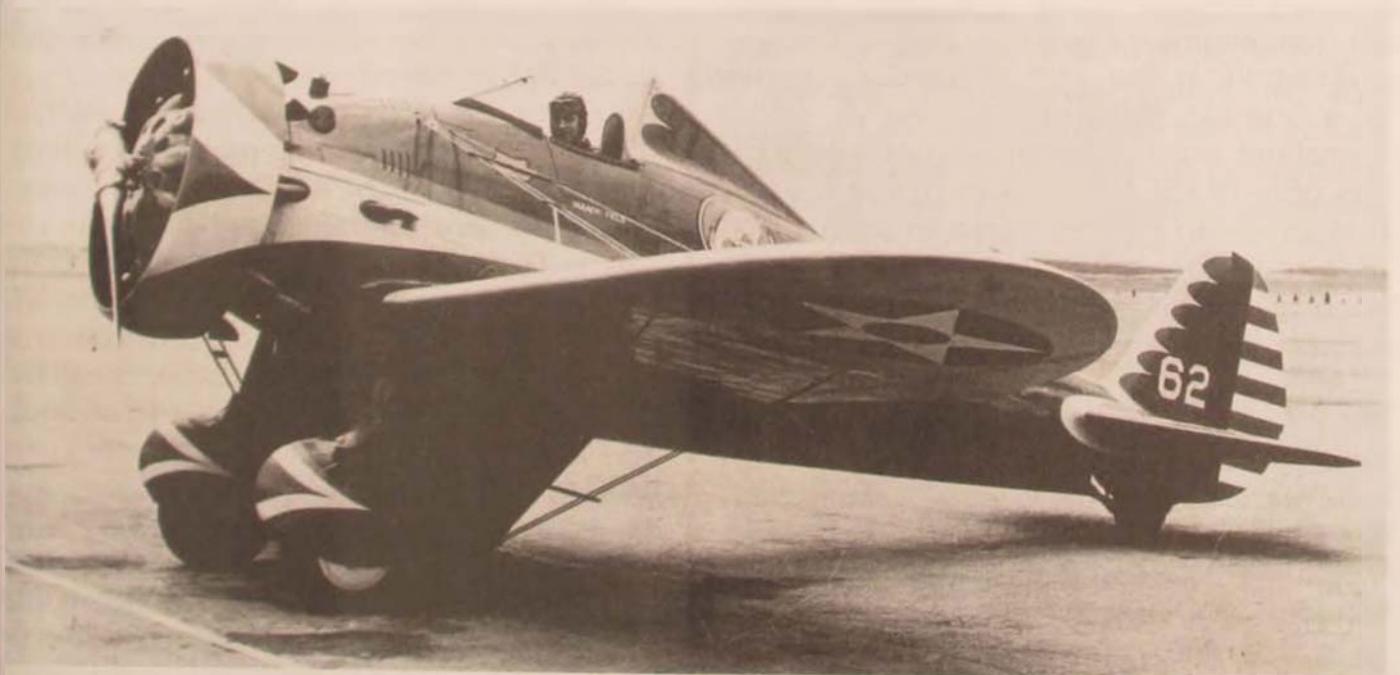
Too many historians have indulged in the wisdom of hindsight to paint Chennault as a pariah who was right and who was drummed out of the service because of his outspokenness in a correct cause. But arguably Chennault was wrong, and the establishment was right—in the context of the facts then known

and assumptions that could *then* be reasonably made. First, much of the literature was highly colored by the knowledge that five years later, the defense worked in the Battle of Britain. The bomber did not get through. However, radar and an integrated command and control (C²) system were in place for the Battle of Britain. The disastrous experience of the 33d Pursuit Group at Thelpte in Tunisia two years later in the absence of radar and a competent reporting system showed what was likely to occur.²⁵ In the mid-1930s, it would have taken a superhuman act of foresight to anticipate the coming of radar in just five short years.²⁶ Even in Chennault's own theater—China—his argument is weakened by the fact that the Japanese had more important fish to fry than to wreck his forces. In 1944, when the Japanese had been set back on their heels everywhere else, they marched against Chennault's bases in China and were not to be stopped. Finally, the drumming-out part of the story has also been dramatized. As Martha Byrd has shown, Chennault had a lucrative contract in hand in the summer of 1936 from the Chinese Nationalists *before* he put in his retirement papers.²⁷

Further, one can make a plausible case that the Air Corps certainly did not ignore the

need for progress in either ground support or pursuit, notwithstanding the emphasis—perhaps even overemphasis—on strategic attack. The doctrinal equivalent of “putting one's money where one's mouth is” may be the kinds of equipment that actually got onto the ramps of attack and pursuit units.

The first monoplane metal bomber—the Martin B-10—got onto the line of the Air Corps in 1932.²⁸ The first metal monoplane fighter to reach line service in any of the major air forces was the Boeing P-26 Peashooter, arriving in 1933.²⁹ The first monoplane in the British service, where the threat of bombing attack was much greater than with the United States, was the Hurricane, which got to squadrons in 1936—and did so with fixed-pitch wooden propellers and a partially fabric-covered fuselage. The first unit in the German air force to receive monoplanes traded its biplane He-51s for Messerschmitt 109s in the summer of 1937.³⁰ The first monoplane fighter in the carrier-deck loads of the Navy was the Brewster Buffalo, which was delivered in 1939. The first Air Corps monoplane fighter with closed cockpit and retracting landing gear was the Seversky P-35, which first flew in 1935 and was ordered in quantity in 1937. The Curtiss P-36 was similar, and it too first flew in 1935. Delivery of



Boeing P-26 Peashooter



Seversky P-35

the production models began early in 1938, and some P-36s were in combat against the Japanese at Pearl Harbor.³¹ The first Soviet monoplane fighter with retracting gear and closed cockpit, the Polikarpov I-16, went into squadrons starting in 1934 and outclassed the German and Italian fighters in the first part of the Spanish Civil War—albeit the Russians were still dependent upon Western technology transfer for their engine designs.³²

The point is that, notwithstanding the lack of a bomber threat against the American homeland, pursuit design was not ignored. It was only in the last months before the war that European fighters began to open a lead over those of the United States—and with good reason because they were much more threatened by possible bombing attacks.

About the time that the B-17 first flew and the P-35 and P-36 were coming into service, a major reorganization of the Army Air Corps took place. In 1935 the General Headquarters Air Force was established at Langley Field, Virginia. It was made up of three wings and resembled the current composite wings much more than the organizations the Air Force has had for most of the time since Pearl Harbor. That is to say, each had a variety of types,

including bombers, fighters, and sometimes attack aircraft. Theoretically, each of the wings was similar and qualified for all Air Corps missions. However, the 2d Wing at Langley Field had all of the B-17s, and the 3d Wing at Barksdale Field, Louisiana, was more oriented toward the attack mission. Neither the 1st Wing at March Field nor the other two could be described as having pursuit as a primary function—although all three possessed fighter squadrons.³³

On the eve of Hitler's attack on Poland, then, there was a heavy emphasis on long-range bombers in the Air Corps even though the equipment to implement that was still scarce. The implication was that a substantial portion of the battle for air superiority would be through the OCA attack on those bases in striking range of the US homeland. The grand strategy was still purely defensive in outlook, and the primary mission was defense. There were indeed some doubts among airmen that the bomber could go it alone. The development of an escort fighter was a low priority—and the hope was that the bombers could be made self-defending. Perhaps that was only making a virtue out of necessity (or perceived necessity) since the feeling was widespread



Curtiss P-36

that any escort with enough tankage to go the route with the bombers would necessarily not be agile enough to contend with short-range interceptors at the far end of the trip.³⁴ Although Gen Henry Arnold was aware that the Navy was doing research in the area, in the rest of the Air Corps there was not even a glimmering that radar was just around the corner.³⁵ He was also getting feedback by the summer of 1940 that the Me-110, which *had* been designed as a long-range escort fighter, was a failure in the Battle of Britain, and the Me-110 itself had to be escorted.³⁶

The Impact of World War II

The German attack on Poland in 1939 seemed to be a splendid demonstration that Douhet had been right. The best place to get the stalking birds was in their nests, where they were helpless. That part of the Polish air force that escaped did so by dispersing to outlying bases—where maintenance and supply support were so poor that the sortie rate was driven low enough to be ineffective.³⁷ Offensive counterair seemed to be the way, and nothing in the experience seemed to

contradict the general notion that air superiority came first, followed by interdiction, and—where necessary—direct support of ground forces through CAS.

Battle of Britain

Dunkirk before and Barbarossa after the Battle of Britain seemed to mask some of the doubts that should have arisen from the fight over the British Isles. The Germans started with their standard OCA against the RAF on the ground, but it did not go as well as it had in Poland. Here, they were faced with an integrated air defense system (IADS)—the first in the world. It included radar; a first-class pair of fighters, which were agile and heavily armed; a competent C² system; and an elaborate anti-aircraft structure under the operational control of the air commander. Further, it also included a good organization of ground observers to supplement the radar and first-class communications. The Luftwaffe persisted in its OCA attack for a while, but when it became frustrated, turned to other objectives (like London), shy of having achieved command of the air. By mid-September 1940, it had been defeated. The Luftwaffe had made a

start against British radar but for several reasons still underestimated its importance.

Many "lessons" came out of the Battle of Britain. Among them was the notion that maybe the bomber would not always get through after all. Defensive counterair can sometimes work. In the words of Gen Carl Spaatz,

A well dispersed air force is a most difficult target to destroy on the ground. Bombing attacks against airdromes have resulted in surprisingly little damage against aircraft and combat crews although considerable damage has been done to buildings and major permanent installations. However this damage does not prevent the units from operating effectively. On the other hand the action of fighters against hostile daylight raids has been very effective and in such cases where airplanes are brought down the combat crews are casualties, this in contradistinction to the destruction of planes on the ground. Since the combat crew eventually becomes the neck of the bottle this makes destruction in combat doubly effective. The RAF officers I have spoken to on this subject state that their pre-war conception that the place to destroy an Air Force is at their nests was wrong.³⁸

Combined Bomber Offensive

The initial British attempts at bombing the Germans seemed to affirm that DCA had much more potential than had been anticipated, and the RAF went over to night operations to preserve the security of the bomber force. This was done at a considerable cost in target acquisition and bombing accuracy, but it seemed necessary.

When the Americans got into the bombing of Germany, they too learned that the bomber might not be able to get through with acceptable losses. Further, the USAAF made more of an effort to establish air superiority through OCA than did the RAF. The airfields and aircraft factories did prove hard to get, and later the impact of bombing the Luftwaffe's fuel sources was felt only gradually, although from the late spring of 1944 the effect proved increasingly significant. But in the first half of 1944, most of the mayhem worked on the

Luftwaffe was done in the air—by US long-range fighter escorts and bomber gunners. Air superiority was achieved by the deadline—the invasion of Normandy. However, the factors leading to that result were complex indeed. Suffice it to say at this point that the USAAF leaders came away with the idea that the bombers could get through with acceptable losses only through a campaign that resembled Mitchell's approach more than Douhet's. There would have to be both an air battle and an attack on the ground echelons of the enemy air force plus its supporting infrastructure. Even in Russia, the effects of the German OCA assault at the outset were only temporary, and at the end of the day the USSR owned the air, very largely through air battle there and over Germany itself. In the words of two of the principals,

General Carl A. Spaatz: When did you know that the Luftwaffe was losing control of the Air?

Reichsmarschall Hermann Göring: When the American long range fighters were able to escort the bombers as far as Hanover, and it was not long until they got to Berlin. We then knew we must develop the jet planes. Our plan for the early development of the jet was unsuccessful only because of your bombing attacks.³⁹



Messerschmitt 262, the jet Göring mentioned

The US Strategic Bombing Survey (USSBS) seemed to agree. It attributed the German loss of command of the air to a combination of attrition of fighters in the air and on the ground and damage to aircraft production, which delayed that program and assured air superiority over Normandy. Command of the air was then sustained by the additional measures of destruction of aircraft fuel sources and, finally, the disruption of the transportation system, which wrecked supply and aircraft repair.⁴⁰

Pacific

In the end, the war against Japan did not do much to change perceptions of the nature of the battle for air superiority. In the Pacific, too, the factors leading to command of the air for the Allies were complex.

The irreplaceable Japanese pilot force suffered severe attrition at the Battle of Midway and during the Solomon Islands campaign. The Japanese committed their best surviving naval air units to the latter struggle and lost them. But they proved unable to replace them in part for the want of fuel, technological limitations, and bad doctrines. Literally hundreds of half-trained pilots went down in the Battle of the Philippine Sea of 1944, to cite but one of many samples.

Yet, there were also some classical OCA operations against Japanese bases in New Guinea before then, and the Southwest Pacific campaign might even be seen as one designed to capture air bases with ground forces acting in support of the main striking arm—the air forces. Again, the need for escort was demonstrated there, and the length of the leaps that Gen Douglas MacArthur's forces made was usually determined by the range of the fighters available.

Judgments

By the time the B-29 attacks on the Japanese homeland started, the two Japanese air forces (army and navy) were too weak to do much about them, even if they somehow could have been persuaded or coerced into cooperating with one another. The bomber losses over

Japan were but one-third of what they had been over Europe. Too, the Japanese training system had degenerated to the point where nearly half of their losses were noncombat—getting lost or crashing on landing and the like. The Allies by midwar enjoyed a substantial qualitative and quantitative advantage in aircraft and weapons, and though the Western organizations were hardly more unified in command than the Japanese, there did seem to be more unity of effort through cooperation.⁴¹

It has seldom happened that victory is so complete that the winner has complete access to his victim's country—and even to his archives. That did happen with both Germany and Japan in World War II. Even that, though, does not reveal a picture that is absolutely complete and absolutely true. Often, the defeated will tell the victors what the latter want to hear. Often, the investigators will somehow reveal to the defeated that which they want to hear. Often, much of the desired data is lost in the final fires. But the USSBS is about as valid feedback as one ever gets from wars. Its final judgment on air superiority in World War II was expressed thusly: "The German experience suggests that even a first class military power—rugged and resilient as Germany was—cannot live long under full-scale and free exploitation of air weapons over the heart of its territory. . . . The significance of full domination of the air over the enemy—both over its armed forces and over its sustaining economy—must be emphasized. That domination of the air was essential."⁴²

The Battle for Command of the Air in Korea

At the time of the USSBS report, few people thought that any war in the future would be anything but a total war. Fewer still thought that our wartime ally, the USSR, would soon be our enemy—and that before the decade was gone, she would explode a nuclear device. And fewer yet suspected that we would again be involved in an overseas war before the



B-29s suffered relatively little attrition over Japan in World War II, but the MiGs shut down their daytime operations near the Yalu River in Korea.

aircraft with which we had fought World War II had worn out.⁴³

Yet, we were back in combat in Korea before the fifth anniversary of V-J day. The tiny North Korean air force was wiped out in short order, but soon the People's Republic of China, now the second great Communist state, had intervened in the war. Airpower was a disappointment in Korea to most airmen. But it was not because of the want of air superiority. Most of them felt that we enjoyed more or less complete superiority not only over the battle lines but all the way up to the Yalu River. It is true that there were some pretty fierce air battles, by then all jet, over the northernmost reaches of North Korea. However, the United Nations (UN) forces seemed to have a free ride all over South Korea and almost up to the northern borders of North Korea.⁴⁴

Many interpretations of the frustrations with airpower rest upon the notion that the new form of limited war denied UN forces the possibility of conducting an OCA campaign against the Communist air forces on the ground. Rather, they had to depend wholly on the air battle and to do so at a long range from friendly air bases and in the enemy radar

environment. That yielded three great advantages to the enemy: numbers, the ability to refuse battle, and ground-control intercept direction by radar.⁴⁵ Too, the Chinese air force had MiG-15s that were surprisingly competent in some ways, even in comparison to the US F-86 Sabre, which did most of the air combat on the UN side. Until very late in the war, American airplanes were armed only with .50-caliber machine guns, whereas the MiGs had cannons—with much heavier projectiles, albeit with a lower rate of fire. Missiles were not on the scene yet for either the air or the ground defenses—although ground fire did impose many casualties on UN aircraft.

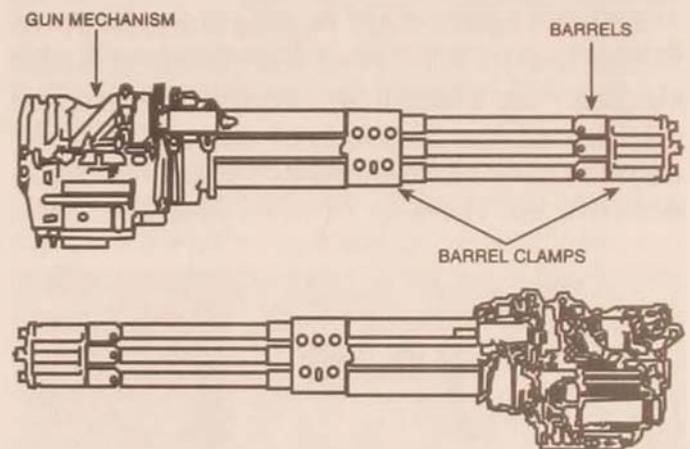
The war did have an OCA dimension to it, notwithstanding the fact that the rules of engagement (ROE) prohibited the B-29s from crossing the border and the MiGs made it too dangerous for them to do so in any event (in daylight). The Chinese did, however, try to extend their base structure southward to increase their pressure on the interdiction airplanes in the north and perhaps to provide some air support to their troops in the line. However, the B-29s and fighter-bombers successfully denied that extension by their continual attacks on bases under construction.⁴⁶

The organization of airpower in the Korean War was anything but centralized. The Air Force did create a joint operations center and won the cooperation of the other services in it, but that had little effect on the air battle. The air combat in MiG Alley up at the Yalu was largely an Air Force affair, as the Navy and Marine Corps did not yet have fighters that were at all competitive with the Communist jets. So, the lack of centralized organization did not matter much for the air superiority battle.⁴⁷

In the end, the judgment was that the superior combat experience among the American flyers was the decisive thing in generating the overwhelming kill ratios against the MiGs. The Sabre was not superior to the MiG-15 in some important respects. Its armament had a much higher rate of fire, but the Communist cannons had a much larger projectile weight. The MiG also had a weak gun-sight, a small ammunition load, and guns that often jammed.⁴⁸ The official organization certainly had little to do with the ratio. The Communists had the advantage in C² in their own ground-controlled intercept (GCI) environment. They also had the ability to refuse battle and a large numerical advantage. So, there is little left but combat experience to explain it. And that was largely fortuitous. Only five years had passed since World War II, and many of the seasoned veterans of that conflict were still in good shape and on active duty or in the reserves.⁴⁹ Perhaps all that led to complacency in America—especially in light of the fact that few came away with any thought of ever again engaging in a limited war on the Asian mainland.

In the years immediately following Korea, the commander in chief and the secretary of state were telling the country there would be no more Koreas. Although fighter and ground-attack aviation were never ignored altogether, the emphasis was very much on massive retaliation. It was the heyday of Strategic Air Command (SAC), and for all others it seemed that the only way to get funding was to acquire a slice of the nuclear pie. Still, it was during the Eisenhower administration that some important things were done that

affected US conventional war capabilities. The *Forrestal* class of aircraft carriers came on the line—the Navy got its supercarriers after all. The C-130 rolled out in 1956 to become one of the most successful tactical aircraft programs ever. One of the best nonnuclear weapons in history, the M-61 Gatling gun, got its initial operational capability (IOC) in 1958 aboard the F-104 and F-105. Too, AAMs appeared for the first time, and one of them—the AIM-9 Sidewinder—got its initial kills aboard Chinese Nationalist F-86s that same year.⁵⁰ Before Eisenhower left office, the first SAM kill was achieved when a US U-2 was brought down over Russia by an SA-2. That these things would work a substantial change on the world of air combat was only dimly perceived.



The M-61 Gatling gun came on the line in 1958 and still equips practically all US fighters except the Marine Corps Harrier, Air Force F-117, and Air Force A-10 Warthog.

History may record that in one respect, the Eisenhower administration's foresight was crystal clear—the space part of air and space superiority. The German combat employment of ballistic missiles in World War II even while General Eisenhower was campaigning across France set the world thinking about the future of space and space weapons. Soon after, both RAND and the Scientific Advisory Board were declaring that satellites and intercontinental ballistic missiles (ICBM) might soon become practical.⁵¹

The remarkable thing about the initial space policy was that Eisenhower, himself a military man, chose the "freedom of the seas" rather than the "command of the air" model to be sought as humanity first extended its military activity into space. Well before anybody had orbited anything in space and before he could have had an inkling that the Russians would do so first, President Eisenhower established the policy of freedom of space—similar to freedom of the seas. A part of that was his "open skies" proposal at the summit of 1955 and his whole effort to keep military space and civilian space activities strictly separated—and to give the latter a commanding role. His whole effort was greatly facilitated by the fact that the Soviets under Khrushchev launched sputnik without any attempt to get permission for overflight, and the satellite clearly flew over US territory repeatedly and with impunity.⁵²

So, well before Gary Powers was shot down in the U-2 in May 1960 for violating Soviet airspace, the Eisenhower administration had established the freedom-of-space idea to facilitate space reconnaissance that was to underwrite the viability of both deterrence and



Although the emphasis in the 1950s was on strategic nuclear warfare, tactical doctrine and technology were not ignored; the C-130 has been used for all sorts of tactical missions as a gunship, bomber, airborne delivery of troops and resupply, medical evacuation, and many other functions. Starting in 1970, portable infrared missiles like the SA-7 became a threat, and one countermeasure was the launching of flares.

arms control. At first and for a long time, the space program clearly had a strategic orientation although it sometimes had tactical effects. Among its early achievements were the revelations that neither the "bomber gap" nor the "missile gap" had any basis in fact. That was an important factor in the leveling off of the US strategic nuclear order of battle, which in turn led to stabilization of the nuclear arms race.

