AIRPOWER

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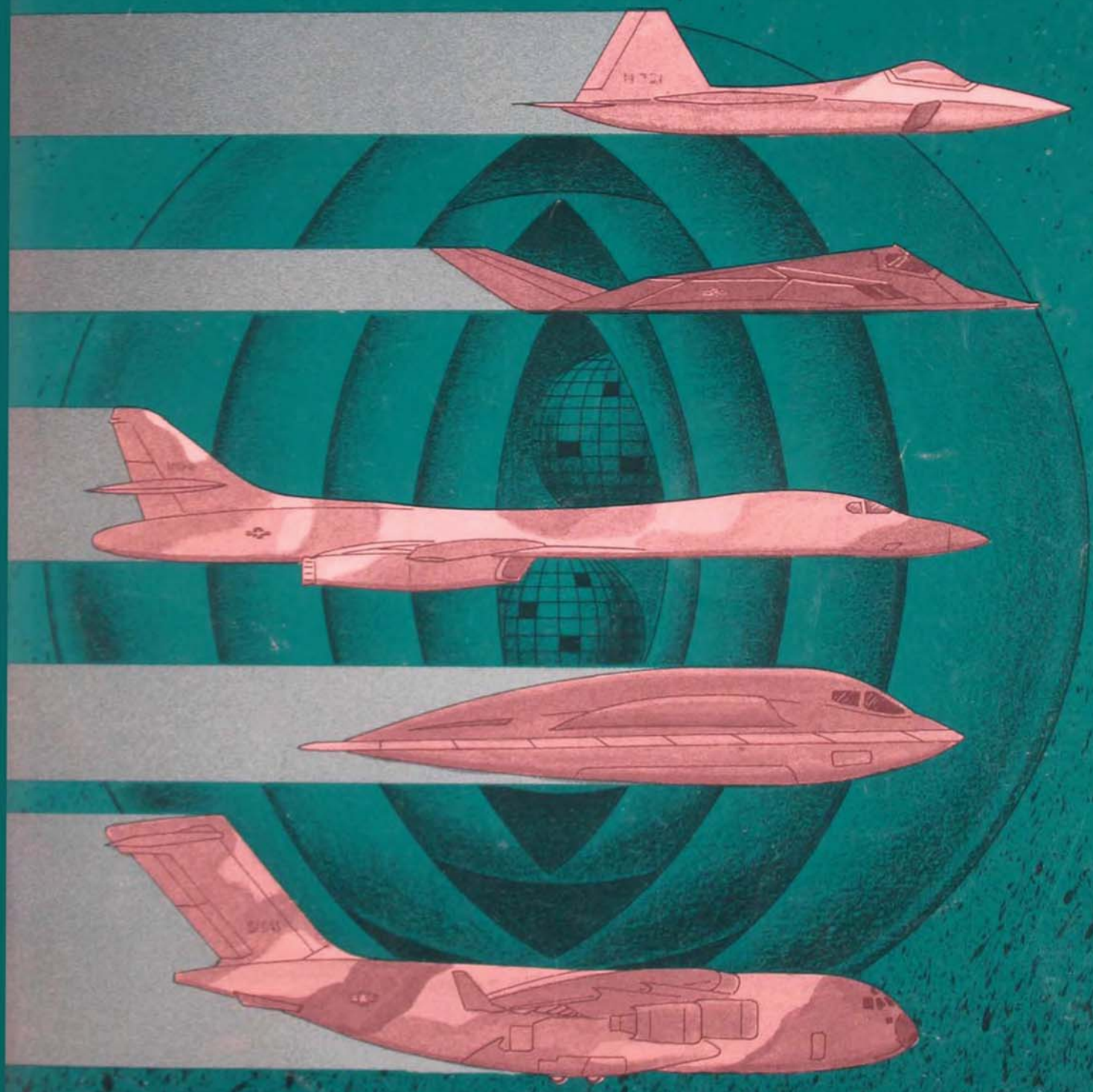
JOURNAL



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EDITORIAL

The Decisiveness of Air Power

FOLLOWING the Gulf war, an old debate reemerged. The central question of this long-standing dispute is, Can air power be decisive in war? This single quarrel has caused more dissension between the US Air Force and its sister services than perhaps any other. Much of the controversy stems originally from some rather extraordinary claims made by early proponents of air power. Their prophecies that air power alone could win wars were not well received by people who had spent their lives waging war on the surface of the earth. Reactions were so strong that they still overshadow the current issue. When the question, Can air power be decisive? is posed, some still hear the old assertion, Air power can win by itself. A key reason we have not put this debate to rest is that we have a void in our definition of terms. What do we mean by *decisive*?

Victory in a sporting event can often be traced to one particular play (making a first down on fourth and four), or to a certain player's overall performance (pitching a no-hitter), or to the contribution of a particular portion of the team's game (free-throw shooting, offense or defense, special teams, etc.). We call that contribution, whatever it was, the decisive factor in the game. It isn't necessarily the final or only contribution, just the *key* one.

Does that mean the other plays, players, or parts of the team's effort were unimportant? Of course not. If a team leaves the field claiming victory after making a first down on fourth and long, it will lose. If the remainder of the team leaves the court because the point guard is having a great game, victory will slip away. If the offense hits the showers because the defense is shining, an apparent win will wind up in the loss column. In sports, the term *decisive* simply refers to a factor that was clearly critical to victory. If that factor had not exerted a crucial influence, something else would have been decisive.

If we view the term *decisive* in the same way when we ask, Can air power be decisive in war? the answer is clearly *yes*. It *was* decisive in Operation Desert Storm. That doesn't mean that the surface forces were not important, nor does it mean that air power could have won the war alone. It simply means that air power in that particular situation was crucial to obtaining the kind of victory achieved.

Like new parents, when the early proponents of air power recognized the potential of the infant airplane, they knew that the nature of war had changed forever. In that analysis, they were correct. When they predicted that this new