Space-based weather forecasting began to have a significant effect on the Vietnam War. Communications technology was so facilitated by satellites that it actually became an impediment in some cases. During the evacuation of Saigon in 1975, for example, the presence of a satellite communications terminal in the Defense Attaché Office (formerly the Military Assistance Command, Vietnam [MACV] headquarters building) was a godsend. Ultimately, all other links with the outside world were broken. But satellite communications made it so easy for many leaders everywhere to reach the few officers responsible for marshalling the evacuation that they hardly had time to attend to their urgent duties—they were so busy answering queries from every headquarters between Nakhon Phanom and Washington.⁵³

Two years earlier, during the Yom Kippur War, the superpowers had been better informed as to what was going on at the battlefield than were the combatants themselves. In part, this was due to high-altitude reconnaissance from the SR-71 and the Foxbat. In part, too, both sides were getting satellite photographic intelligence that was instrumental in bringing a truce to the fighting—and to the stabilization of Middle East politics ever since.⁵⁴

Up to that point, then, I suppose that one could argue that the United States did not have space superiority. She could operate freely there herself but could not deny the adversary the free use of the medium. Still, the fact that the Soviets could also work there with impunity was not altogether negative in its impact on US national interests. We now turn to a review of an important new book as a vehicle for discussing the Vietnam War phase of the history of air and space superiority theory and doctrine.

“Clashes”: A New View of the Struggle for Air Superiority over Vietnam

So the United States entered the war in Vietnam in stages without much thought as to what her real objectives were, nor how she would get out. Her Air Force and Navy had emerged from Korea without much change in their doctrines on air superiority and probably had not fully articulated the implications of the subsequent new technology of AAMs and SAMs. It is probably also true that the services had not much considered that relationship between guerrilla war and airpower, nor were they as advanced in electronic warfare (EW) as they might have been. At the outset of Vietnam, precision-guided munitions (PGM) technology had hardly advanced at all (in principle) over the Azon guided bombs that had been used in Korea. Col Marshall Michel has now come forth with a new book* explaining how all that came to pass and how the performance might be improved in the future.

Thesis

Michel makes a persuasive argument that is not altogether new. The US air forces—Navy and Air Force—held their own for the early part of the war, once they found technical answers to the new SAM threat to their command of the air. But things turned sour during 1967, in part because the Vietnamese themselves were learning, and the technological responses were having a diminishing effect against them. Operation Rolling Thunder was shut down in the spring of 1968, and in the months that followed, the Navy went to work and repaired its training program with its Top Gun operation; the Air Force made some technological improvements but then did not do much with the air-to-air training effort. The result was that when the Linebacker operations came in 1972,⁵⁵ the Navy fared much better than did the Air Force. Only since then has the Air Force repaired the training system with such things as

Red Flag, changes at the Fighter Weapons School, and other programs.⁵⁶

Is the Author an Authority?

Colonel Michel has fine credentials for doing such a book. A native of New Orleans, he came into the Air Force in 1966 and flew combat sorties—more than three hundred—out of Udorn, Thailand, some in the RF-4 and others in the F-4E. He later spent time as assistant air attaché in Israel and on the Israeli desk for the Joint Chiefs of Staff (JCS). He then flew a tour in F-15s at Langley Air Force Base (AFB), Virginia. Michel later was on the NATO staff and retired in 1992. His writing style is excellent, and though he seems knowledgeable on naval aviation, the vast preponderance of his documentation is of Air Force origins. He has a nice combination of practical experience and professional study, but it is probably fair to say that his search of the literature on air and space superiority was competent but not exhaustive.

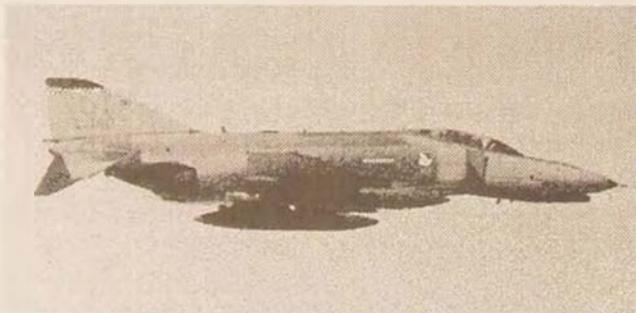
One of Colonel Michel's degrees is in English from Georgetown University, and that shows in his writing. Another, in international relations, is from Catholic University. He was also a fellow both at the Harvard Center for International Affairs and at Tel Aviv University. He is now working on another book, this one focused on Linebacker. It does seem to me that he makes one assumption that there is in the Air Force an inverse relationship between rank and the ability to profit from constructive criticism. A second might be that there is a direct relationship between high rank and the fragility of egos. Perhaps a third is that commanders and other high-ranking officers are omnipotent. I have no evidence that Michel was ever a flying-unit commander, and those apparent assumptions make me suspect that he was not.

The Argument

Clashes explains the disappointments of the battle for the command of the skies over

**Clashes: Air Combat over North Vietnam, 1965-1972* (Annapolis: Naval Institute Press, 1997).

North Vietnam as arising from a variety of factors, the most important of which is unrealistic air combat training before and during the war. Among the others, though, were equipment shortcomings. The main air-to-air fighter on the US side was the F-4, much larger than the MiGs it fought. That, plus the fact that it had a smoky engine made it less likely that the American crewmen would see their enemy before they themselves were spotted. Too, the design of the F-4 (originally intended to be a fleet-defense fighter against nonmaneuvering, large targets) yielded poor all-around visibility, which was especially bad toward the rear—the most likely avenue of enemy attack. Further, in the F-4C—the Air Force version—the cockpit layout was not “user friendly.” The switches were placed hither and yon, which made it difficult for the crews to manipulate them at the same time they were keeping watch for enemies outside the cockpit. Finally, the aircraft did not have an internal gun in either the Navy (F-4B) or the Air Force versions (F-4C and D). Here, Michel seems to imply that the shortcomings were somehow the fault of the senior leadership in the Air Force.

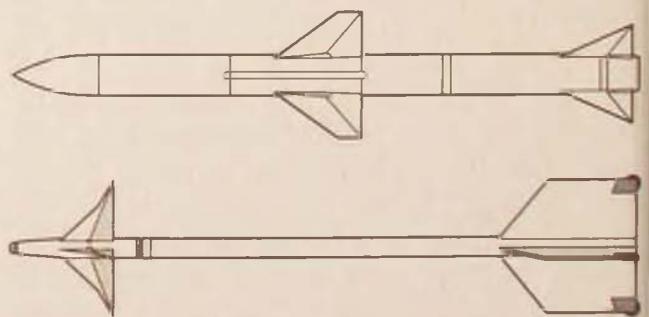


An Air Force F-4G for the suppression of enemy air defenses (only the F-4E had a gun installed)

The air-to-air weapons were also highly ineffective. Radar missiles were particularly difficult to set up in the heat of combat, and one had to keep the F-4's radar pointing at the target for the entire flight time of the missile.⁵⁷ The AIM-7 Sparrow (radar guided, semiactive)⁵⁸ was large, about a quarter of a ton, and it had a smoky engine—both factors making it easier to spot and evade with vio-

lent maneuvers. Too, when the Navy first developed the missile in the 1950s, solid-state electronics had not yet appeared, and miniaturization of electronic parts had just begun. Thus, the early versions of the Sparrow were far less reliable than desired. Also, the ROE required a visual identification of the target before firing, which greatly inhibited the use of the AIM-7s. So, in the end, the kill rate with them in Vietnam was down around 10 percent, and two-thirds of them malfunctioned when Air Force crews tried to fire them.

The AIM-9 Sidewinder was a heat seeker (infrared [IR]) also developed by the Navy in the 1950s. The IR system was much simpler than radar missiles and thus more reliable. But it also was dependent on earlier-generation electronics and consequently very subject to failure. Too, its rocket motor was exceedingly smoky,⁵⁹ and its ability to make a high-G (very sharp) turn was limited—so it could also be avoided if spotted in time. Still, the Sidewinder kill ratio was only about 18 percent. Colonel Michel does explain, though, that one of the reasons the Navy achieved a better record was its greater reliance on the more reliable and simpler-to-use IR missile than on the radar weapons. (The Navy's best-trained air-to-air units flew the F-8, which was not equipped to fire the radar missiles.)



AIM-7 Sparrow (top) and the AIM-9 Sidewinder (bottom)

None of the Navy's F-4s ever used a gun in combat—they never acquired a model with an internal weapon and could not use the external gun pod because it would have eliminated the use of the centerline external fuel tank, which would have been unacceptable for carrier operations. Even before the war, the Air

Force had undertaken the development of an external gun pod containing a 20 mm weapon. It turned out to be a good piece of equipment, but it did limit the performance of the airplane because of its drag, and it never was as accurate as an internal gun. The F-105 had such an internal gun from the beginning and made some of its kills with that weapon—it did not have a radar-missile capability, but it also made some kills with the Sidewinder.

Michel demonstrates that another reason for the Navy's superior record was the excellence of its shipborne GCI, called "Red Crown." Even the Air Force crews, when they were close enough to the coast, avowed that radar control and warning was superior to the Air Force provisions in the "College Eye" radars aboard C-121s or the "Teaball" warnings coming from a ground facility at Nakhon Phanom.

Finally, Michel explains that the Navy had the easier problem in many ways. Its operating areas were on the coast, requiring very little time over enemy territory. But the Air Force aircraft had a long drag from Thailand across the whole of North Vietnam to the targets in the eastern part of the country. Thus, Air Force crews were under enemy surveillance and fire for much longer periods. Also, he explains that the Vietnamese deployed the MiG-21s against Air Force formations more than against the Navy, and the latter was faced with the obsolescent MiG-17 much more frequently than was the Air Force.

Nevertheless, Michel denies that that situation excused the Air Force for its inferior record. His main complaint was the inadequacy of air combat training before and during the war. This he lays at the door of senior leadership, although he does allow that there was a substantial conservative streak among the teachers at the Fighter Weapons School. Their approach to training was much too conservative, and the air-to-air portion of the program consistently received too little emphasis. A part of this arose from the heavy concentration on the nuclear-strike mission in the years following Korea. Also, many commanders were too hypersensitive to the risk

of accidents to permit truly realistic air combat training. Then too, the conservatism of the senior generals made the Air Force stick with an inadequate tactical formation—the "Fluid Four"—long after the Navy had demonstrated the superiority of its "Loose Deuce." Finally, the conservatism of senior Air Force leaders also caused them to cling to a technological explanation for the disappointment after Rolling Thunder—that the poor kill ratios were to be expected because we were operating in the enemy GCI environment without radar warning and control of our own. But the Navy was usually able to employ the radar facilities of ships standing hard by the shore. The result was that the Navy turned to briskly and built up a splendid "Top Gun" training program⁶⁰ while the Air Force sought only technological solutions until after Linebacker exposed the unwisdom of that.

Evaluation

My estimate is that *Clashes* is the best book in print on the subject. But it is not perfect. The sources used are largely limited to Air Force documentation and only a few of the most prominent published works on naval aviation. Michel uses the Air Force's Red Baron studies very extensively. There *are* some inferences drawn that may not come from the documentation but from his crew-member experience. One example is that the absence of a gun from the design of the F-4C was the fault of Air Force senior leadership. I suspect that the whole thing is much more complex than Michel imagines. The way that Lt Gen John J. Burns explains it is that the A-7, F-4C, and F-111 were forced upon the Air Force as a package, at least insofar as some of their design features were concerned, by Secretary of Defense Robert McNamara. He came to office determined to improve accountability and to reduce the inefficiencies arising from service parochialism.

One dimension of this was to get the services to employ more "commonality" in their aircraft-acquisition programs. The Navy did not require an internal gun for the F-4 because it was designed to be a fleet-defense intercept-

tor. McNamara wanted the airplane to equip both services, and the initial difficulties with the F-105 helped him achieve that. When the Air Force was finally persuaded to accept the F-4, the secretary put strict limits on the modifications that would be made to it to make it suitable for Air Force service. One that was permitted was the addition of a duplicate set of controls—which were not in the Navy version—to the back cockpit. The Air Force also wanted an internal gun, but the Office of the Secretary of Defense would not permit it—until after combat over Vietnam proved its essentiality. By then, it was necessary to come out with an entirely new model—the F-4E—to accommodate it. The side-by-side seating in the F-111 is another example. The visibility from the cockpit of that airplane is poor, and the Air Force could not have tandem seating because that would have made the airplane too long for aircraft carrier elevators. In the end, the Navy never purchased any 111s.⁶¹ The point is that the generals in the Air Force are not as omnipotent as most flyers, including me, have traditionally thought them to be. That is as it should be in a democracy, even when it results in some wrong decisions from time to time.

Another standard lament of crew members, especially those in the fighter force, is that the generals of the pre-Vietnam days were too timid to permit realistic air combat training. General Burns shares that opinion with Colonel Michel.⁶² Doubtless they have a point, but what is often left out of that lament is that the accident rate certainly did come down greatly during the late 1950s and early 1960s. It seems to me that there was a certain devil-may-care/boys-will-be-boys attitude among the flyers in the early fifties, but the “buzzing” of girlfriends’ houses was much diminished after 1955, when the service began to exert more professional discipline on the officer corps. Indeed, more lives may have been saved in the ensuing decade than were lost in the skies over North Vietnam—just another dilemma of high command, I suppose?⁶³ Finally, we came away from the war against Kim Il Sung with a stout “no-more-Koreas” attitude that necessarily led to em-

phasis among fighters on continental air defense against high-altitude, nonmaneuvering bombers.

In the end, though, those comments are only quibbles. Again, I say that *Clashes* is, to my knowledge, the best thing in print on the air war over North Vietnam, and *APJ*'s audience should give it a high place on their reading list. It may not be the last word, though, because there is a book in the offing by a long-time member of the Air Force History and Museums program, Dr. Wayne Thompson, that will appear in the next year or so; his book should supplement if not supercede Colonel Michel's fine work. Thompson, who has done much creditable work there over the last couple of decades and was a prominent member of the Gulf War Airpower Survey, has completed the draft of *Rebound: The Air War over North Vietnam, 1966-73*. It should be in print within the next year. *Rebound* and *Clashes* are both positive signs that airpower history is maturing beyond the histrionics of the 1960s.

Air Superiority after Vietnam

For a number of years after 1972, the American air forces did not do much air fighting. Several times, foreign air forces got involved in combat, but they all were so limited that what emerged was largely a set of speculations rather than any “lessons.”

Before the final American humiliation in Vietnam, the Israeli air force (IAF) executed a campaign that added to its already-great mystique. In the opening hours of the 1967 war, it destroyed the Egyptian air force in an OCA operation that would have made Douhet proud. The war began with a preemptive strike on Egyptian airfields and radar sites. More or less complete surprise was achieved, and restrikes were conducted with impressive dispatch and minimal ground times. At the end of the campaign, the Israelis claimed to have destroyed over four hundred Arab aircraft, close to 90 percent on the ground. Although the missile war was in full swing in

Vietnam at the time, it seems that all the air-to-air kills on both sides came from guns. Atoll air-to-air missiles were fired, and one did some damage—but apparently no aircraft was brought down by a missile. The Israelis dominated the air battle, but by far the greatest damage was done by the attacks on the enemies in their nests.⁶⁴

The dramatic IAF victory had multiple effects. First, it set off an aircraft-shelter building program not only all over the Middle East but also among the NATO and Warsaw Pact air forces. Second, it accelerated the Arab move into ground-based missile defenses, not only around their air bases but also ultimately leading to the building of a formidable missile belt along the Suez Canal. Third, it imposed such a humiliation on the Arabs—and they lost so much important territory—that it probably made another war inevitable. Finally, the additional buffer space gained by the Israelis and the ease of their 1967 victory may have lulled them into a false sense of security.

Notwithstanding the splendor of Israel's victory, the Six-Day War may not have been the IAF's finest hour. According to Michael Howard, doctrine is always wrong, and he whose doctrine is the least wrong and whose system is the most flexible will win. This is so because he will be able to compensate for the wrongness more rapidly than can his enemy.⁶⁵

The war of attrition from 1967 to 1970 taught the Israelis that a preemptive, Douhet-like strike would not likely work again. In any event, it would be too costly in terms of world opinion—especially so in the United States. By 1973 there were missile batteries around the most important Arab bases and along the Canal, and the IAF had largely been reequipped with American aircraft, principally the A-4 Skyhawk and the F-4 Phantom. There were plenty of signals of an impending attack, but the Israelis did not believe them. Possibly that was because they did not understand that the Arabs no longer had the destruction of the Israeli state in mind but were going for more limited objectives. Further, it possibly was because of complacency, and

certainly because of a false assumption that there would be 48 hours advanced warning.⁶⁶

This time, there would be a more complex and closer-run contest for the command of the skies. The ground-based element was to play a much larger part than theretofore. The firm doctrine that air superiority has to come first was compromised for the sake of ground support, especially on the Golan Heights, where it seemed for a while that the Syrians were about to break through to the sea. It was a classical case of a ground emergency serious enough to divert airpower away from its primary task—the winning of air superiority as envisioned above in the passages on the new AFDD 1. Too, it was a wonderful demonstration of the flexibility of airpower, in that the IAF was switched from the Sinai Desert in the south to the Golan Heights in the north with blazing speed. And it seems that it saved the day in so doing. The cost, though, was enormous. The Israelis had reequipped their forces with aircraft but had not gone as far as they might have in the acquisition of PGMs and electronic countermeasures (ECM) pods. However, in this war there were significant numbers of kills by both AAMs and SAMs. Further, the shoulder-fired antitank missiles had a field day in the biggest tank battles since Kursk in 1943.⁶⁷ Howard suggests, then, that one does not gauge the true measure of an air force when things go perfectly according to plan, but when the plan becomes a shambles and the force nevertheless has the presence of mind and flexibility to snatch victory from the jaws of defeat. If that is valid, then perhaps Yom Kippur is a better indicator of greatness than 1967 was.

The next air combats came in the Falklands War and the Israeli operations in the Bekaa Valley, both in 1982. In the former, most of the air-to-air kills were by missile, and ship-board defenses seemed inadequate, notwithstanding some SAM kills. The British suffered painful ship losses and might have suffered many more if the safe-and-arm devices of the Argentinean bombs had worked properly (actually, it was improper launching tactics that prevented the devices from functioning as designed). In the latter case, the IAF proved

that it had learned its lessons well. In company with the Israeli ground forces, the IAF managed to shut down the Syrian SAM system with impressive speed, extensive use of remotely piloted vehicles (RPV), and an air battle that went heavily in the Israeli favor. Both experiences suggested that the command of air and space would continue to be determined by some combination of surface attack and air fighting plus fire from ground guns and missiles. In the Falklands, AIM-9L Sidewinders were responsible for the greater part of the British air-to-air kills, and the very high success ratio suggested that reliability problems with that missile had been overcome. Practically all of the kills of the IAF at the Bekaa Valley were by missiles.⁶⁸

The Navy and Colonel Michel were certainly right in saying that a part of the Rolling Thunder difficulty over North Vietnam arose from training, not technology alone. After all, there is no evidence that the Communist weapons were any better than the American ones. The Navy moved quickly to establish a rigorous, specialized air-to-air training program (Top Gun) for its F-4 pilots, and that seemed to have immediate effects.

As noted, Michel argues that the Air Force leadership did not want to admit a weakness and blamed it instead on technology. Perhaps that is true, but it is also true that there were but four years between the bombing halt and Linebacker—and that is not all that much time to get a major training operation started. Soon after, though, the Red Flag exercise was set up on the ranges at Nellis AFB, Nevada, complete with electronic tracking and recording methods and elaborate video debriefing systems. The range was equipped with accurate simulations of practically all of the ground threats the West was liable to face, and American and allied units were cycled through the program at frequent intervals.⁶⁹

The Air Force Fighter Weapons School was collocated with Red Flag and played an important role in the reforms. It brought in select instructor pilots from field units and subjected them to an intense, unusually rigorous training program. If those students graduated, they went back to their units with a special status and

expertise to pass on the latest thinking about air combat to their colleagues.⁷⁰

Additionally, again following a Navy lead elaborate air combat maneuvering instrumentation (ACMI) systems were installed at various locations around the United States and at some places overseas. Although not as elaborate as the installations at Nellis, they nevertheless were able to accurately track and record fairly complex mock air battles over their local ranges. Then the recorded material was used in a new and rigorous debriefing program that vastly improved the realism and effectiveness of continuing training.

For some time after the fall of Saigon, the Air Force maintained both a Soviet Awareness Group and an aggressor squadron. Both were charged with becoming expert in Soviet culture, technology, and doctrine and with traveling about the United States to pass on their expertise to users. The aggressor squadron was equipped first with T-38s and later with F-5s so as to permit dissimilar air-to-air training. Practice air combat maneuvering between F-4s had limited effects in preparing US crews to face MiGs, and the F-5s were a fairly close approximation of the MiG-21. According to Michel, the results were at first much in the favor of the F-5 aggressors, but fairly soon the line crews were able to reduce the gap.⁷¹ Added to this was a new, more aggressive policy toward home-unit training that many fighter pilots feel was the most significant factor.⁷²

Finally, there were some highly important reforms in areas other than the air-to-air battle that affected it in a significant way. One was development of the stealth bomber—the F-117. That was important because it was so hard to detect on radar that if it flew at night, the support package needed for other attackers to protect them from the stalkers was unnecessary. Another item was that the increasing availability of PGMs and their substantial advantage in accuracy over unguided bombs meant that a strike package containing few “shooters” would administer a higher level of damage to the target than would have been the case in Vietnam. That meant that the United States could afford to include many more support aircraft to protect the “shoot-

ers" from the enemy airborne and ground-based stalkers. It also meant that easing of requirements for air-to-ground training released more time for air-to-air practice.

By the 1990s, although we had not yet deployed lethal instruments in space, the nonlethal ones were making a substantial contribution to air and space superiority. Certainly, space-based weather reconnaissance contributed in many ways, even in the days of the Vietnam War. By 1990 it yielded a substantial advantage in planning attacks and providing for force protection. Space assets also were a large help in reconnaissance and the air-"recce" units had all but disappeared from the forces. Also, in conjunction with the new airborne warning and control system (AWACS) in the jet aircraft that replaced the "College Eye" in the C-121 "Connies" of which Marshall Michel complained, space assets were making warning and battle damage assessments (BDA) much more effective than they had been. Although it was to prove impossible for the air campaign to completely shut down Saddam Hussein's communications, their degradation, combined with the enormous benefit of the new US space-based communications links, yielded another huge advantage.

Finally, the Goldwater-Nichols Department of Defense Reorganization Act of 1986 had greatly strengthened the role of the chairman of the JCS and the area commanders in chief (CINC), and that was arguably a substantial step in the direction of the traditional Air Force organizational and doctrinal preference.⁷³ Legislation and the policies growing herefrom made it not only feasible but also advisable for the CINCs to appoint a joint force air component commander (JFACC).⁷⁴ This seemed to promise that the ideal of centralized control of airpower at the theater level by a coequal air commander would finally be realized.

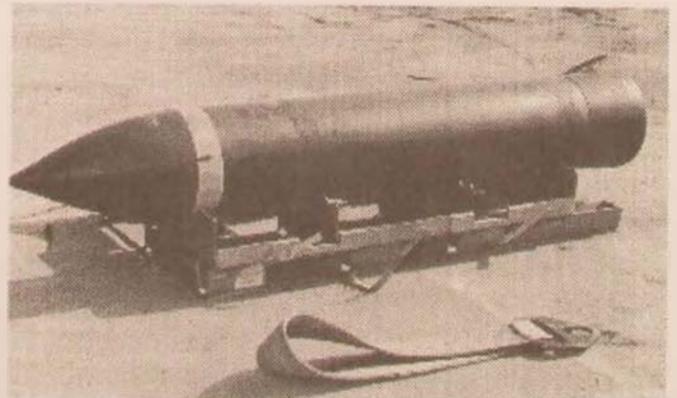
The Gulf War

Some people have suggested that any old strategy would have brought the Iraqis down

in 1991. The implication might be, then, that the battle for the command of air and space against a paper tiger means little for the future. It is true that it was a lopsided victory. The OCA part of the campaign in its air-to-ground dimension worked like a charm. The F-117 did always get through.⁷⁵ The degradation of the Iraqi detection and C² systems was quickly accomplished, and it certainly added to the ease with which the air-to-air part of the campaign was completed. The F-15s cleared the skies of the few enemy aircraft that ventured forth, and the coalition suffered no more than one suspected air-to-air kill. The combination of stealth as well as lethal and nonlethal SEAD largely suppressed the SAM threat and in turn permitted coalition aircraft to do their missions at medium and high altitudes above the AAA and shoulder-fired SAM threats. The spread of PGM technology enabled them to actually hit targets from those altitudes. They also made feasible what John Warden calls "parallel attack" (as opposed to sequential).⁷⁶ That empowered the coalition to overwhelm the defenses as a synergy arose from the destruction of so many OCA targets nearly simultaneously.

The stout aircraft shelters built by Iraq and many other nations in reaction to the "lessons" of the 1967 Arab-Israeli War proved useless—except perhaps as magnets attracting PGMs to empty shelters. The combination of precision and penetrating bomb bodies made it so.⁷⁷

Added to those great advantages was the fact that the coalition enjoyed a huge infor-



BLU-109 penetrating bomb body, two thousand pounds

mation edge by virtue of an extreme imbalance in the access to space resources—the Gulf War was called the first space war. In short, the coalition enjoyed air and space supremacy.⁷⁸ This time, the adversary did not even enjoy the access that the Arabs had in the Yom Kippur War through the Soviets. The cold war having ended, the Russians were no longer the patrons of the Iraqis, and the only access Saddam Hussein might have had was through commercial space assets. But was that imbalance just a flash in the pan, or can we hope for more to come?

Missiles accounted for practically all of the air-to-air kills in the Gulf War. The reliability and kill ratios for the AIM-7s and the AIM-9s were much better than they had been in Vietnam, and the AWACS performed much better than had College Eye in the 1960s and 1970s. There really was not that much of an air-to-air battle, certainly not in the form of dogfights. The result was that the major improvements made in the F-15C design for the sake of air-combat maneuvering were not fully tested in combat. The same is true for the F-16, which had been designed as a dual-role fighter, although with much more attention to air combat than had been the case with the F-105 and the F-4. The great advantage that the United States had in air refueling made the maintenance of continuous combat air patrol feasible. This had advanced considerably since the Vietnam War by the acquisition of the KC-10, which helped greatly with refueling deployment (and with airlift). Further, the reengining of the KC-135 fleet to create the R model greatly enhanced its ability to sustain extended combat operations.⁷⁹

There was a good deal of self-congratulation in the aftermath of the Gulf War over the fact that the Goldwater-Nichols Act worked. The centralization of the C² of theater air forces was really accomplished. Later, though, some people argued that the reason it appeared that way was the accommodating personality of the JFACC, Gen Charles Horner.⁸⁰ They argued that his great preponderance of air assets permitted him to avoid the hard choices and to allow all the air forces (save perhaps his own US Air Force) to fly

whatever missions they wanted. As with the campaign in France in 1944, when one has wall-to-wall airpower, doctrine does not matter very much.

Since Operation Desert Storm

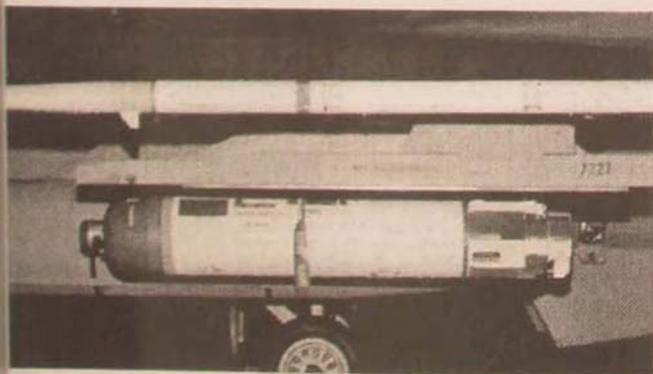
Many critics were quick to say that the conditions in the Gulf War were nearly ideal for airpower.⁸¹ That was true. Still, spells of bad weather slowed the air campaign. Laser-guided bombs (LGB), IR weapons, and television guidance all required at least a modicum of visibility. Since the Gulf War, the United States has moved to close that weather sanctuary, just as she has eliminated the shelter of darkness.

The Joint Direct Attack Munitions System (JDAMS) is going into service at this writing. It uses a guidance system that is not quite as precise as laser or television guidance, but one that can operate in all weathers—as long as there is good intelligence on the location of the target. It operates with an inertial kit that steers the bomb toward its objective, aided by a Global Positioning System (GPS) receiver that takes signals from space to correct the inertial trajectory and deliver a circular error probable (CEP)⁸² of about 15 meters (for some LGBs, the CEP is about three meters). This accuracy is fine for the vast majority of targets—if a two-thousand pounder falls within 15 meters of a soldier in the open, his day is done. This can be done from above the clouds and at medium altitude, either day or night. Another beauty of it is that the cost of each JDAMS kit is only \$14,000—far lower than that of a laser kit, which itself is far cheaper than all other forms of guidance. Some people argue that the day of the “dumb” bomb appears to be done.⁸³ The implications of this for the air-and-space-superiority battle is that far fewer shooters will be necessary to destroy a given set of targets than heretofore; consequently, it will be far easier to protect them from the stalking birds. Too, early in the next century, it is anticipated that an autonomous seeker⁸⁴ will be developed for some of the

JDAMS so that when the last increment of precision is indeed required, JDAMS will be able to deliver it. The F-117 will be able to carry two of these weapons in the two-thousand-pound size, and a smaller version of one thousand pounds is being developed so that it may be carried inside the weapons bay of the oncoming F-22. That is necessary to preserve its stealth qualities, although where that is not necessary, the Raptor will be equipped with pylons to carry the larger bombs externally.⁸⁵

An attractive feature of the JDAMS we noted was its moderate price. But another development has been designed especially as a strap-on kit for the standard munitions dispenser. It does not contain the GPS feature and relies wholly on an inertial system that takes out the effects of the wind when the weapon is dropped from medium altitudes. It costs about half the price of a JDAMS kit, and initial production will take place in 1998. Called the wind-corrected munitions dispenser (WCMD), it will be capable of carrying the standard submunitions, including the sensor-fuzed weapon, mines, and the combined-effects munition. It is not quite as accurate as JDAMS, but extreme accuracy is not required for scatter weapons.⁸⁶ It would play a part in the battle for command of air and space because submunitions are especially effective against SAM and AAA sites or aircraft in the open.

To be able to fire at an enemy stalker who cannot reach you is a capability longed for since ancient times. The Air Force has been

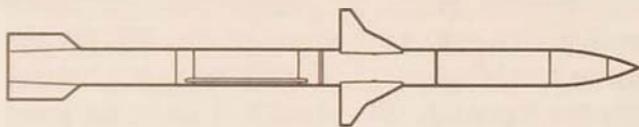


Wind-corrected munitions dispenser loaded on port pylon of Air Force F-16

the lead service in the development of the JDAMS; the Navy is leading another development with a common guidance system—the joint standoff weapon (JSOW) system, also designed to fire at an enemy who cannot shoot back. Its IOC is just around the corner. It is a glide bomb with wings that extend after release. The idea is that the weapon will be used at a distance to degrade the enemy air defense systems to make it safe for aircraft to go in with JDAMS and even dumb bombs to strike other targets. It too will be released from medium altitude or above and from a much greater distance than with JDAMS. Initial versions will be equipped to deliver the various submunitions in the inventory, such as the combined effects munition (CEM) or Gator mines.⁸⁷ One version is being built to deliver a unitary bomb as well. Later phases of the program in the next century will marry the GPS/inertial guidance system with a terminal seeker that will give some of the JSOWs the same precision that LGBs now enjoy. Usually, scatter weapons like the CEM have no need for the last increment of precision, so there will not be the need to use up an expensive seeker and processor for them. Still, JSOWs will be more expensive than JDAMS and, therefore, will not be procured in as many numbers.⁸⁸

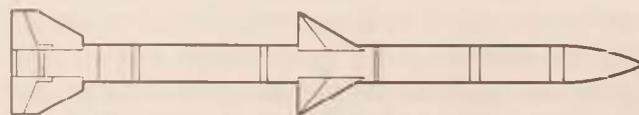
Still more expensive than the JDAMS is the joint air-to-surface standoff missile (JASSM).⁸⁹ There typically are some nodal points in an IADS that are vital but too dangerous to approach, even to JSOW ranges. Before the fall of the USSR and the Warsaw Pact, the services had a joint program for a similar missile with stealth characteristics that were deemed necessary to attack such targets. However, to get the last increment of stealthiness would have been an expensive proposition. When the Communist empire fell, we decided that that requirement could be relaxed a bit, so the original program was cancelled (for that among other reasons), and JASSM was designed for the same mission at about half the cost.⁹⁰ It will nevertheless be expensive and not ready until the next century, when it will become the longest-range standoff weapon available for Air Force fighter aircraft.

Another part of the armament program that is aimed at similar effects is the high-speed antiradiation missile (HARM)—but it does not have the long-range JASSM. We saw that the stalking birds in Vietnam had a huge advantage working inside their own GCI environment, and HARM is designed to suppress the radars essential to that direction. It homes on radiation and travels at very high speeds in the hope of arriving at the antenna before the enemy operator can shut it down. HARM was first used in the raid on Libya in 1986, and in the Gulf War it was not necessary to fire very many of them. The Iraqi controllers quickly discovered that emitting was hazardous to their health, so the mere presence of HARM shooters in the vicinity was enough to keep their radars off the air—which enabled the free passage of nonstealthy strike forces.⁹¹



AGM-88 HARM

We saw above that substantial improvements were made in air-to-air weapons before the onset of the Gulf War. However, perhaps the most important one achieved its IOC only in September 1991 and could not be deployed to the Gulf in time to get a combat test. The advanced medium-range air-to-air missile (AMRAAM) had been under development for many years, and the goals for its program had been ambitious indeed.⁹²



AIM-120 AMRAAM

We have noted that it was necessary for US fighters over Vietnam to direct their radar missiles until they hit the target and that that was a disadvantage compared to the "launch-and-leave" characteristics of IR missiles. One

of the AMRAAM goals was to develop a weapon that could guide itself to the target without the assistance of the launching aircrew after it departed the missile racks. That would permit the crew either to begin their escape or to launch other missiles at other targets before the first one had impacted. Yet another goal was to make the AMRAAM light enough to be used aboard the F-16, since the fighter force had more of these planes than any other. Most of the latter did not have any beyond-visual-range capability because the AIM-7 Sparrow needed a fairly sophisticated aircraft guidance system and the F-16 radar was inadequate.⁹³

AMRAAM's weight is perhaps 70 percent of the Sparrow, and it is fully compatible with the avionics of the F-16. It has a higher speed too, and there is less smoke generated by its motor. Multiple AMRAAMs can be managed at one time by a single fighter, and one of their modes of operation is autonomous—they become launch-and-leave weapons. For all of that, though, the world of air combat is a hard one—it is difficult to stay ahead, and in some respects the Russians have better missiles—although the combination of stealth in the F-22 and the AMRAAM will likely be better than the combination of Russian fighters and missiles.⁹⁴

If the threat of Russian fighters and radar missiles were not enough to keep one awake, then there have also been developments in the world of IR weapons and helmet-mounted displays (HMD) that will. In the days of Vietnam, as we have seen, it was necessary to drive up behind an enemy and maneuver into a moving cone behind his exhaust to get a lock-on and fire an IR missile. Such missiles have now been improved to the point that they are all-aspect weapons. They can be fired from the forward hemisphere of the enemy, and they will home in perhaps on the leading edges of wings that have been heated by air friction—but more likely on the jet exhaust, which can be sensed even from the nose aspect.⁹⁵ But at first it was still necessary to point one's aircraft at or nearly at the enemy before the missile could be fired. By moving the sighting display to the visor on the pilot's

helmet and giving the seeker on the missile itself a wide field of view (FOV), it can be launched at very large "off-boresight" angles—precious seconds before the enemy can fire one at our airplane.⁹⁶ The Russians and the Israelis have had such missiles and helmets for some time now, and they do have some limitations.⁹⁷ The F-22 will come equipped with a joint helmet-mounted cueing system and a new IR missile (AIM-9X), but that is not scheduled to gain its IOC until 2004.⁹⁸ Several European nations have missile programs also looking toward that kind of weapon/helmet combination.⁹⁹

Another advantage of the IR missiles is that they are passive—that is to say, they send forth no electromagnetic emissions to warn the enemy that he is about to be attacked (some Sidewinders *do* have proximity fuzes that emit radio-frequency energy—and using the aircraft radar to measure range even with IR missiles can be a big help). The unfortunate part of it is that IR weapons are short range. However, the Russians and the US Navy (aboard its F-14s) have had operational infrared search and track systems (IRSTS), which enable them to spot other aircraft at considerable distances without turning their radars on. This has the potential to permit the first shot, as radars theoretically can be detected by radar-warning receivers at twice the distance that they can themselves identify the target (the energy has to make a round-trip for the attacker's antenna but only a one-way journey to the target's antenna). This may be especially troublesome in that the Russian AA-10 has a longer range than most other IR missiles; this capability might enable it to reach out and touch someone when combined with an IRSTS.¹⁰⁰ A well-established notion of air combat is that he who takes the first shot is very likely to win.

The Air Force has so far not specified an IRSTS for the F-22, although it tested some in the late 1980s. Apparently, stealth combined with a radar set that seems to be difficult to intercept is enough to make the inclusion of an IRSTS unnecessary. Such equipment already on Russian and late-model Navy fighters is soon to be included on other European aircraft. Too, it has other potential uses in which its passivity

may help, such as finding a tanker without making emissions or identifying plumes from Scud missiles as they fire.¹⁰¹ US fighters so equipped have a similar capability through their LANTIRN (low altitude navigation and targeting infrared for night) pods.¹⁰²

But balanced against those technological gains has been a huge force-structure draw-down. The Air Force is now about a third the size it was at the height of the Vietnam War. In 1997 the enlisted strength of the Air Force was lower than in any year since Pearl Harbor except 1947. Continuing commitments in the Persian Gulf and elsewhere have created an operations tempo so high that opportunities for realistic training are often lost. Aggressor units are much diminished from what they once were.¹⁰³

Additionally, there has been a huge overseas-base drawdown and a greater concentration of units in the continental United States. There has been some reorganization and consolidation among the major commands, and composite-wing experiments have been conducted. Work has been done on developing a doctrine and organization for quick redeployment overseas in the form of air expeditionary forces, but that has not yet had a large-scale combat test. Most of the plans associated with that call for the front-loading of air superiority assets in the redeployments, and doubtless it would be done better now than it was in Torch in 1942. But excessive confidence that our technological, doctrinal, and organizational cleverness will compensate for low numbers and the lack of bases and radar sites in the stalkers' backyards would make us victims of Michael Howard's lament. Doctrine is always wrong, and he who can adapt to its errors after combat has revealed them will win. If the world turns out to be different from the way we picture it, will we be able to react more quickly than enemies now far less knowable than the Soviets were for 50 years?

A Century of Thinking on the Command of Air and Space

We are now in the twilight of the first century of the air age. What do we have to

show for the huge intellectual effort that has gone into the development of air and space superiority doctrine? There has been little disagreement that we should command the medium. The rub comes when the discussion turns to the methods of doing so.

During World War I and the 1920s, in America at least, the emphasis was on the air battle. Different thinkers placed varying values on the offensive methods of fighting that battle. Douhet was among the earliest to assert that command of the air could be best won through attacks against ground targets. American thinkers moved toward that position in the 1930s but not all the way.

Soon after the onset of World War II, the limitations of the Douhet approach began to show themselves. The coming of radar was everything. The ability to spot attackers in the footless halls of space enabled stalkers to implement the principle of mass—to hold their forces on the ground and launch them directly at the threat without dispersing their power all around the perimeter looking for bombers. British bombers had to go over to the sanctuary of night to survive—but for a long time, that entailed such a loss of target-acquisition ability and accuracy that it ruined their potency. In the end, the survivability evaporated because radar helped the German interceptors, but British gunners and escorts had little effect at night. The Americans attempted for a while to find sanctuary behind the many .50-caliber turrets they hung on their bombers. But that failed because it was too easy for the stalkers to mount even larger weapons and hold back their assault until radar told them the escorts had gone home. Then they could quickly find the attacking formation, hover just outside .50-caliber range, and pop away until they made their lethal hits. Finally, the impractical was made practical by the partially fortuitous combination of technologies in escort fighters, growing numbers, and changes in tactics—and the stalking birds were killed in such huge numbers that it was not long before Germany lay prostrate before the Allies, now in command of the air.

Unhappily, the emergent doctrine obsolesced as rapidly as did the World War II air-

planes. In both Korea and Vietnam, the United States was unable to apply the full force of OCA attacks because of constraints arising from the limited-war scenario. Too, her great advantage in air superiority technology and experience eroded with seemingly blazing speed. From the Eisenhower administration forward, though, the exploitation of space in a nonlethal way tended to counteract that erosion. That, combined with the fall of the Communist empire, enabled the coalition to fully exploit the potential of its technological and doctrinal advantages against Iraq and achieve an air supremacy not often witnessed in the past.

But the wall is down. The “threat” has become so diffuse that thinking about the methods of commanding air and space is more difficult than ever. Technology seems to be changing as rapidly as ever, but the force structure is much diminished. There are no more Vietnam veterans in the cockpit; only a fraction of the force got combat experience in Desert Storm, and that too is disappearing. The doctrine has really not changed greatly. One wonders whether a full revolution in military affairs (RMA) is really afoot—whether all the technology and readiness training will be enough to yield air and space superiority in the next century. Certainly, potential adversaries have learned as much or more from the Gulf War as we have. Doubt remains whether we have solved the problems of command of the air in a guerrilla-war context. Because of Watergate, Linebacker III never came to measure whether or not the first two were exceptions to a general rule.

One of the pillars of our self-assurance in the struggle for air and space superiority has long been the notion, perhaps the conceit, that our people have more initiative than those elsewhere—especially those in the Communist empire. But the centralized C² system, the wonderful instant-communications systems, and VIP jet travel may have led to micromanagement over the last half century that has eroded the degree to which junior people have developed that initiative. The Air Force Academy has just graduated its 40th class. The student body there has been drawn down

A 10-Book Sampler on Air and Space Superiority: Works for Air Force Professional Development*

Two for the Macroview:

Benjamin Franklin Cooling, ed., Case Studies in the Achievement of Air Superiority (Washington, D.C.: Center for Air Force History, 1994). This is an official Air Force history done by various authors. It is better than most anthologies because the chapters were done under contract, and the editors had more control over the coherence than is usually the case.

Mike Spick, The Ace Factor: Air Combat and the Role of Situational Awareness (Annapolis: US Naval Institute Press, 1988). Lest the title stimulate the wrong image, you should be aware that this work is much better than many of the aviation books in the popular market.

Eight for More Detailed Knowledge:

Lee Kennett, The First Air War: 1914-1918 (New York: Free Press, 1991). This book is by a longtime professor at the University of Georgia. See especially chapter 4, "The Development of Air Combat."

Marshall L. Michel III, Clashes: Air Combat over North Vietnam, 1965-1972 (Annapolis: US Naval Institute Press, 1997). Colonel Michel was a fighter pilot, and the work is colored somewhat by that viewpoint. Many of his viewpoints are widely shared by crew members outside the fighter community as well. Still, it is the best work available in print about the air battle over Vietnam.

David R. Mets, Checking Six Is Not Enough: The Evolution and Future of Air Superiority Armament (Maxwell AFB, Ala.: Air University Press, 1992). This pamphlet is included not because of my high regard for its author but because, to my knowledge, it is the only recent, compact treatment of the air armament part of the struggle for air and space superiority.

Lon O. Nordeen, Air Warfare in the Missile Age (Washington, D.C.: Smithsonian Institution Press, 1985). Although this work was published before Desert Storm and takes a case-study approach, it is worthwhile. Nordeen was employed by McDonnell-Douglas in public relations for some time, but he has a better-than-average grasp of the technical and tactical details of the subject. The book covers more than the air superiority dimension of airpower.

Lon O. Nordeen, Fighters over Israel (New York: Orion Books, 1990). There is a substantial literature on the Israeli air force, and often it has had the most recent air combat experience with US equipment against air forces instructed and equipped by the USSR. Thus, the history of its struggle for air superiority in the Middle East is a worthy topic for study by Air Force warriors/scholars.

David N. Spires, Beyond Horizons: A Half Century of Air Force Space Leadership (Colorado Springs, Colo.: Air Force Space Command, 1997). Although the Gulf War was widely advertised as the first space war, there as yet has been no combat there—and possibly there will never be any. The implication for us is that the literature is highly speculative, although it is becoming vast. The Spires book is a good start, even though it has many more subjects than just space superiority.

Kenneth P. Werrell, Archie, Flak, AAA, and SAM: A Short Operational History of Ground-Based Air Defense (Maxwell AFB, Ala.: Air University Press, 1988). Carl Builder's assertion that Air Force officers are more interested in their airplanes than they are in air war receives some support in the way that the United States has dealt with ground-based air

*The sampler is intended only to provide a baseline for the generalist professional officer. It is not for specialists in military or airpower history, nor for specialists in air combat (though some of the latter might find some instruction in the historical dimension of their own specialty). A bibliography covering the whole field would be many pages long and would quickly become outdated in any event.

defenses. Surely, they are as much a part of the air superiority equation as are fighters, but the literature on air combat far outweighs that on surface defenses. Back in World War II, the ground defenses were a part of the Luftwaffe, but there never has been much thought¹⁰⁴ here about making them a part of the air arm. Werrell's book is therefore an essential part of our study.

Derek Wood, with Derek Dempster, The Narrow Margin: The Battle of Britain, 1940 (Washington, D.C.: Smithsonian Institution Press, 1961, 1990). There is a huge literature on this clash, and the battle indeed was a seminal event in the evolution of airpower theory and doctrine. It remains the closest approach to a pure air battle, and the Luftwaffe was operating under many of the same handicaps that the Air Force had over North Vietnam. This book was written by two British journalists with good writing skills and a grasp of technical and tactical details. The battle proved that the bomber would not always get through.

One for Good Measure:

Air Force Doctrine Document (AFDD) 1, Air Force Basic Doctrine, September 1997. You will have to read this sooner or later; why not now? At the very least, it will familiarize you with the standard conceptual framework and vocabulary, and those things will certainly facilitate your further study on air and space superiority.

much less than has the officer corps in general. Their retention, as disappointing as it has been, has nevertheless been higher than that of other sources of officers. Diversity on the faculty and among the Air Officers Commanding is much diminished. The last two chiefs of staff and the greater part of the current three- and four-star generals are Academy graduates. We live in an age of "political correctness" wherein a single mistake is often thought to be the death knell of a career. If indeed we do bank on individual initiative among our war fighters and their leaders, are we counting on a chimera? Is Marshall Michel correct in his low estimate of the open-mindedness of the senior officers of the service?

Another of the great advantages upon which we found our confidence is "information warfare" (IW) superiority. But that, combined with our doctrine, does much to drive centralization even further—and to make us all the more dependent upon centralized technological systems with obvious nodal points. Just as the last great wave of imperialism was brought to an end when the colonials learned how to use the Maxim gun, is it inevitable that this lead in IW will disappear? As we have noted, GPS has become increasingly central to our operation in many ways,

and technicians assure us that it is ECM resistant—but that is what they said about the German Enigma machine. It was a code that could not be broken—but it was.¹⁰⁵ Similarly, we now possess an enormous lead in space, and perhaps the law of diminishing returns will set in. Meanwhile, the rest of the world may still be on the steep part of their development curves, and the gap there will also close. Will it close all the more rapidly if those of us who would end the "freedom of space" policy have our way? If they succeed in weaponizing space, will that only so threaten the rest of the world as to stimulate their efforts to close the gap even more rapidly? Would we then be able to duplicate the kind of air and space supremacy that we enjoyed in the Gulf War of 1991?

But what can professional air warriors/scholars do about it? How can they help to assure that somehow their country will be able to sustain air and space superiority? There is no need to deliver a sermon about being the best in one's own specialty. But are we in general as competent to think about war as opposed to battle, engineering, maintenance, logistics, and the like? One cannot do much to practice war, and even those things that simulate battles, campaigns, and wars are

always wrong. They are also expensive and time-consuming. They have to be supplemented with an organized, professional reading program. Certainly, that is an imperfect substitute for experience, but it is the only substitute one has available in a lifetime limited to, say, 76 years. You cannot live it all, so you must supplement your real-world experience with the vicarious experience called professional reading. Because the most important of the Air Force core competencies is air and space superiority, you should concentrate on that area above all—all the more so if you are not directly involved in that area in the course of your day-to-day work. The "10-Book Sampler" included here is intended to help you get started in that effort.

Could that sampler also be a useful aid in repairing one of the glaring deficiencies of the officer corps? I had five flying tours in four different major commands, including bomber and fighter wings in SAC and Pacific Air Forces (PACAF), and never once saw anything faintly resembling an organized mentorship effort. Why not use the books in the sampler to start a mentorship program in your unit?

Finally, if you were king for a day, would you ever replace a congenial dummy as your chief of staff with a nasty genius? Are you capable of resisting the temptation to kill the bearer of bad tidings? Will you ever be able to do anything to erode the impression in the officer corps that it is a One-Mistake Air Force? □

Notes

1. AFDD 1, September 1997, 29, describes it as air and space superiority and places it at the head of the list of Air Force core competencies; it appears that the recent changing of the guard at Headquarters USAF will result in a change of the nomenclature in the next version of *Basic Doctrine*, in that we shall revert to the old term *aerospace*.

2. The best short treatment of the subject is Lee Kennett, *The First Air War: 1914-1918* (New York: Free Press, 1991), chap. 4, pages 63-82.

3. Harper Lee, *To Kill a Mockingbird* (Philadelphia: Lippincott, 1960).

4. Marshall L. Michel III, *Clashes: Air Combat over North Vietnam, 1965-1972* (Annapolis: Naval Institute Press, 1997).

5. The relevant parts are in AFDD 1, pages 29 and 47-48.

6. Maj J. C. Carter, "The Cult of the Offensive" (master's thesis, School of Advanced Airpower Studies [SAAS], Maxwell AFB, Ala., 1997). Carter's work won the Air Force Historical Foundation's award for the best SAAS thesis for academic year 1996-1997.

7. Col Maris McCrabb, "The Evolution of NATO Air Doctrine," in *The Paths of Heaven: The Evolution of Airpower Theory*, ed. Col Phillip S. Meilinger (Maxwell AFB, Ala.: Air University Press, 1997), 455.

8. Giulio Douhet, *The Command of the Air*, trans. Dino Ferrari 1942; new imprint, Washington, D.C.: Office of Air Force History, 1983), 23.

9. Maj Gen Haywood S. Hansell Jr., *The Air Plan That Defeated Hitler* (Atlanta: Higgins-McArthur/Longino & Porter, 1972), 40.

10. AFDD 1, page 29.

11. *Ibid.*, 29, 45-47.

12. *Ibid.*, 46.

13. Samuel P. Huntington, *The Soldier and the State: The Theory and Politics of Civil-Military Relations* (Cambridge, Mass.: Harvard University Press, 1957), 234-42.

14. Douhet, 18-19.

15. Maj William Mitchell, Aviation Section, Signal Corps, memorandum to chief of staff, American Expeditionary Force, 12 June 1917, in *The U.S. Air Service in World War I*, vol. 2, *Early Concepts of Military Aviation*, ed. Maurer Maurer (Washington, D.C.: Office of Air Force History, 1978), 108.

16. Kennett, 63-70. Incidentally, attacking balloons was not the Little League by any means, because they so often were

surrounded by heavy concentrations of AAA and small arms, making them traps for unwary aviators; shooting one down was deemed just as prestigious as defeating a Fokker.

17. *Ibid.*; and Mike Spick, *The Ace Factor: Air Combat and the Role of Situational Awareness* (Annapolis: Naval Institute Press, 1988), 32-33.

18. Kennett, 71-82; and Spick, 6.

19. William Mitchell, lecture to Army War College, 24 November 1922, file no. 240-49, US Army Military Institute archives, Carlisle Barracks, Pa. Mitchell said, "Some improvement has been made in anti-aircraft artillery. However, as I said before, we care little for anti-aircraft artillery." Douhet said it thusly: "The airplane has complete freedom of action and direction; it can fly to and from any point of the compass in the shortest time—in a straight line—by any route deemed expedient. Nothing man can do on the surface of the earth can interfere with a plane in flight, moving freely in the third dimension. All the influences which have conditioned and characterized warfare from the beginning are powerless to affect aerial action" (page 9).

20. William Mitchell, "Tactical Application of Military Aeronautics," lecture to Army War College, 1921, file no. 97-10, page 1, US Military History Institute curricular archives, Carlisle Barracks, Pa.

21. Douhet, 18-19; and Alfred F. Hurley, *Billy Mitchell: Crusader for Air Power* (Bloomington, Ind.: Indiana University Press, 1964, 1975), 63.

22. This did not include, though, any public advocacy of population attack or an extreme concentration on battle planes (strategic bombers) à la Douhet.

23. Robert T. Finney's *History of the Air Corps Tactical School, 1920-1940*, USAF Historical Study 100 (Maxwell AFB, Ala.: Air University, 1955), is the current authority on the subject.

24. Martha Byrd's *Chennault: Giving Wings to the Tiger* (Tuscaloosa, Ala.: University of Alabama Press, 1987) is the least partisan work on Chennault and his "struggles" at Maxwell Field.

25. Daniel R. Mortensen, ed., *Airpower and Ground Armies: Essays on the Evolution of Anglo-American Air Doctrine, 1940-1943* (Maxwell AFB, Ala.: Air University Press, 1998), 62.

26. See Hansell, 12-14, for a view from one on the bomber side of the debate.

27. Byrd, 61-64.

28. John W. R. Taylor, ed., *Combat Aircraft of the World, 1909 to the Present* (New York: Paragon Press, 1969), 527.
29. *Ibid.*, 453. "Peashooters" actually got into combat as a part of the Philippine air force the day World War II started.
30. *Ibid.*, 182.
31. *Ibid.*, 478.
32. *Ibid.*, 597-99.
33. Maurer, 325-44.
34. Hansell, 40-41. Hansell, incidentally, was as qualified to judge as Chennault, in that he too was an experienced fighter pilot and a graduate of Georgia Tech. Further, he had considerable engineering experience in civilian life.
35. Bernard Brodie and Fawn M. Brodie, *From Crossbow to H-Bomb* (Bloomington, Ind.: Indiana University Press, 1962, 1973), 207-8. The Navy was working on radar in Washington from 1935 and demonstrated it aboard ship before the war; the Army tested radar for AAA guns and for aircraft warning by 1939 as well, but little thought had so far been given to the implications for air defense and for long-range bombing.
36. Derek Wood, with Derek Dempster, *The Narrow Margin: The Battle of Britain and the Rise of Airpower, 1930-1940* (1961; new imprint, Washington, D.C.: Smithsonian Institution Press, 1990), 29.
37. R. J. Overy, *The Air War, 1939-1945* (New York: Stein & Day, 1980), 28-29; and Williamson Murray, "The Luftwaffe against Poland and the West," in *Case Studies in the Achievement of Air Superiority*, ed. Benjamin Cooling (Washington, D.C.: Center for Air Force History, 1994), 76-78.
38. Col Carl A. Spaatz to Maj Gen Henry H. Arnold, letter, 27 August 1940, box 7, Spaatz Papers, Manuscripts Division, Library of Congress, Washington, D.C.
39. Reichsmarshal Hermann Göring, interviewed by Gen Carl A. Spaatz et al., Augsburg, Germany, 10 May 1945, copy in Spaatz Collection, US Air Force Historical Research Agency (AFHRA), Maxwell AFB, Ala.
40. US Strategic Bombing Survey, Military Analysis Division, *The Defeat of the German Air Force, 1945, 1947*, 1, copy in Air University Library, Maxwell AFB, Ala.
41. James A. Winnefeld and Dana J. Johnson, *Joint Air Operations: Pursuit of Unity in Command and Control, 1942-1991* (Annapolis: Naval Institute Press, 1993), 33-35; Alvin D. Coox, "Air War against Japan," in *Case Studies*, 383-442; and US Strategic Bombing Survey, Military Analysis Division, *Japanese Airpower*, July 1946, 103, copy in Air University Library, Maxwell AFB, Ala.
42. *The United States Strategic Bombing Surveys (European War) (Pacific War)* (30 September 1945, 1 July 1946; reprint, Maxwell AFB, Ala.: Air University Press, October 1987), 37-38.
43. John Lewis Gaddis, *We Now Know: Rethinking Cold War History* (New York: Oxford, 1997), 1-25.
44. Eduard Mark, *Aerial Interdiction in Three Wars* (Washington, D.C.: Center for Air Force History, 1994), 287-319. Mark argues that the conventional view that we had air superiority because our kill ratio of enemy fighters was something above 10 to one obscures the fact that we did not command the skies. The Communist MiGs so threatened the B-29s in daylight near the Yalu River that they could not operate there for half the day. The great advantage in numbers enabled them to stalk our interdectors up north, even while losing great numbers in the air battle meant that we did not have air superiority. But it is probably fair to say that his is a rare opinion depending heavily on his own definition of what air superiority is.
45. During the latter part of the war, the UN was able to emplace a radar on one of the islands off the west coast of North Korea, and that diminished the Communist advantage somewhat.
46. Thomas C. Hone, "Korea," in *Case Studies*, 453-98. Hone is much more certain than Mark that air superiority was achieved and maintained by UN forces in Korea.
47. The joint operations center had its main impact in the air-to-ground battle, mostly CAS. Winnefeld and Johnson, 49-50.
48. Maj Lee T. Wight, interviewed by author, 7 April 1998, Maxwell AFB, Ala.
49. Robert Frank Futrell, *The United States Air Force in Korea, 1950-1953*, rev. ed. (Washington, D.C.: Office of Air Force History, 1983), 697.
50. Bill Gunston, *The Illustrated Encyclopedia of Aircraft Armament* (New York: Orion Books, 1988), 55; and Frederick I. Ordway and Ronald C. Wakeford, *International Missile and Spacecraft Guide* (New York: McGraw-Hill, 1960), 34-35.
51. David N. Spires, *Beyond Horizons: A Half Century of Air Force Space Leadership* (Peterson AFB, Colo.: Air Force Space Command, 1997), 271; and Jeffrey T. Richelson, *A Century of Spies: Intelligence in the Twentieth Century* (New York: Oxford, 1995), 170-72, 295.
52. Spires, 50-51.
53. Lt Col Thomas Tobin et al., *Last Flight from Saigon* (Washington, D.C.: Office of Air Force History, 1985), 103.
54. David R. Mets, *Land-Based Air Power in Third World Crises* (Maxwell AFB, Ala.: Air University Press, 1986), 109-10; and Richelson, 333-34. The Soviets were better informed of the Israeli truce violations than were the Americans because their short-life satellites had to be launched and recovered more frequently than the "better" US satellites; consequently, their information was more recent than ours.
55. Actually, the Air Force did activate its first aggressor squadron between Linebacker I and II.
56. For background on some of the things that were done in fighter training before Vietnam, see Blake Morrison, "Gunsmoke: A History, a Tradition, a Competition," *USAF Fighter Weapons Review*, Fall 1981, 3-12.
57. Over time, the time-of-flight problem was mitigated by tactical development, but the requirement for visual identification remained a serious handicap. Maj Matthew Donovan, interviewed by author, 23 March 1998, Maxwell AFB, Ala. Donovan was a Fighter Weapons School instructor and also an aggressor squadron pilot.
58. Semiactive radar missiles have a radar receiver and a control system that guide them toward the source of the radar energy. That means that the aircraft radar has to continue bouncing the radar signal off the enemy aircraft until the time of impact. Some of the newer missiles, such as the AIM-120, have active radars—that is, they can be launched at a target, and they have their own radar transmitters as well as receivers. At some point in their trajectories, their own radar transmitters will start "painting" the target; thus, they will home on the energy reflected back from their own radar signals. That means that the launching aircraft can leave as soon as the missile is on its way (in one mode of its operation, at least).
59. It was smaller than the radar missile, though. The AIM-9L, which is the current version, weighs less than half as much.
60. Capt Allan Miller, "Top Gun Program," *USAF Fighter Weapons Review*, Winter 1986, 8-12.
61. Lt Gen John J. Burns, USAF, Retired, interviewed by Hugh Ahmann, Saint Louis, Mo., 5-8 June 1984, file no. K239.0512-1587, AFHRA, Maxwell AFB, Ala.
62. *Ibid.*
63. As it happens, once the realistic training was introduced after the Vietnam War, the accident rate actually went down—not up. Maj Scott Walker, USAF, interviewed by author, 25 March 1998, Maxwell AFB, Ala.
64. Lon O. Nordeen, *Air Warfare in the Missile Age* (Washington, D.C.: Smithsonian Institution Press, 1985), 111-23; and Breton Greenhouse, "The Israeli Experience," in *Case Studies*, 578-82.
65. Michael Howard, "Military Science in an Age of Peace," Chesney Memorial Gold Medal lecture, 3 October 1973, reprinted in *Journal of the Royal United Services Institute* 119 (March 1974): 3-11.
66. Greenhouse, 586-96; and Nadav Safran, "Trial by Ordeal: The Yom Kippur War, October, 1973," *International Security* 2 (Fall 1977): 130-62.
67. Nordeen, 158-72; and Safran, 130-62.

68. Nordeen, 201-6; Matthew M. Hurley, "The Bekaa Valley Air Battle, June 1982: Lessons Mislearned," *Airpower Journal* 3, no. 4 (Winter 1989): 60-70; and Nick Kerr, "The Falklands Campaign," *Naval War College Review* 35 (November-December 1982): 14-21.

69. Maj Gerald R. Volloy, "Red Flag in Perspective," *USAF Fighter Weapons Review*, Spring 1979, 2-5; and "Training and Simulation: Filling the Missing Link," *Jane's Defence Weekly*, 13 April 1991, 606-9.

70. Wight interview.

71. The F-5 had an advantage throughout, however, because of its greater maneuverability. Donovan interview.

72. Walker interview.

73. Air Force Manual (AFM) 1-1, *Basic Aerospace Doctrine of the United States Air Force*, vol. 1, March 1992, 18; and AFDD 1, 512-3.

74. Winnefeld and Johnson, 100-101.

75. That fact seems to support the Air Corps Tactical School bomber advocates in their arguments against Chennault. Without radar, they were right, and their prediction then that radar was a serious prospect would have been a superhuman act of foresight. (Doubtless, it will occur to the reader that the Luftwaffe was a much tougher opponent in a total war than the Iraqi air force was in the Gulf War.)

76. Col John A. Warden III, "The Enemy as a System," *Airpower Journal* 9, no. 1 (Spring 1995): 40-55; and idem, "Air Theory for the Twenty-first Century," in *Challenge and Response: Anticipating US Military Security Concerns*, ed. Karl P. Magyar (Maxwell AFB, Ala.: Air University Press, August 1994), 311-32.

77. Thomas A. Keaney and Elliot A. Cohen, *Revolution in Warfare? Air Power in the Persian Gulf* (Annapolis: Naval Institute Press, 1995), 15. This book is one of the best sources on the Gulf War.

78. Ibid., 48-49; and Michael R. Gordon and Gen Bernard E. Trainor, *The Generals' War: The Inside Story of the Conflict in the Gulf* (Boston: Little, Brown, 1995), 205-26, 473-74.

79. Keaney and Cohen, 159-60.

80. Winnefeld and Johnson, 146-47.

81. Col John D. Waghelsteln, "Some Thoughts on Operation Desert Storm and Future Wars," *Military Review* 71 (February 1992): 80-83.

82. CEP is the radius of a circle within which 50 percent of the bombs, missiles, or projectiles may be expected to fall.

83. Bill Sweetman, "Scratching the Surface: Next Century Air-to-Ground Weapons," *Jane's International Defence Review* 30 (July 1997): 55-63. In "Experts Count Costs to Fix JDAM Design Flaws," *Jane's Defence Weekly* 28 (5 November 1997): 6, Stacey Evers reports that the unit cost would be about \$18,000 and that the program, then in low-rate initial production, would be delayed in going to full-rate production until some design flaws revealed in testing were overcome.

84. Millimeter wave radars, ladars (laser radars), and synthetic aperture radars are all under consideration. Without them and a sophisticated set of algorithms, only versions of JSOW and JDAMS carrying dispenser warheads with appropriate submunitions will have any chance against moving targets.

85. Bill Sweetman, "The Progress of the F-22 Fighter Program," *Jane's International Defence Review, Quarterly Report*, no. (1997): 1-20. Another development is the effort to develop the small smart bomb (SSB) at 250 pounds with such accuracy that it will have the same effect as the two-thousand-pound LGB, yet six of them will fit in the F-22 weapons bay.

86. Sweetman, "Scratching the Surface," 57; "USAF Plans Inertial Dispenser Selection This Month," *Jane's International Defence Review* 30 (January 1997): 10; and US Air Force, Headquarters Air Combat Command/DRPW, "Final Operational Requirements Document, Wind Corrected Munitions Dispenser," 23 September 1994.

87. In November 1997, it was reported that the first JSOWs were deployed aboard the aircraft carrier USS *Nimitz* in the Persian Gulf even though they had not achieved their IOC and were still

in low-rate initial production (LRIP). The versions deployed were said to be the ones containing CEMs particularly useful against air defense sites. "Nimitz Is Carrying Latest Stand-off Weapon," *Jane's Defence Weekly* 28 (19 November 1997): 4.

88. Sweetman, "Scratching the Surface," 55-63; Roy Braybrook, "Not-Too-Close Encounters of the Air-to-Ground Kind," *Armada International* 20 (February/March 1996): 28-39; and James W. Canan, "Smart and Smarter," *Sea Power* 38 (April 1995): 93-96. In "Mining Silver Bullets: Navy and Air Force Pursue Longer Range, Autonomous Standoff Weapons," *Armed Forces Journal International*, July 1997, 26-27, Glenn W. Goodman Jr. cites an accuracy of 33 feet for JDAMS and JSOW, stating that LRIP has been approved for both the JSOW and the Navy's standoff land attack missile, expanded response.

89. David A. Fulghum, "TSSAM Follow-on to Take Shape This Year," *Aviation Week & Space Technology*, 27 February 1997, 49; and Headquarters US Air Force/XORW, "Joint Air-to-Surface Standoff Missile, Program Management Directive," PMD 2389 (1), 2 February 1996.

90. Stacey Evers, "JASSM Struggles on Low Budget Pending Study," *Jane's Defence Weekly* 28 (8 October 1997): 11. Evers reports that the unit cost range is stipulated to be between \$400,000 and \$700,000 per round.

91. Keaney and Cohen, 195-96. Keaney and Cohen report that soon the HARM shooters were coming back to base without having fired their weapons, and only five coalition aircraft were lost to radar SAMs during the war.

92. "Eglin's AMRAAMs Join War," *Northwest Florida Daily News*, 22 February 1991, 3; and Jeffrey Lenorovitz, "Allied Air Supremacy Keeps Air-to-Air Engagements Limited," *Aviation Week & Space Technology*, 18 February 1991, 45-46. For information about the first kill of the new missile, see news release, Hughes Aircraft Company, Canoga Park, Calif., "Hughes AMRAAM Intercepts MIG-25 in Iraq 'No-Fly' Zone," January 1992; and Bill Sweetman, "Russia Sets the Pace in the Race for Air-to-Air Missiles," *Jane's International Defence Review* 30 (November 1997): 70-79.

93. An air defense fighter (ADF) version of the F-16 was fielded to use AIM-7s, but the system was put together as an interim solution until AMRAAM came on the line and was not very satisfactory. Donovan interview.

94. Sweetman, "Russia Sets the Pace," 70-79; idem, "Progress of the F-22 Program," 9; and Jean Dupont, "Europe Competing Strongly in AAMs," *Interavia* 53 (January 1998): 42-44. Dupont identifies the Russian R-73 and R-77 as the threats to beat but calls the AMRAAM "the reference" missile.

95. Wight interview.

96. A similar combination is being designed to retrofit our fleet of F-16s and F-15s. Walker interview.

97. Dupont, 42-43.

98. Sweetman, "Progress of the F-22 Program," 14.

99. Dupont, 42-44.

100. Donovan interview.

101. Mark Hewish and Joris Janssen Lok, "Passive Target Detection for Air Combat Gathers Pace," *Jane's International Defence Review* 31 (February 1998): 32-37.

102. Walker interview.

103. "Personnel Facts," *Airman* 42 (January 1998): 29; and Donovan interview.

104. At the time of the debate on the Unification Act of 1947, there was an effort on the part of the USAAF staff to carry the Air Defense Artillery with the airmen into the new Air Force. It never came to fruition, though, because of the airmen's desire to avoid antagonizing Gen Dwight Eisenhower and Gen George Marshall, whose support they needed. Additionally, there was not much enthusiasm for the idea among the officers in the Air Defense Artillery because they feared that the Air Force would be owned by the pilots.

105. Furthermore, civil society here and abroad is becoming so dependent upon GPS that it might prove politically and economically difficult to shut it down in time of conflict.



Way Points

Real knowledge is to know the extent of one's ignorance.

—Confucius

OPERATIONALIZING JOINT VISION 2010*

One of our key challenges as we approach the new century will be to transform America's armed forces into a future joint force tailored to a new security environment and capable of employing revolutionary new systems and operational concepts to achieve decisive success. The foundation of this effort is *Joint Vision 2010*, or *JV2010*, our conceptual template for future joint war fighting. In the past few years, we have made dramatic progress in charting a course to the future. Now we must begin to translate that vision into concrete reality.

In thinking about the future, my thoughts often wander back to my predecessors of a century ago. How did *they* see the future as the Victorian age drew to a close and the twentieth century came into view? Did they foresee that in less than a single generation the greatest war in history would break out? Did they anticipate that in less than a single short career, they would see the emergence of the airplane, the tank, the submarine, and the wireless radio systems that would transform forever the field of human conflict? Or did they extol the virtues of horse cavalry, observation balloons, and the bayonet?

Much of the tragedy of the First World War stemmed from the inability of the military leaders of the day to grasp the implications of change. Their failure doomed an entire generation and led directly to a second, even more destructive global war. How high was the price of that failure? The true numbers of dead may never be known; certainly they numbered in the tens of millions. But one example of the enormous cost of misjudging the future is described in Barbara Tuchman's classic work *The Guns of August*. After the war, a memorial was erected at Saint-Cyr, the French military academy, bearing a simple but tragic inscription that read, "To the Class of 1914." Every member of that class was killed in the Great War. And to compound the tragedy, even the memorial itself was destroyed in World

*Adapted from remarks by Gen Henry H. Shelton, chairman of the Joint Chiefs of Staff, at the Gen Graves S. Erskine Distinguished Lecture Series, Marine Corps University, 10 February 1988.

War II. The American people would never forgive that today, nor should they. It is our responsibility that each and every one of us do all in our power to see that we are ready for tomorrow and that we never allow complacency to take hold.

What will the future look like for you, the military leaders who will lead us in the next century? Almost certainly we will not face a hostile superpower in the near term, but let me be very clear: the world will remain a dangerous place. There will be many who do not share our values, many who will challenge our interests, and many who will threaten our friends and allies.

Some of these threats will look familiar. The nation-state, after all, will still be with us for a long time to come, and so will armies, navies, and air forces much as we know them today. But the twenty-first century will also see the nonstate actor come of age.

Fanned by the ancient flames of ethnic, religious, cultural, and economic rivalry, many groups will challenge us at home and abroad. However, unlike past eras, terrorist groups and other nonstate actors will have access to state-of-the-art technology. They will have secure communications and access to global positioning satellites; highly advanced computer technology; and, perhaps most frightening of all, weapons of mass destruction.

The proliferation of advanced technology with military applications has been so rapid and so pervasive that our enemies in the next century will have capabilities they could only dream about in this one. And whether those enemies come in the form of nation-states or rogue organizations pursuing their own agendas, they will have learned to challenge us asymmetrically, not where we are strong but where they think we are vulnerable. Thus, preparing to respond to the full range of asymmetric threats should increasingly occupy our attention now when we have a window of opportunity in which we are unchallenged by a strategic rival that could threaten our existence as a nation.

Our best thinking about how we should fight in the twenty-first century is found in *Joint Vision 2010*, our conceptual template for future joint operations. Most of you are probably familiar with *Joint Vision 2010*, at least in its broad outlines. The four pillars of *JV2010* are its key operational concepts: Dominant Maneuver, Precision Engagement, Focused Logistics, and Full-Dimensional Protection; and two "enablers"—Technological Innovation and Information Superiority. Each of these are very powerful individually, but they are not ends in themselves. The ultimate goal for joint war fighting in the future is decisive operations: the ability to win quickly and overwhelmingly across the entire range of operations, or, in other words, Full-Spectrum Dominance.

More than ever before, achieving a rapid decision on the battlefield and in operations other than war will be the hallmark of joint operations in the next century. But in thinking about the future, there is a key error we must

avoid. We must never fall into the trap of thinking that simply by fielding new and better systems we will maintain our lead. History has taught us over and over again that technology alone is not the answer. The *quality* of our people, the *caliber* of our leaders, and the *operational concepts and doctrine* we use to employ technology on the battlefield—*they* are the decisive factors.

World War II provides us a sobering example of this point. In the 1930s, the Allied powers were hard at work developing new airplanes, tanks, aircraft carriers, radar, and other advanced systems. As war broke out, the Allies had, across the board, better technology than the Germans, and more of it. When the Germans invaded France in May of 1940, they had fewer men, fewer artillery tubes, and fewer tanks than the Allies—and the tanks they *did* have were inferior.

But they had revolutionary operational concepts for employing their systems to achieve battlefield effects far greater than the sum of the parts. The next year they stood before the gates of Moscow, having conquered all of Europe from the arctic circle to the shores of Greece, from the coast of France to within sight of the Kremlin. In time, the Allies learned the hard lesson that how you *employ* technology is even more important than the technology itself. But these lessons came at a fearful cost.

If we are to avoid the military tragedies of this century, and if we are serious about bringing joint war fighting into the next one, then we must go beyond conceptualizing. We must *operationalize* our vision. That means translating ideas into steel on target, in a way that captures the best of what each service brings to the fight, while eliminating the inefficiencies that can sometimes accompany interservice operations.

We have already come a long way since we published *Joint Vision 2010* in July 1996 and its companion piece, *The Concept for Future Joint Operations*, a year later. The next milestone is the *JV2010 Implementation Master Plan*, scheduled for release in the summer of 1998. This plan is our road map for assessing and evaluating joint concepts for future war fighting.

Our starting point is joint doctrine. Because doctrine undergirds everything we do, it is the logical beginning for our efforts to translate our vision of joint war fighting into reality. Joint doctrine is indispensable because it provides the overarching framework for the conduct of joint operations. We have found time and again that when we stand up joint task forces on short notice and give them challenging missions, as we did in Operation Just Cause in Panama or Uphold Democracy in Haiti, joint doctrine provides the glue that holds everything together. As inherently complex and difficult as joint operations are, we have a sound body of joint doctrine out there—some 108 joint doctrinal publications so far—which gives our joint commanders a strong foundation to build on.

As new systems come on-line, as new operational concepts evolve, our joint doctrine will evolve as well. To turn joint doctrine into reality, we plan to conduct an extensive series of “joint war-fighting experiments.” Such

experimentation will be a continuous, ongoing process that pulls together many different threads to help us test new systems and new concepts. More than ever before, great things are going on in each of the services to aggressively prepare for the future. The Marine Corps's Sea Dragon experiments, the Army's Force XXI initiatives, the Air Force Battle Labs, and the Navy's Fleet Battle experiments are all plowing fertile ground for advanced experimentation.

We are working very hard to bring these service efforts together to help us learn how to meld service expertise, service systems, and service networks more efficiently into the world of joint war fighting. Joint war-fighting experiments will complement service experiments by focusing on major areas where forces and weapons from different services overlap. And that's where we're going to realize our most revolutionary breakthroughs.

What do I mean by a real breakthrough? If a joint commander and his staff from 1998 were somehow put into deep freeze and brought back in 2010, they would have a difficult time coping with the challenge of twenty-first-century warfare. The tempo of operations, the interplay of forces, and the operational concepts being used would be so advanced that today's commanders could scarcely recognize them, much less control them.

For example, the 72-hour air-tasking cycle we now use is great for executing prolonged air operations in support of a theater campaign plan. But it can't react quickly to battlefield changes measured in hours or minutes. The same is true on the ground, in the sense that there is a delay in bringing major ground systems to bear on high-value targets, even when they are within range. But if we can give battlefield commanders a real-time picture of threats and opportunities, we can mass weapons effects on the target literally in seconds. That means we could get much more punch out of our weapons and do it much faster than our opponent can react. That's what we mean by exploiting information superiority to dominate the battlefield.

Can we do this in the chaos and confusion of future hi-tech battlefields? That's what we intend to find out with joint war-fighting experiments. This concept calls for much more than just a few joint exercises. We'll begin by defining the operational capabilities we think we'll need, test and evaluate them, and then align and integrate the systems and doctrine that will give us those capabilities. Next we'll hand this effort off to our war fighters, the commanders in chief (CINC) and joint commanders in the field for more hands-on evaluation and testing to make sure we're getting it right.

We envision a series of war games and simulations, headquarters experiments, command post exercises, and field training exercises (FTX), each progressively more advanced. This will culminate in a "Super Bowl" event in 2004 called "Global Challenge," a massive joint FTX where we plan to test all of our *JV2010* concepts at every level. The year 2004 is important, because what we learn then will help guide the Quadrennial

Defense Review the following year, and will show us what we need to fund, develop, and field to have the optimum joint force for 2010.

This year, US Atlantic Command (USACOM) will take over responsibility for monitoring CINC, service experiments, and battle labs. We'll put both the Joint Battle Center and the Joint Warfighting Center under ACOM, which already operates the Joint Training Analysis Simulation Center, our joint activity for training joint operational headquarters. These different agencies already play leading roles in developing *JV2010*, and ACOM is therefore a natural choice to take on the day-to-day responsibilities of operationalizing our vision for future joint war fighting.

Our initial experiments will focus on building operational architectures to achieve the joint command and control capabilities required to realize our vision. Simultaneously, we'll initiate information superiority experiments to gain better understanding of what is possible, and what isn't, in the realm of information warfare. Then we'll progress to joint war-fighting experiments testing *JV2010's* key operational concepts, leading up to Global Challenge.

In addition to refining joint doctrine, we'll apply the lessons we learn to our joint organizations, training and education, leadership, and materiel—even the kind of people we recruit and where we place them in the force. That's essential because, unless we make timely changes in these areas to keep pace with emerging technology, we'll fail to realize its full potential.

What is exciting about all of this is that we're going beyond traditional methods to reach out and grab the future. For example, instead of putting all our units in one place, we're thinking about using distributed nets, linking all of the participating forces and headquarters electronically without colocating them. In fact, we'll be doing a lot of "out-of-the-box" thinking, hooking up different systems, trying out seemingly incompatible hardware and software, and harmonizing different processes and procedures.

In the early stages this process has been centered in the Pentagon. Now it's time to get it out into the field and work it, in the mud and snow and salt water, up at 30,000 feet, and in space too. We'll put everything under the microscope, not just operational concepts and doctrine, but also operational architecture and emerging technologies and techniques borrowed from the private sector.

Clearly, we face many challenges on the road to operationalizing *JV2010*. Perhaps the biggest is finding the resources we'll need to modernize the joint force based on what we learn from all our joint experimentation. Where will the funding, the people, the equipment, and the time come from to transform ourselves from where we are now to where we need to be?

That's a tough question given our level of activity and how constrained our budgets are. The current level of funding won't be enough to fully modernize the force in the next decade. The bottom line is we'll need help from the Department of Defense (DOD), and continuing support from

forward-thinking leaders in Congress, to close or realign facilities we no longer need. We must also save money by becoming more efficient in how we do business within DOD. And we'll need to be sensitive to the heavy commitments borne by the services and CINCs. But we must not allow ourselves to be deterred by these obstacles, because the future won't wait. In the year 2010, our forces will be much smaller than they were in the cold war, but if we do this right they'll be much better. And smaller is not better—better is better!

How good will we be? In the joint force of 2010, we'll be able to detect the launch of a ballistic missile; identify, target, and attack the launch platform; alert all units in the impact area; and attack and destroy the incoming missile all in a matter of a very few seconds. The ability to transfer information that fast across service and even national boundaries, in the fog and friction of war, using joint language that we all understand, will be nothing less than revolutionary. No military in history ever thought harder about its future than we are doing right now. And we will get there because that is our contract with the American people. They expect the best military on the planet. That's what they have today—and that's what we must give them tomorrow.

Our goal is to field a military of unmatched capability and versatility. But translating our vision into reality will take the talents, energies, inspiration, and hard work of the entire joint force. We cannot succeed without the active involvement of all our leaders, young and old, from every service and command. I challenge all of you to participate in this vitally important process. In our professional journals, in our joint and service schools, in the field, and in the fleet, we need and must have a strong and vigorous exchange of ideas to move forward. With your help, we'll build a joint force that will ensure a safe and prosperous America for many, many years to come. And that will be a legacy we can all be proud of.

Quantico, Virginia

CAN THE UNITED STATES AFFORD TO SURRENDER IN THE NEXT CONFLICT TO ANOTHER NATION'S DOMINANCE IN SPACE?

LT COL RICHARD EARL HANSEN, USAF, RETIRED

Themistocles, an Athenian politician and naval strategist of early Greece, was an astute observer who wrote that "he who commands the sea has command of everything."¹ Themistocles was the creator of Athenian sea power and the chief savior of Greece from being conquered by the Persians. The navy he designed defeated the Persian fleet in the Battle of Salamis in 480 B.C., thus saving Athens from subjugation.²

In those ancient times, it must be noted, the fastest means of travel was on the seas, since ships outdistanced all other methods of travel. Over the centuries, we have seen an upward progression in the speed of travel from ships on the sea, to railroads and highways on the surface, up through airplanes in the atmosphere and, in this fin de siècle, to the flashing speed of rockets in space. Consequently, while giving due respect to Themistocles, it must be concluded that we have presently reached that era in which whoever commands in space has command of everything.

The United States and our Air Force would do well to accept that statement as a basic doctrinal verity in any conflict. Note that the Gulf War played out to be an excellent, though partial, proving ground for that axiom. Our dominance over Iraq in passive space tools provided the United States and its allies with a commanding position over Iraqi terrestrial forces. After a period of decisive air strikes and only one hundred hours of ground warfare, the stated goals of the United Nations were achieved. Due in great part to these superior United States advantages in space, victory in the conflict was celebrated.

The world has reached the situation in which many nations and businesses have extensive commercial capabilities in space for television and communications. One example is the Motorola Corporation's 50-odd satellite-studded array of its iridium personal communications system. Other satellite-rich commercial systems are quickly filling near-earth space seemingly out-pacing governmental deployments. Aggressive acts by unprincipled nations or terrorists threatening such orbital assets must be dealt with as a possibility. Our US corporations will then reasonably expect Air Force aerospace forces to provide security for their peaceful space ventures. Such normal expectations would parallel our naval fighting ships providing protection for our merchantmen and fishing fleets, or as our

cavalry in the early West escorted and defended the prairie schooners venturing into our unpopulated frontiers.

In order to establish national policy and Air Force strategic doctrine, the United States would do well to make these declarations:

As to United States National policy: *It shall be the policy of the United States that freedom of passage on the high seas of space is considered an inalienable right of all nations.*

As to United States Air Force doctrine: *Air Force forces shall be prepared to achieve early dominance in any space conflict so as to guarantee freedom of passage for United States commercial ventures as well as all United States governmental and military assets in space.*

We must initiate the struggle for the creation and operation by our Air Force of those aerospace forces capable in wartime of achieving a commanding presence on the high seas of space. When realized, that dominance would provide protection from electronic tampering, predators, pirates, and hostile nations for our valuable US space-traveling assets. And it is difficult to believe that any middle or compromise solution to protect our vital space assets could approach success against direct hostile interference.

Could it possibly occur that the United States, presently one of the world's most powerful nations on the sea, on the land, in the air, and currently masterful in space, would ever fail to strive for wartime dominance in space? Were we not to create and exercise US Air Force commanding forces in space, would we not, in effect, be abandoning our commercial and military space assets to potential, or even certain, loss. By such a failure to act, would not the United States be engaging in surrender before the fact? Could we in this country afford to turn our heads and permit a form of military laissez-faire to be our guiding doctrine in space? No!

The medium of aerospace has long been the combat operating environment of our Air Force, just as surely as ground-based forces accrue to the Army and seaborne forces belong to the Navy. "Aerospace Environment" is succinctly defined in Air Force Manual 1-1, *Basic Aerospace Doctrine of the United States Air Force*, this way: "Aerospace consists of the entire expanse above the earth's surface."³ I believe that the US Air Force, therefore, should be charged promptly by the Congress and the Executive Branch with the mission of achieving and exercising, in wartime, dominance on the high seas of space. Further, Congress should be urged to provide sufficient statutes and funding for the Air Force to create and carry out that mission. Upon some future hostile challenge to US space assets, were our Air Force not so prepared, the unwelcome outcome would be seen to border on sheer capitulation.

Presently, the Air Force has published doctrine stressing that air supremacy must be achieved early in any conflict.⁴ These days, air supremacy is often referred to by some flag officers as "air dominance."

This dominance serves as the cornerstone of success in any campaign, be it air, ground, or sea. Because AFM 1-1 states that "the aerospace environment can be most fully exploited when considered as an indivisible whole," the term *Air Dominance* leads across that continuum to the concept of Space Dominance.

The necessity for embracing such a wartime doctrine will undoubtedly not be fully grasped nor readily accepted by everyone. Few seminal concepts are. Gen Howell M. Estes stated recently that "space, to a large extent, is an unknown to many throughout our country and to many leaders in our government who are being asked to make critical decisions that will chart the course in space for the United States—both inside and outside the military."⁵ General Estes is the commander of the US Air Force's rapidly growing Space Command.

The US citizenry's majority belief in these policy and doctrinal matters must be fostered through the educational efforts of responsible professionals, policy makers, and executives. To stimulate citizen thinking, this author has assayed the completion of a novel,⁶ the plot of which embraces the crucial decisions and difficulties involved in a fictional hostile space challenge to our US space shuttle in orbit. Other, more comprehensive, exploitation of electronic and print media are certainly in order. It can be expected that, with a fuller understanding of the issue, voters will demand that Congress fully fund the requisite forces and infrastructure within the Air Force to achieve "Dominance on the High Seas of Space."⁷

Notes

1. Cicero, *Ad Atticum*, X, 8, as quoted in John Bartlett, *Familiar Quotations*, 14th ed. (New York: Little, Brown and Company, 1968).

2. *Encyclopaedia Britannica*, 1966 ed., s.v. "Greco-Persian Wars."

3. Air Force Manual 1-1, *Basic Aerospace Doctrine of the United States Air Force*, March 1992, vol. 1, 5.

4. *Ibid.*

5. Gen Howell Estes III, commander in chief, US Space Command, and commander, Air Force Space Command, as quoted in *Aviation Week & Space Technology*, 1 December 1997, 69.

6. Richard Earl Hansen's *Check Six!* (Murphys, Calif.: NovelNovels, n.d.) is space fiction envisioning a US Department of Defense satellite grappled by a hostile and hotly radio-fuzed space mine that is discovered by space shuttle astronauts sent to repair that "broken" reconnaissance bird in orbit; on-line, Internet, available from <http://www.novelnovels.com>.

7. Lt Col Richard Earl Hansen, USAF, Retired, "Dominance on the High Seas of Space," *Air Chronicles*, n.p.; on-line, Internet, available from <http://www.airpower.maxwell.af.mil/airchronicles>.

Ricochets and Replies

Continued from page 5

mand and control centers? Aren't those tactical objectives to set the stage for hitting strategic targets? Isn't that the same as the Germans creating a hole in the French and British lines in May 1940 and then exploiting that hole and capturing Paris, a strategic objective? Wasn't France defeated in about the same amount of time that it took to liberate Kuwait?

In both cases, the attacker applied his own strengths against the weaknesses of his opponent. This application of force against weakness is probably the most fundamental concept in executing any conflict. For the Germans it was a superior combined arms doctrine emphasizing mobility, and for the United States it was superior airpower. The Iraqis were incapable of defending against stealth aircraft and cruise missiles. The initial US attack took advantage of this to create a huge "hole" in the Iraqi defenses and to then exploit this hole with overwhelming airpower. The incredible results were not achieved simply by airpower but because of the relative Iraqi vulnerability to air attack, or in essence, a weak flank. Without the stealth aircraft or cruise missiles, Iraqi vulnerability would have been much less and the results of an air campaign far less decisive.

That's the true advantage enjoyed by the United States at this point in time—we have the capability to punch a hole in nearly any air defense. If we fail to maintain this advantage, future air campaigns could again closely resemble the indecisive war of attrition. It's important to note that we only control half of the equation, for while we build an ever-more effective Air Force, other nations will seek to improve their air defenses.

Capt Robert A. Dietrick
Prince Sultan Air Base, Saudi Arabia

EDMONDS REVISITED

I challenge a number of points made by Lt Col David K. Edmonds in his article ("In Search of

High Ground," Spring 1998) concerning the Clausewitzian theoretical "trinity of war" and the National War College schematic construct illustrating that trinity. Upon careful examination, these points do not seem to me to be fairly based upon the actual words and intent of Clausewitz himself as stated in his work *On War*.

In book 1, chapter 1, section 28, "The Consequences for Theory," Clausewitz expressed his opinion that the dominant tendencies of war make it a trinity of (1) violence, which concerns mainly the people; (2) chance, which concerns mainly the army and its commander; and (3) its subordination as an instrument of policy, which makes it subject to reason and concerns mainly the government. Clausewitz described these three tendencies as "variable in their relationship with one another." He rejected any theory that seeks to fix an arbitrary relationship between them. And he went on to discuss developing a theory that maintains a balance between these three tendencies, a task which he explored in book 2.

I think it's very important to regard the idea of "balance" in light of Clausewitz's assertion that the three are "variables" in their relationships and his rejection of an "arbitrary relationship" between them. The questions I think must be asked are (1) What are proper and improper balances between the three? (2) How can it be determined what is an improper or proper "balance"? (3) Are there really proper "balances" as contrasted to improper "balances" between these variable tendencies? These questions are not answered by Clausewitz in book 2, or in the quoted section from book 1. But Colonel Edmonds and the National War College seem to believe that they have the answers. Nowhere does Clausewitz define proper and improper balances, and his assertions about the elements of the trinity being variable and his rejection of arbitrary relationships seem to negate proper and improper balances between the three.

Edmonds says, "If one element gets out of balance, then, as Clausewitz warns, war has the tendency to spiral out of control" (page

6). And he claims that in World War I and the Vietnam War, one or two elements got out of balance. However, nowhere did Clausewitz make any warning about war spiraling out of control because of a lack of balance in the trinity. Such a statement simply wasn't made by Clausewitz. Clausewitz merely said that the theory of war should maintain a balance between the three—not that the three themselves should be in some sort of defined balance.

Further, Clausewitz, in discussing a theory involving his postulated trinity of war, was being descriptive—not prescriptive. He was providing insights to understanding, not directions, when he discussed theory. In book 8, chapter 1, Clausewitz said, "Theory cannot equip the mind with formulas for solving problems, nor can it mark the narrow path on which the sole solution is supposed to lie by planting a hedge of principles on either side" (page 278).

In book 2, chapter 2, both titled "On the Theory of War," in the section "Theory Should be Study, not Doctrine," Clausewitz has this to say: "Theory will have fulfilled its main task when it is used to analyze the constituent elements of war . . . to illuminate all phases of warfare in a thorough critical inquiry. Theory then becomes a guide to anyone who wants to learn about war from books. It is meant to educate the mind of the future commander, or, more accurately, to guide him in his self-education, not to accompany him to the battlefield . . . not lead him by the hand for the rest of his life" (page 141).

In view of the actual words of Clausewitz, I question the purpose for which the Clausewitzian theory of the "trinity of war" is employed in Colonel Edmonds's article.

Joseph Forbes
Pittsburgh, Pennsylvania

COLONEL PARRINGTON'S RESPONSE

In response to the critiques of my article, "Mutually Assured Destruction Revisited: Strategic Doctrine in Question" (Winter

1997), I offer my full assurance that I am 100 percent pure Air Force and not an Army or Navy man in disguise as they imply! I also agree with them on many of their counterpoints, including their criticism of the sweeping generalizations made. But as anyone who has published will confess, it is nigh impossible to compress textbooks of material into the few pages of a journal article and still get your point across. The idea is to challenge, not prove, a point, and to cause further research and thinking on the subject, which I hope I have done.

The two letter writers seemed most disturbed with the possibility that without a strategic mission, the Air Force could not justify its separate existence. One suggested I wanted us back in the meat-grinder days of World War I and attrition warfare. How far from the truth. After fifty years of leading our nation in national security, there is plenty of reason for a separate US Air Force. Such accusations also do a great disservice to our sister services. It may surprise the writers to learn that the US Army actually flies more aircraft than the Air Force and that the concept of maneuver warfare is all about avoiding head-on battles, not pursuing them.

More importantly, as I wrote in "MAD Revisited," airpower has proven itself *the* decisive factor of warfare in the twentieth century. No one has lost a battle without first losing air superiority, and when used correctly in concert with land and naval power, airpower greatly reduces attrition and casualties on all sides. But our focus must be on the enemy's military capability, not on his people. To paraphrase Capt Alfred Thayer Mahan, US Navy (perhaps the most widely respected strategic thinker in American history), "The principal mission of a navy in war is the destruction of the enemy navy just as the principle mission of an army is destruction of the enemy's army." It follows that the principal mission of an air force (or space force) is destruction of the enemy's air forces (or space forces) and the establishment of air (space) supremacy. If we do that, as we have done since 1943, then all the other missions, whether on the ground, in the air, or at sea, can succeed in their own

tasks. But if we fail, or more likely ignore, that imperative and pursue a strategy of our own, then our nation will relive the bloody lesson of Pearl Harbor, Schweinfurt, and even the Somme. Air supremacy is reason enough for

a separate Air Force; we need explain no further.

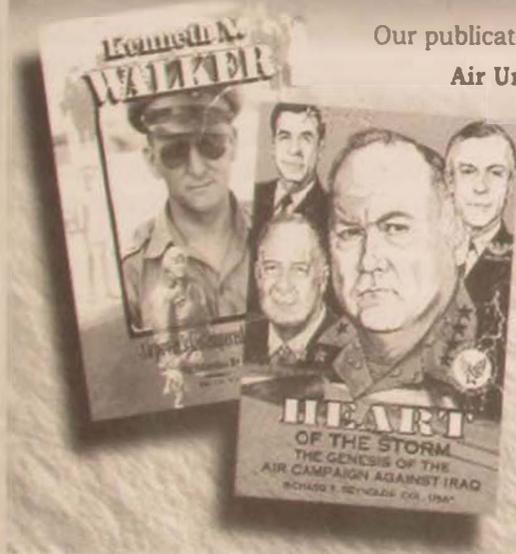
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The reason why so few good books are written is that so few people who can write know anything.

—Walter Bagehot

To End a War by Ambassador Richard Holbrooke.
Random House, 201 East 50th Street, New York
City 10022, 1998, 432 pages, \$27.95.

Richard Holbrooke's *To End a War* is an extraordinarily rich and complex book. Additionally, it is a highly personal and frequently compelling account of what might come to be regarded as a watershed in US foreign relations following the cold war: the decision of the United States to commit itself—both diplomatically and militarily—to the implementation of peace in Bosnia-Herzegovina. It is in fact Holbrooke's admittedly partisan account of the interaction between the diplomatic corps and the military that places *To End a War* on the "must read" shelf. Those who read it carefully will be rewarded with unique insights into a wide range of foreign-policy processes not limited to war in the Balkans.

Holbrooke, former assistant secretary of state for European and Canadian affairs, led the diplomatic shuttle preceding the Dayton Conference and then served throughout the negotiations (1–21 November 1995) as the ranking American diplomat. *To End a War* is, however, far more than an annotated travelogue of mind-numbing meetings and endless travel. Holbrooke offers the reader a detailed and remarkably undiplomatic account of the personalities and negotiation processes involved. His portraits of principal protagonists, drawn with artist-like attention to human frailties, graphically illustrate the importance of individual personalities in shaping the character of nations. His observations on the success and failure of negotiations in a variety of locations, including Packy's All-Sports Bar, offer plentiful raw material for a study of negotiation strategy. The dynamics that motivated Holbrooke and his team, however, remain the focal point. What drove them? What allowed them to succeed where others had failed?

The book is certain to be controversial. One point of controversy will be whether or not Hol-

brooke was politic to publish it with so many issues still unresolved. The narrative is a complex weave of many themes, running from the personal to the political. His reflections on missed opportunities (including one from Vietnam that inspired his later efforts in the Balkans) will no doubt catalyze speculation, approval, and disagreement. Was a peaceful disintegration of the Socialist Republic of Yugoslavia into its component republic and territories possible? Would early involvement of the North Atlantic Treaty Organization (NATO) have mitigated the bloodshed? Once concluded, could the Dayton Agreement have been implemented more rapidly and effectively?

As noted above, one of the central themes that runs throughout *To End a War* is Holbrooke's account of the interaction between diplomatic initiatives and military operations. He offers case studies of both the conflicts and pressures between military and diplomatic professionals and the measured application of military power as the means to achieve diplomatic ends. Holbrooke leaves no doubt that the military situation is the foundation from which diplomatic initiatives are undertaken: "The shape of the diplomatic landscape will usually reflect the balance of the forces on the ground" (page 73). Furthermore, he clearly understands that the military instrument can be—and in the case of the Dayton negotiations, was—effectively applied to shape that landscape. Airpower enthusiasts will note repeated references throughout the book to the efficacy of air strikes to discourage aggression and insure compliance. In retrospect, Holbrooke argues, "the best chance to prevent wars would have been to present the Yugoslavs with a clear warning that NATO airpower would be used against any party that tried to deal with the ethnic tensions of Yugoslavia by force" (page 28). In the course of his narrative, however, he tacitly acknowledges that the tragedies of Srebrenica and Sarajevo may have ultimately been necessary to catalyze the international consensus necessary for the conduct of air operations.

Holbrooke differentiates among at least five fundamentally different military actions in Bosnia: the United Nations (UN) mission prior to US engagement; the "Western offensive" or the Muslim-Croatian Federation; the NATO air campaign in August and September of 1995 (Operation Deliberate

Force); the implementation of the military provisions of Dayton; and Implementation Force (IFOR) support to civilian authorities. The critical significance of the NATO air campaign for the negotiation process is clear. Less clear, however, is the criticism directed toward the military's insistence on unity of command. Somewhat insensitive to the significance of the "chain of command," Holbrooke argues that the air campaign might have been even more effective had he been able to deal directly with the commander—the US Air Force's Michael E. Ryan, then a lieutenant general. "Informed discussions" between Holbrooke and General Ryan, however, were prevented by Adm Leighton W. "Snuffy" Smith Jr., who correctly insisted upon unity of command and strict control over tasking, staffing, and communication.

In the context of the air campaign, it is interesting to note that, coincident with the campaign, Holbrooke repeatedly encouraged the leaders of the Croat-Muslim Federation forces to pursue their Western offensive. His account of the diplomatic maneuvering that coordinated these "combined forces" operations is superb. Once the agreement was signed, NATO and allied ground forces under the command of Admiral Smith began to play an equally important part in ending the war.

Holbrooke's observations on the deployment and the mission of the IFOR are perhaps among his most controversial. In particular, he is critical of the "minimalist" interpretation of support to civilian authority taken by Admiral Smith. One could argue that, given Admiral Smith's successful execution of the IFOR mission, the minimalist approach was prudent. On the other hand, Holbrooke's description of the theoretical cost of the minimalist approach merits thoughtful consideration.

Diplomatic initiatives and military operations are both instruments of state power. At the highest levels of government, where Holbrooke operates, this relationship is oftentimes as personal as it is institutional. Friction between civilian and military "factions" is unavoidable and is actually an essential ingredient of the foreign-policy implementation process. Rather than counterproductive, it is a healthy dynamic that builds on the collective experience of diplomatic and military leadership in order to evolve workable courses of action.

I once had a conversation with a high-ranking diplomat who espoused a theory about this professional friction. He explained that career soldiers spend much of their professional lives wringing the ambiguity out of problems. Career diplomats, on the other hand, spend their professional lives courting ambiguity, oftentimes building it into

negotiations in order to allow room for negotiation and flexibility. A "clash of cultures" can occur both within and outside the US national-security arena and may, in fact, be endemic to US national-security decision making.

In summary, *To End a War* is a fast-paced narrative that is certain to become a classic on the shelf of primary-source diplomatic and military literature. Perhaps more importantly, it is also a stimulating invitation to a fresh, constructive debate on the evolution of US foreign policy, the coordination of diplomatic initiatives and military operations, and the inevitable friction that evolves as the United States pursues its foreign-policy objectives. Current unrest in the region highlights the importance of the issues so ably and vividly addressed by Richard Holbrooke.

Maj Gen Michael J. McCarthy, USAF
Stuttgart, Germany

The Origins of Western Warfare: Militarism and Morality in the Ancient World by Doyne Dawson. Westview Press, 5500 Central Avenue, Boulder, Colorado 80301-2877, 1996, 203 pages, \$24.95.

In the short introduction to his excellent book, *The Origins of Western Warfare*, Doyne Dawson relates an instructive observation about his college teaching experience. In the 1980s, he taught military history to ROTC cadets, and at the same time, he served as a volunteer for several student peace organizations in Boston. Dawson talked with both groups about war but found he had to do so in different ways. In the first case, with the cadets, he primarily used strategic and tactical terms, while in the second case, with the peace activists, he spoke using moral terms. Both groups discussed many of the same issues, yet did so using languages that were foreign to the other group. Accordingly, Dawson points out, they could not communicate with each other nor could they understand the other's position.

Professor Dawson's clear and lucid text is a superb effort to bridge that communication gap. He does so with the coherent insight that only when both types of languages are used can the phenomena of war, particularly Western warfare, be discussed productively.

The essence of Dawson's argument is that only by returning to our roots in the ancient world, first in primitive tribes with their warrior bands, then Greek city-states with their phalanxes, and subsequently, the Roman Empire with its legions can

we understand the sources of our uniquely Western way of war. He notes that the main motivations of prehistoric warriors for going to war were revenge and honor. These motivations developed into paradigms of justice and group loyalty. The Greeks added one additional motivation, that of seeking the advantage, which evolved into the paradigm of *raison d'état*, which views war as a legitimate expression of a state's power. Finally, the Romans refined all three notions into recognizable ideas familiar to contemporary audiences.

Using a short account of classical theories of war and imperialism, Dawson organizes these ideas into three major issues: moral, international, and constitutional. In the first case, warfare is viewed as an instrument of human and divine justice. This section includes an interesting discussion of the older doctrines of "just war" and "holy war," which until recent times were assumed to have a place in the world order, as well as some thoughtful reflections on more modern theories of "defensism" and pacifism.

In the second case, warfare is seen as a legitimate instrument of foreign policy—*raison d'état*. This section includes a discussion of the Greek, and later Machiavellian, notion that states exist in a tough world environment and therefore must be prepared to use force when it is in their interest to do so.

Finally, in the third case, warfare is understood as an instrument of internal policy. In this section, the discussion of martial values goes beyond their functional role—defending the city or state—to a larger role of becoming a source of civic virtue and loyalty. Distinctions are also made between the concepts of militarism and "bellicism."

The only shortcomings that can be cited in Dawson's book are those of omission, not commission. His discussion of the origins of Western warfare and morality leaves the reader wanting to read more about their development throughout the medieval and modern eras. Likewise, a similar treatment of Eastern warfare and morality would be instructive and worthy, but as Dawson himself notes in the introduction, he is not qualified for the pursuit of such a project.

Overall, however, this is a wonderful book that allows one to easily follow the development of Western ideas about war and their corresponding paradigms of morality, strategy, and militarism through the disciplines of history and philosophy. I plan to use it in my next advanced military ethics course here at the Air Force Academy.

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Victory at Any Cost: The Genius of Viet Nam's Gen. Vo Nguyen Giap by Cecil B. Currey. Brassey's, Inc., 1313 Dolly Madison Boulevard, Suite 401, McLean Virginia 22101, 1997, 432 pages, \$25.95.

Fascinating! *Victory at Any Cost* provides a paradigm shift into viewing the Vietnam War through our enemy's eyes. Cecil B. Currey has performed a great service by carefully researching and presenting this biography of Vietnam's leading general, Vo Nguyen Giap. The book argues that Giap was a military genius, successfully formulating winning strategies against three of the world's major powers. Make no mistake, this book does not deify Giap. He was a totally ruthless individual, responsible for the murders of many fellow countrymen who posed a political threat. Currey spent five years thoroughly researching Giap's life. He conducted interviews with Giap and several key colleagues. Currey recently retired as a professor of military history, University of South Florida, and from the US Army Reserve with the rank of colonel.

Born in 1911, Giap's life parallels the rise of the anticolonial movement in Vietnam. A gifted student, Giap acquired a Western education in French-managed schools in Vietnam. Giap avidly studied military history. He could present schematics of Napoléon's campaigns and major battles from memory. Already a vehement anticolonialist, Giap was introduced to Communist ideology, which he quickly adopted as his own. In the 1930s, while working as a teacher and journalist and covertly as a Communist propagandist, Giap became increasingly radical, advocating the revolutionary overthrow of the French. His value to the Communist movement was recognized in 1940 when he was ordered to seek refuge in Southern China. There he became acquainted with Ho Chi Minh and began plans for the formation of the Communist army. Giap proved to have a genius for organization and logistics, basically forming and equipping an army from the ground up with virtually no resources. One of Giap's fundamental beliefs was the prerequisite for political indoctrination. He professed only properly politically indoctrinated troops would make the sacrifices necessary to obtain victory.

During World War II, Giap's forces occasionally cooperated with US forces against the Japanese. Japanese surrender brought the return of French colonial rule and resulted in open hostilities between Communist forces and the French. Giap learned his trade by trial and error, learning from his mistakes. He gradually improved and expanded

his forces and his logistical base of support. The harshness of the French rule furthered the Communist agenda by alienating the people.

One of Giap's defining moments was the planning and execution of the defeat of the French garrison at Dienbienphu in 1954. There Giap used low-tech solutions such as undetectable underwater bridges, hand-carrying thousands of artillery rounds, and using thousands of civilians to dig trenches to within close proximity of French lines to surprise the defenders. Similar tactics would be used later against US forces engaged in Vietnam. Giap was a master of analyzing his opponents, identifying strengths to avoid as well as weaknesses to exploit. He correctly surmised that the American people would tire of the conflict and its continual drain of manpower and wealth. All along, his strategy was to take the long-term view, believing he eventually would be victorious if he simply outlasted his opponents. Giap broke with party lines and opposed the 1968 Tet offensive. He contended they were not ready for large-scale offensive operations. He was overruled by other senior party members and went on to develop the plan for the Tet offensive. The United States proved a tougher adversary than the French because of its massive firepower, modern technology, and greater mobility. Following Tet, Giap once again turned to low-tech solutions, using massive amounts of manpower to repair bomb damage and camouflage and deception to mask operations.

After Communist forces overran the South, Giap's influence and power waned. In later years, he became more of a figurehead representing the party internationally and at ceremonial functions within Vietnam.

I do not hesitate to recommend *Victory at Any Cost* to all readers of the *Airpower Journal*. I totally enjoyed reading the book both because of the engrossing subject matter as well as the author's writing style. Most importantly, the book conveys a different and yet very enlightening perspective of our involvement in Vietnam.

Lt Col Chris Anderson
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matched by any other power. It also ought to provide some important lessons to modern military leaders and thinkers. Disarmed, demoralized, and under constant if not very vigilant observation, the Luftwaffe was to emerge as the most combat-effective air force in the world. Using new archival sources, Corum explains how the Luftwaffe resurrected itself with visionary planning. Opening with an overview of World War I German aviation history, he provides a complete and accurate account of the evolution of German military airpower theory, doctrine, war games, and operations between the two world wars. The Germans, in defiance of the Treaty of Versailles, thoroughly studied and tested the lessons of World War I, analyzed the emerging air doctrines of other nations, and experimented with innovative aviation technology to create a "shadow air force." In creating the new air arm, the army, especially Hans von Seeckt, the first post-World War I chief of staff, was instrumental in keeping aviators in the Weimar army and supported the eventual creation of a separate air force. The old imperial General Staff and its post-World War I successor, the Truppenamt, realized in 1919 that Germany had been surprised by technology in the great battles of 1918 and needed to keep abreast of developments if it was to avoid strategic surprise on any future battlefield. Setting up a secret airfield inside Soviet Russia, thousands of pilots and ground-support personnel were cycled through training, giving the Germans valuable experience necessary for creating a viable operational doctrine. The Germans also exploited every loophole in the Treaty of Versailles in building police, reserve air arm, and civilian aeronautical establishments that allowed the military to train and created an air-mindedness that would serve the Luftwaffe well in later years.

An item that stands out among the many positive innovations in the German military during the interwar years is a complete and total lack of naval aviation. In later years, especially after the Nazis came to power and rearmament began in earnest, Hermann Göring and Adm Erich Raeder fought for control of naval air assets. There was no real development of naval air doctrine other than reconnaissance and artillery spotting. Thus, aircraft carriers were thought of as luxury items instead of an operational necessity that could benefit attack operations. Corum discloses the debates within the General Staff, led by Hans von Seeckt, Helmuth Wilberg, Wolfram von Richthofen, and Walther Wever, about the future role of airpower and the problems of aligning aviation technology with air doctrine. He challenges previous accounts and

The Luftwaffe: Creating the Operational Air War, 1918-1940 by James S. Corum. University Press of Kansas, Lawrence, Kansas 66049-3904, 1997, 378 pages, \$39.95.

The development of the Luftwaffe in the interwar period, 1919-38, is an accomplishment un-

demolishes a number of myths. For example, he demonstrates that Germany did not dismiss the potential of strategic bombing or embrace terror bombing of civilian populations and that it was not heavily influenced by its popular culture's romance with aviation. The Luftwaffe was organized along traditional lines with fighters, bombers, reconnaissance assets, dive-bombers, and transport aircraft. Its ability to cooperate with the army, far superior to any power opposing Germany in the 1930s, did not distract from the understanding and value of strategic bombardment. Lack of resources and politically imposed guidance, rather than lack of doctrine or operational strategy, kept the Luftwaffe from gaining a true strategic bomber force. The Luftwaffe also pushed the development of new technologies such as radios, cameras for reconnaissance, and coordination for air support between panzer and Luftwaffe units. As another cornerstone of German blitzkrieg strategy, paratroopers were established after the Germans were able to observe Soviet tests with smaller battalion-sized formations. Karl Student, who had an engineering degree, was able to convince the Luftwaffe to add gliders to this force and create a strategic strike force, allowing German paratroopers to seize fortresses and defeat the Dutch army in 1940 in five days.

Again, learning from its World War I experience, the Luftwaffe developed a comprehensive and sophisticated flak (antiaircraft) arm for defensive operations. The development of a series of medium- and heavy-caliber guns led to the creation of the famous 88 mm gun, which was also effective against armor. Also believing that it needed to create a defensive battle plan for its civilian population, the Luftwaffe formed an extensive civil air defense organization, which was exercised extensively before the outbreak of the war.

During the Spanish Civil War, the Luftwaffe was able to exercise its first- and second-generation aircraft. Its future commanders used this proving ground to test aircraft, doctrine, and tactics in preparing for future conflicts. Airlift, never really considered a strategic form of warfare, helped to achieve the breakthrough the nationalists needed to win the war. German Ju-52s ferried Gen Francisco Franco's troops from Morocco to Spain, and the Luftwaffe conducted similar operations in Holland in 1940 and Crete in 1941, again achieving the battlefield dominance required for victory.

Battlefield mobility was also stressed as a force enhancer, and a ground infrastructure was built up in peacetime that would give the Luftwaffe great service during the 1940 campaigns in the West.

Units and their support equipment could be quickly and effectively moved, ensuring that air support was close to the battle. This extensive organization was originally created to allow the Luftwaffe to shift its scarce resources quickly within Germany, but it was then adapted for the battlefield.

After 1933, Göring took over the reins of the Luftwaffe, but he made some key appointments that condemned the Luftwaffe to equipment that could not achieve the battlefield victories desired after 1941. Ernst Udet, who as chief of the technical office was responsible for the development of third-generation aircraft, pushed his concept of dive-bombing on Luftwaffe medium and heavy bombers with disastrous results. This shortcoming became apparent after 1941 with severe consequences.

Owing to the German General Staff tradition of war games and large-scale maneuvers, the ideas developed in the 1920s matured into an effective air doctrine for battlefield victory. Despite the failure to develop a naval air doctrine and the poor guidance of Hans Jeschonnek, chief of staff of the Luftwaffe, the Germans were able to gain the aerial advantage over the Allied powers in the first years of World War II, not because they had overwhelming numbers of aircraft but because their conception of a future air war and the training and equipment for such a war was far more accurate than their opponents' airpower visions.

Flexibility of German doctrine afforded the German Luftwaffe a greater strategic impact than massive bombardment alone did, which was the strategy of other European powers. This book is outstanding because it shows how doctrine, training, and visionary thinking need to be combined and refined through war games if airpower is to succeed in any future war. As the changing world situation continues to deemphasize the classic mission of strategic bombardment, the United States Air Force must recognize, plan for, and adapt to missions such as military airlift, close air support, and precision strike. I strongly recommend this book for inclusion into the curriculums of Air Command and Staff College and the Air War College, since the text actually shows how doctrine and tactics are created to overcome military problems and situations. The Luftwaffe had the ability to adapt and ensure that its doctrine and strategy did not become stale or tied to outdated or technologically inferior concepts. This is the key lesson of this book.

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The Future of War: Power, Technology, and American World Dominance in the 21st Century by George and Meredith Friedman. Crown Publishers, Inc., 201 East 50th Street, New York 10022, 1996, 464 pages, \$30.00.

Arguably the first modern airpower theorist, Giulio Douhet, argued that "research into the war of the future is not, therefore, an idle pastime. It is, rather, an ever-present practical necessity." The quote is applicable to the Friedmans' book *The Future of War*, since those in the national security field should consider reading this work a practical necessity rather than an idle pastime. The book does not present radical "2013, 2023, or pick your favorite date" scenarios articulated merely for shock value and doomsday predictions not based on any logical analysis of historical fact, as the current glut of most futurist-oriented works tend to do. Instead, the work presents a line of reasoning and argument that is thought provoking and well supported.

The authors start the work by presenting their argument along with the majority of the national security community that Desert Storm represented an epochal change in warfare. The twenty-first century is argued to be an American epoch secured through brilliant weapons just as the European epoch was secured by ballistic weapons. To support their fundamental thesis, the Friedmans present as a framework (referenced indirectly throughout the book) a list of eight points on weapons development that determine when a weapon has atrophied from being strategically significant to becoming obsolete, or "senile" as the Friedmans express it. To the Friedmans, a strategically significant weapon "is the one that brings force to bear in such a way that it decisively erodes the war-making capability of the enemy," while a senile weapon is one in which "the primary strategic function of the weapon has been obscured by the need to construct expensive defenses against threats to the weapons platform." Historical accounts providing examples of how past strategically significant weapons systems have become obsolete are presented throughout the work.

Despite the title, earlier chapters avoid discussion of the future of warfare and focus on other indirectly related issues. For example, chapters 2 and 3, respectively, discuss the evolution in which American scientists and civilians became military strategists and present an argument outlining the reasons for the irrelevance of nuclear weapons. As an interesting debating point, the special treatment accorded nuclear weapons in *The Future of War* seems to imply that the authors themselves believe

that as a total system, nuclear weapons are not necessarily obsolete but rather irrelevant due to their lack of political utility through actual use. The political discussion entailed in their treatment of nuclear weapons also discounts an early statement in the work that stresses that the authors intended *The Future of War* to be a "book on the technology of war only." The discussion of nuclear weapons, however, within the context of the entire book serves as an interesting digression more than an integrated portion supporting overarching themes.

The later chapters are directly linked to the Friedmans' fundamental thesis and supporting framework. For this reason, these portions of the work are very interesting and demand attention. The Friedmans spend much time identifying current weapons systems destined for obsolescence or senility (implying that some type of technological Alzheimer's disease exists and that the authors by dealing only with discussing the technology of war are prone to humanizing weapons systems). Weapons systems argued to be approaching senility include the tank, the aircraft carrier, and the stealthy manned aircraft. Obviously, this alone makes the book somewhat unique since it endeavors to criticize the most prized programs of each service and chooses no favorites as works in the defense policy field tend to do (intentionally and unintentionally). The book's support for the mobile off-shore base in a final chapter may be the one exception depending on which service is the owner of such a program. What makes the final chapters exceptional of their own accord is the Friedmans' predictions regarding future strategically significant systems.

The book articulates that increasingly more brilliant and faster weapons, coupled with the inevitable movement of warfare into the medium of space, represent the arena in which military dominance is to be established, as well as the tools with which to establish dominance, far into the future. Hypersonic cruise missiles are advocated as the quintessential weapons of the future. The discussion of hypersonic missile technology does not seem that futuristic when considered with recent informational reports such as the September/October issues of *Surface Warfare* and the 13 October issue of *Aviation Week & Space Technology*, which both possessed cover-story articles discussing plans for hypersonic weapons development. Arguing space to be the high ground of future military activity also is reasonable considering policy documents such as *Global Engagement: A Vision for the 21st Century Air Force* and the White House's National Security Strategy identification of space as an area in which the United States has an overarching capability.

The book's discussion of space warfare begins with the premise that the migration of warfare into the realm of space has a historical precedent in the migration of warfare into the realm of air, and later continues into an analysis concluding that the actual conduct of space warfare shares the most commonality with the conduct of naval warfare. The control of the seas is then revisited when the book concludes that controlling space will be a necessary step to maintain control of the seas, which is cited as the most fundamental mission for any hegemonic power to be able to complete in order to protect its interests and ensure its national security. As summarized on page 411 of *The Future of War*:

Whoever controls space, therefore, will control the world's oceans. Whoever controls the oceans will control the patterns of global commerce. Whoever controls the patterns of global commerce will be the wealthiest power in the world. Whoever is the wealthiest power in the world will be able to control space.

The final chapters also include one that presents the effect of future weapons technologies on land warfare that foreshadows the "return of the poor, bloody infantry" possessing information-age weaponry and firepower, extending to it extraordinary capability in what by today's standards seems to be in small quantity. As already alluded to, however, the primary prediction of the final chapters is that the future of American preeminence is and will be founded on its capability to expand military activity into space and to operate hypersonic, brilliant weapons. Readers of *The Future of War* are left to discern for themselves what will motivate this expansion, at whose hands it will take place, and whether it will be politically acceptable. This makes it a valuable, perhaps an indispensable, read for those guiding the future of American military power.

Patrick Harding
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Fateful Rendezvous: The Life of Butch O'Hare by Steve Ewing and John B. Lundstrom. Naval Institute Press, 2062 Generals Highway, Annapolis, Maryland 21402, 1997, 408 pages, \$32.95.

Butch O'Hare was an American hero when America most needed heroes in the dark early days of World War II in the Pacific. Flying an F4F Wildcat off the carrier *Lexington*, Butch O'Hare destroyed five of nine attacking Japanese bombers, effectively

breaking their attack. Winning the Medal of Honor and saving hundreds of American lives for that heroic action is only part of the Butch O'Hare story. He played a key role in developing fighter tactics and preparing naval aviators for war. Steve Ewing and John B. Lundstrom have pieced together the first biography of this naval aviation hero. The book was written with the cooperation of the O'Hare family, who provided insight and made available family papers. Research for this book included quite extensive use of recently released Japanese documents and numerous interviews with those who served with Butch.

Both authors are experienced naval historians. Mr. Ewing is the author of six additional naval books and is currently curator at the Patriots Point Naval and Maritime Museum. Mr. Lundstrom is curator of American and military history at the Milwaukee Public Museum. He has authored two other naval books and is working on a third.

As a biography, the book mostly follows a traditional chronological approach, although it digresses a little to discuss Butch's father, E. J. O'Hare, and his role in bringing Al Capone to justice. Butch O'Hare was born in 1914 in St. Louis, Missouri. His given name was Edward O'Hare, and his nickname came some twenty years later. His early years gave no indication of the greatness he would achieve. Butch's father was so concerned about Butch's lack of initiative that he enrolled him in a military academy, which seemed to work wonders. In 1933 he was accepted at the US Naval Academy, graduating with the Class of 1937.

Appropriately, the majority of the book covers Butch's wartime accomplishments. His defense of the *Lexington* against the Japanese bombers is covered in detail. As a result of his actions, Butch O'Hare was promoted and given command of a fighter squadron, VF-3. Due to a shortage of carriers, VF-3 became a reserve pool of pilots and aircraft for other squadrons. While this was not as exciting as combat, VF-3 made valuable contributions by preparing newly assigned pilots for the rigors of combat. Eventually Butch was reassigned to combat operations as commander of Carrier Air Group Six aboard the carrier *Enterprise*. He was instrumental in developing techniques for night fighter operations to protect carriers from attack. On 26 November 1943, Butch O'Hare, flying an F6F Hellcat, failed to return from an attempted intercept of an enemy night strike. For years the loss of Butch O'Hare was a mystery, as no one actually witnessed the crash of his aircraft. Some attributed his death to friendly fire. The authors went to great lengths to resolve the mystery, interviewing actual participants and

analyzing both US and Japanese archives to resolve the mystery. The authors surmise that Butch O'Hare was most likely killed by a lucky shot from a Japanese bomber.

I found this book interesting and recommend it to fellow airmen. In addition to a fascinating story of courage, it provides great insight into World War II carrier operations. The book also showcases Butch's unique leadership style, which motivated and inspired the men under his command.

Lt Col Chris Anderson
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Fighter Pilot: World War II in the South Pacific by William M. Gaskill. Sunflower University Press, 1531 Yuma, P. O. Box 1009, Manhattan, Kansas 66502-4228, 1997, 186 pages, \$22.95.

The Cold Blue Sky: A B-17 Gunner in World War Two by Jack Novey. Howell Press, 1147 River Road, Suite 2, Charlottesville, Virginia 22901, 1997, 183 pages, \$24.95.

ACE! Autobiography of a Fighter Pilot in World War II by Melvyn Paisley. Branden Publishing Company, Inc., 17 Station Street, P. O. Box 843, Brookline Village, Boston, Massachusetts 02147, 1992, 316 pages, \$22.95.

Begging Charles Dickens's indulgence, these books represent the best of memoirs and the worst of memoirs. This trio depicts a wide spectrum of aerial combat in World War II. The first book, written by a P-38 fighter pilot, covers a small portion of the air war over New Guinea in late 1944 and early 1945. The second covers one man's war as a B-17 waist gunner over occupied Europe in 1943. The final memoir, by a P-47 pilot, describes the battles in the skies over Europe in the final months of the war.

I attacked William Gaskill's memoir first. Let's not mince words: it is amazing that this book was ever printed. Published by Sunflower University Press, a small, mustang publishing house known for its independence and emphasis on airpower topics, I expected a degree of entertaining insight into the trials and tribulations faced by airmen in the Southwest Pacific area. I was sorely disappointed. The diary Gaskill kept while stationed in the Southwest Pacific failed to stimulate his memory enough to write a decent account of his war.

Instead of expanding on his wartime experiences—something he was eminently qualified to do—the author penned chapters on the Pacific war, including a war chronology—things he was not qualified to do. The rambling and disjointed narrative is too poorly written to be of value to any but the most ardent student of the war. More than once, the author included an anecdote (or chapter) with little or no connection to the story line. For instance, he includes a chapter on Japanese aggression in the Pacific that chronicles the first months of the war but fails to describe what impact this had on him as a young aviation cadet, or the changes he perceived in society at large, or how his training was preparing him for the upcoming challenge.

This is all the more distressing since Gaskill had the foundation of a first-rate story. Of historical note: he piloted one of the lesser-known fighters of World War II, the P-39 Airacobra, one of the first fighter aircraft with a tricycle landing gear and one built around its armament—a 37 mm cannon. Armed with this weapon, Gaskill's squadron attacked Japanese shipping and myriad installations in the Pacific. Later, his squadron transitioned to P-38 Lightnings and provided bomber escort. What Gaskill needed was a good editor to tighten the argument. Unfortunately, this is something he did not receive from his press.

Unlike *Fighter Pilot*, the other two memoirs are a joy to read. Jack Novey's *The Cold Blue Sky* recounts the exploits of a B-17 waist gunner in the early days of the Combined Bomber Offensive. *The Cold Blue Sky* has two things going for it that *Fighter Pilot* lacks. First, aside from a great title, Novey created a highly entertaining and engaging account of his war. Although he gives credit to his editor for markedly improving his manuscript, the author's talent is immediately obvious. He spins an entertaining tale that engages the reader. Second, Novey focuses on his point and sticks to it. Only rarely, and then towards the end of the book when he discusses his postwar experiences, does the narrator wander onto unstable ground.

But to the heart of the tale: Novey and his crew flew during the most dangerous time of the Combined Bomber Offensive, receiving fighter escort only rarely. Novey is a rarity in that he managed to complete a full tour of 25 missions—including both the August and October 1943 Regensburg-Schweinfurt missions. Few of his friends were so fortunate. Given the appalling attrition rates (on the first Regensburg-Schweinfurt mission, the Eighth Air Force had an attrition rate of 40 percent), it is all the more amazing that Novey's plane, the *Blackhawk*, survived as well.

From page one, the reader realizes he has a fast-paced narrative in his hands. Novey begins his memoir recounting a typical mission and his impressions of 3:00 A.M. reveille, disagreeable chow, mission briefing, followed by the interminable wait beside his aircraft in anticipation of the go signal. Then, the invasive cold and boredom, broken by periods of intense action. Novey's writing is gritty but entertaining and laced with much humor. He discusses how he enlisted in the Army, first wanting to join the cavalry but choosing the Army Air Forces (AAF) because of the free beer at the recruiting meeting and because as a gunner he would be a sergeant and exempt from "fatigue" duty. Once the author set his mind to something, however, he was determined to succeed. Plagued with chronic airsickness during his training, Novey devised ingenious ways to stay on flying status. Sometimes he would tell the pilot that his retching was the first time, "honest, Sir!" Other times he would successfully hide his used breakfast. Ultimately, he was found out and grounded. Novey saw his classmates depart for their crews and Europe. Brokenhearted but not dissuaded, Novey devised a unique way to work his way back. He checked into the hospital complaining of some fictitious ailment. When the doctors could find nothing wrong with him, they would declare him fully fit for combat duty and, alas, he was back at square one for training as a gunner. He never did fully lose his penchant for airsickness—he just had to be creatively resourceful in disposing of the evidence.

The combat narrative, which consumes the final two-thirds of the book is truly exceptional because so few men actually survived this period in the air war—and fewer still have put their experiences into words. In the author's vivid tapestry of his war life, the reader can see in his mind's eye the sullen expressions on the faces of the "old salts" when the "wet-behind-the-ears" Novey drops his bag at his bunk. The reader feels the apprehension during his first few missions as he becomes, not comfortable with the stress of combat, but resigned to it. Later, the reader understands why the author gives replacements that same sullen look he received when he arrived. He couldn't afford to become emotionally attached to anyone. Novey had seen too many of his buddies literally tumble from the sky. Novey often noted that it was only luck that saved a man, as when a friend had the sad duty of escorting a body to the American Cemetery in London, when, on that particular day, the man's entire

crew was lost over Germany. In another example, Novey watched as Luftwaffe fighters, in one pass, shot down every plane in his group except his. Finally, the author communicates vividly the anxiety he felt as he prepared for his 25th and final mission. The author sugarcoats nothing. Besides his airsickness, he freely discusses his girlfriends, liaisons, and drinking in graphic detail.

It is interesting to note that the author describes the atmosphere on board his plane as relaxed. He called the pilot, a lieutenant, "sir" more because he was several years older rather than due to his rank. Yet, he appreciated the stern discipline and leadership from the group commander, Col Archie Old Jr. The author credits Old's insistence on practice missions and formation discipline with saving many lives during combat. *The Cold Blue Sky* is perhaps the finest example of what life was like for the enlisted crew members and would make a fine companion volume to *A Wing and a Prayer* by Harry Crosby.

Like *The Cold Blue Sky*, Melvyn Paisley's *ACE!* is one of the best combat narratives to come out in years. Whereas Novey describes his part of the strategic air war, Paisley provides a glimpse of what a fighter-bomber pilot's life was like. Of course, the author was not just any run-of-the-mill fighter pilot. Paisley was one of the few with the eyesight, skill, and just plain dumb luck to become an ace. More than just a war memoir, however, *ACE!* covers Paisley's early years growing up in Portland, Oregon, and his readjustment to civilian life after the war. These bookends make this work unique from the other two.

The author devotes approximately half of the more than three hundred pages to a history of his private life. A child in the depression, Paisley had a life that was anything but easy. Yet being a child, he didn't realize the hardships his parents endured. He filled his days with marbles, milk bottle caps, and rummaging through the dump looking for treasures. Later, he graduated to jalopies, drag racing, and girls. Although this was not directly related to his wartime experiences, his narrative is engaging nonetheless and well worth the read.

This fascinating view into depression life makes it clear why men like Novey and Paisley were so determined to succeed, whether it be in gunnery school for Novey or flight training for Paisley. Failure was not part of the equation. In fact, Paisley feared washing out of pilot training so much that he refused to visit the local women of the evening, fearing a case of venereal disease would force his dismissal.

Paisley, like Novey, provides a valuable description of training. In fact, taken together both memoirs are valuable if only for the insight into the AAF school system. In particular, one is struck by the "industrialization" of the process and the bewildering maze of courses the students struggled through. Whether basic training, aerial gunnery, or primary flight instruction, the impression left in these memoirs is that the students were mere cogs in a machine. Perhaps lambs to the slaughter is a more apt analogy. The students went where they were told, did what they were told, and either graduated and moved on to the next school or washed out and went to the infantry.

Like *The Cold Blue Sky*, Paisley's narrative is lively and fast-paced. Enlisting in 1942, Lieutenant Paisley didn't arrive at his squadron until October 1944. Between then and V-E Day, he racked up nine victories, including a V-1 and an Me-262. Several of these victories were due to luck, being in the right place at the right time. For instance, it was pure luck that Paisley's squadron was just slightly further away from the German border on New Year's Day 1945 when the Luftwaffe launched Operation *Bodenplatte*—an all-out, last-ditch attempt to catch the Allied tactical air forces on the ground. Paisley and his squadron had just sortied when he spied swarms of German planes attacking nearby Royal Air Force bases and swarms more headed for his aerodrome. The British were caught on the ground, as were many US aircraft. Paisley accounted for five kills that day.

After the war, the author recounts his attempts to reenter the civilian world. Unfortunately for Paisley, this proved far more difficult than he had imagined. He had wanted to return to Portland and to the days of fast cars and faster women. However, he was now in his twenties and was expected to earn a living. Paisley unabashedly describes his immaturity, ending his story when he took a job with Boeing in Seattle.

The Cold Blue Sky and *ACE!* are two of the best World War II memoirs to appear in the last several years. Both works compare with the very best of the firsthand-account literature on the air war, providing the reader with riveting and touching accounts of the horrors, tragedies, and triumphs of the US air campaigns. Both do a wonderful job of seizing the drama of the air war and placing the reader in the middle of the action. A general audience might be slightly disappointed by the abundance of "civilian" stories in Paisley's account. Nevertheless, for readers interested in strategic bombing, tactical support to the ground troops, or the training of the AAF, Novey's and Paisley's ac-

counts will provide informative and worthwhile reading.

Capt Jim Gates
Washington, D.C.

A Certain Brotherhood by Col Jimmie H. Butler, USAF, Retired. Cricket Press, Colorado Springs, Colorado, 1996, 346 pages.

This softcover entry into the Vietnam "forward air controller memoir" genre belongs on the shelf alongside *Danang Diary*, *Lonely Kind of War*, and *Vietnam above the Treetops*. It complements that set of history, adding the mission of interdicting the Ho Chi Minh Trail in 1967. Colonel Butler brings the trail to vivid life, complete with secondary explosions, airbursts, and the frequent terror of operating there in an 80-knot Cessna. His descriptions of flying are worth the price of the book. He takes you there.

The main character is Lt Mitch McCall, who brings baggage to his Nail forward air controller (FAC) assignment at Nakhon Phanom, Thailand. A close call in pilot training shakes his confidence, and now he must deal with hundreds of angry anti-aircraft guns along the Ho Chi Minh Trail. His worries mount as friends pay the full price over interdiction points like Mu Gia Pass where even high-low tactics do not allow the O-1 Birddog aircraft to survive. Whenever a comrade falls, that certain brotherhood pulls together the forces for daring rescue attempts. Lieutenant McCall's reticence seems accentuated alongside more daring pilots in his unit, but he performs his share of heroic deeds.

Mitch develops a rapport with the hear-all, see-all North Vietnamese ground commander for the trail in Laos, and their collision at once seems inevitable. Mitch comes away from the encounter with quite a survival tale to tell. In fact, his heroics on the ground do not fit the character who began the story, unless we believe in some kind of catharsis brought by being drawn into the brotherhood.

This book should be of interest to aviation buffs and Vietnam history professionals, as it illuminates the strategic importance of the North Vietnamese logistics trail through Laos and the difficult Air Force mission of cutting it. Colonel Butler has produced an accurate picture, and an engrossing account.

Col James E. Roper, USAF, Retired
Montgomery, Alabama

Rape Warfare: The Hidden Genocide in Bosnia-Herzegovina and Croatia by Beverly Allen. University of Minnesota Press, 111 Third Avenue South, Suite 209, Minneapolis, Minnesota 55401-2520, 1996, 180 pages, \$20.00.

Rape Warfare is a compelling book and a necessary read for all military officers who will serve or are serving abroad and for planners responsible for implementing Joint Publication 3-07.6, *Joint Tactics, Techniques, and Procedures for Foreign Humanitarian Assistance Operations*, and Joint Publication 3-08, *Interagency Coordination during Joint Operations*. All forms of genocidal rape constitute the crime of genocide as described in Article 2, United Nations (UN) Convention on the Prevention and Punishment of the Crime of Genocide (1948). Allen's book is a testimony and an analysis of the horrifying phenomenon of "a military policy of rape for the purpose of genocide." Although the United States military would never engage in such a policy, unfortunately it has become or will become involved with nations that do. The incident in Okinawa, for example, in which three members of the armed forces of the United States raped a 12-year-old Japanese girl embroiled our government in a foreign legal system, closed bases, destroyed decades of goodwill and credibility, and gravely offended one of our important Asian allies. Allen takes the United States to task over its inadequate understanding of rape and lambastes Bosnia-Herzegovina and Croatia over their use of rape to further military policy.

As defined by Allen, rape warfare is "a military policy for the purpose of genocide currently practiced in Bosnia-Herzegovina (B-H) and Croatia by members of the Yugoslav Army, the Bosnian Serb forces, Serb militias in Croatia and B-H, the irregular Serb forces known as Chetniks, and Serb civilians." Allen identifies three main forms of this "genocidal rape." First, Chetniks or other Serb forces enter a Bosnian-Herzegovinian or Croatian village, take several women of varying ages from their homes, rape them in public view, and depart. The news of this atrocious event spreads rapidly throughout the village. Several days later, regular Bosnian Serb soldiers or Serb soldiers from the Yugoslav army arrive and offer the now-terrified residents safe passage away from the village on the condition they never return. Most accept, leaving the village abandoned to the Serbs and thus furthering the genocidal plan of "ethnic cleansing."

Second, Bosnian-Herzegovinian and Croatian women being held in Serb concentration camps are chosen at random to be raped, often as part of

torture preceding death. Third, Serb, Bosnian Serb, and Croatian Serb soldiers; Bosnian Serb militias; and Chetniks arrest Bosnian-Herzegovinian and Croatian women, imprison them in a rape/death camp, and rape them systematically for extended periods of time. Such rapes are either part of torture preceding death or part of torture leading to forced pregnancy. Pregnant victims are raped consistently until their pregnancies have progressed beyond the possibility of a safe abortion and are then released. In the first case, the death of the victim contributes to the genocidal goal; in the second, the birth of a child has the same effect because the perpetrator or the policy according to which he is acting considers the child a Serb, having none of the mother's identity.

Allen does not offer political-military remedies to the horror of genocidal rape. She feels that the arms embargo should be lifted so that the army of Bosnia-Herzegovina can defend itself and fight to regain territory conquered by the criminal Serb aggression. No political remedies exist since they would depend on negotiations with the architects and executors of the policy of rape. But she does offer some very sound and workable humanitarian and legal remedies. Some of the most effective remedial work in caring for victims has been done by nongovernment organizations and private individuals offering aid and refuge. Her analysis, however, found that "humanitarian" aid from outside governments entailed practically no effort to intervene in any way to stop such atrocities.

Legal remedies suggested by Allen include the dropping of the British (and American) tradition of common law for the juridical system derived from Roman Law and the Napoleonic Code. Addressing genocidal rape under these codes would allow authorities to bring to trial (even in absentia) Radovan Karadzic and the Serb army officers (Gen Blagoje Adizic and Gen Milan Guero) who authored the Ram and Brana plans (which promulgated the military policy of ethnic cleansing). Allen also strongly advocates the establishment of a permanent tribunal for adjudication of genocidal rape in particular and genocide in general, as well as other war crimes, on an ongoing basis.

Just as the reader is taking all of this in, Allen concludes that genocidal rape is a type of biological warfare. Citing the definition of biological warfare as "a voluntary use of living organisms or their toxic products with the aim of killing or harming persons, useful animals, or plants," she demonstrates that as a systemic policy, rape is willfully destructive and aimed at harming. Second, it is used to attack a highly susceptible sector of a popula-

tion—women and children—who are under the threat of death, whether imprisoned or not. Third, sperm, as used in genocidal rape for enforced pregnancy, attacks a specific biological system in its victims: the reproductive system of women capable of gestating. Fourth, genocidal rape has both immediate and long-term effects. Immediately, it produces atrocious physical pain, mental suffering, and often death. Long-term, it produces social ostracism; psychological trauma; and possible death by abortion, childbirth, or suicide. Therefore, according to Allen, genocidal rape qualifies as biological warfare—a crime and a UN treaty violation.

Allen has taken a giant step in justifying the American/UN/NATO presence in the Balkans and its *continuing* presence. These organizations are as opposed to the use of biological warfare as they are

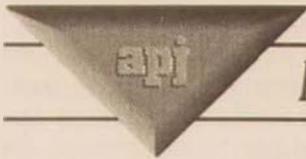
adamantly opposed to the use of chemical and nuclear weapons. Such opposition justifies intervention in the Balkans and other regions as well.

This book's detailed descriptions make the reader extremely uncomfortable as well as more knowledgeable about rape warfare. One must read it at least two or three times to understand the dimensions of what Dr. Allen has seen, researched, and synthesized. *Rape Warfare* calls for actions that will aid survivors, judge the perpetrators, and do what is required to guard against the atrocity of genocidal rape in the future. Otherwise, as Dr. Allen writes, we will never move towards any new formulations of justice and peace in our disordered world.

D. G. Bradford
Orlando, Florida

The real danger is not that computers will begin to think like men, but that men will begin to think like computers.

—Sydney Harris



Mission Debrief

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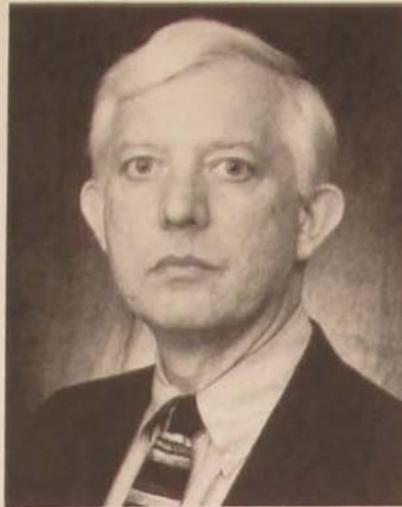
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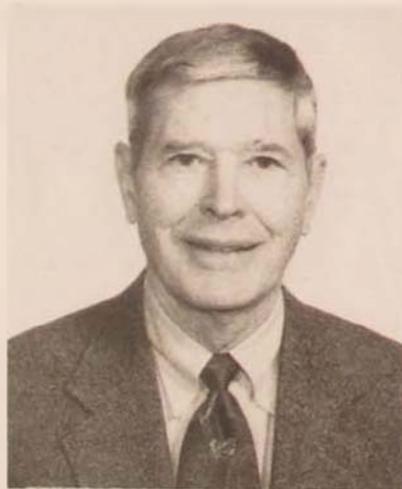
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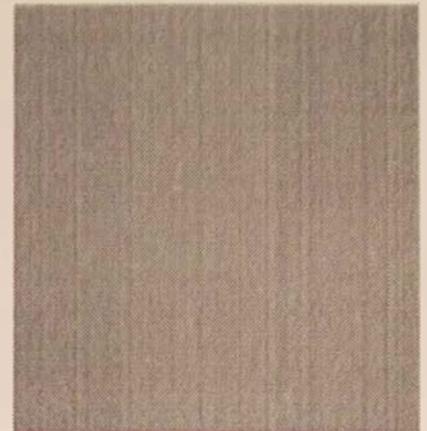
Dr. Grant T. Hammond (BA, Harvard University; MA, PhD, Johns Hopkins University) is a professor of international relations, teaching in the Department of Strategy, Doctrine, and Airpower and the Department of Future Conflict at the Air War College (AWC), Air University, Maxwell AFB, Alabama. He was the first civilian chair of the Department of National Security Studies at AWC and the first holder of a rotating Chair of National Security Strategy. Prior to joining AWC, he held positions at Rhodes College and the Center for International Affairs at Harvard. The author of several books and a number of journal articles, Dr. Hammond is completing two books about a seminal American military strategist, Air Force colonel John Boyd.



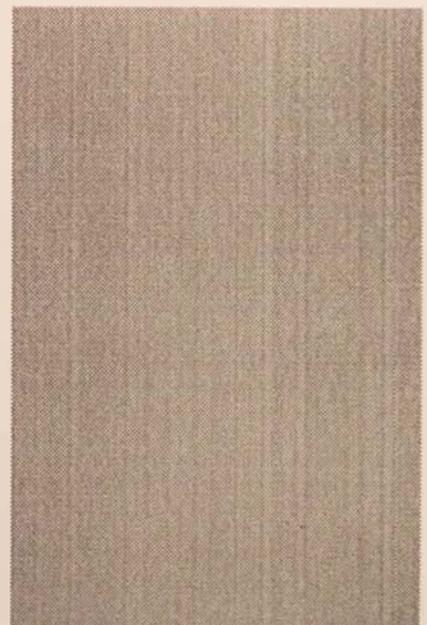
Lt Col James M. Smith, USAF, Retired (USAF; MS, University of Southern California; DPA, University of Alabama), is on the faculty of the United States Air Force Academy, Colorado Springs, Colorado. He formerly served on the faculties of Air Command and Staff College, Maxwell AFB, Alabama, and the United States Military Academy, West Point, New York. A graduate of Squadron Officer School and Air Command and Staff College, Dr. Smith was recently appointed director of the USAF Institute for National Security Studies (INSS).



Col Lloyd J. Matthews (USMA; MA, Harvard University; PhD, University of Virginia) is retired from the United States Army. Overseas tours included Germany and Vietnam. In subsequent assignments, he was commander of a basic combat training battalion at Fort Ord, California; editor of *Parameters*, the US Army War College's quarterly journal; and associate dean of the US Military Academy, from which position he retired in 1984. The editor of five books and the author of some 60 articles, Colonel Matthews is a graduate of the Armed Forces Staff College and the Army War College.



Brig Gen John L. Barry (USFA; MPA, University of Oklahoma) is commander of the 56th Fighter Wing at Luke AFB, Arizona. At the time he wrote his article for this issue of *APJ*, he was director of plans and programs, Headquarters United States Air Forces in Europe, Ramstein Air Base, Germany. A command pilot with more than three thousand flight hours in the F-4 and F-16, he commanded an Air Force fighter squadron as well as a fighter operations group and a composite wing in a combat zone. Previous assignments include F-4 instructor pilot in Europe, test and evaluation pilot at Nellis AFB, Nevada, White House Fellow at NASA during the *Challenger* disaster, F-16 pilot in Korea, and military assistant to the secretary of defense during Operations Desert Shield/Storm and the dissolution of the Soviet Union. A National Security Fellow at Harvard University, General Barry is a graduate of Squadron Officer School and the Armed Forces Staff College.





Lt Col Kathleen Conley (USAFA; MA, Naval War College; MS, Cornell University) is a National Defense Fellow at the John M. Olin Institute for Strategic Studies, Harvard University. Previous assignments include C-141 pilot and aircraft commander; assistant professor of management at the US Air Force Academy; operations officer for the 14th Airlift Squadron, Charleston AFB, South Carolina; and commander of the 86th Flying Training Squadron, Laughlin AFB, Texas. She is a command pilot with over thirty-two hundred hours in C-17, C-141, T-1A, and T-41 aircraft. Colonel Conley also attended Squadron Officer School and the Armed Forces Staff College.



Dr. David R. Mets (BS, USNA; MA, Columbia University; PhD, University of Denver) is a professor at the School of Advanced Airpower Studies, Maxwell AFB, Alabama, and was once the editor of *Air University Review*. He spent a 30-year career as a Navy sailor and as an Air Force pilot and navigator. He flew more than nine hundred C-130B sorties in Vietnam, and his last flying tour was as commander of an overseas AC-130 squadron. He had teaching tours at both the US Military Academy and the US Air Force Academy. Dr. Mets has published three books.

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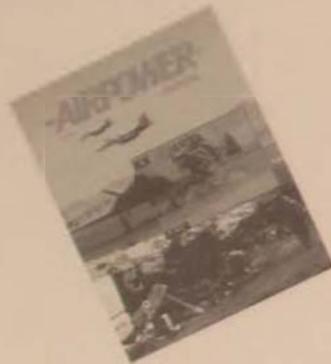
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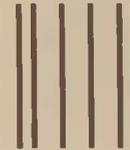
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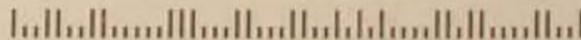


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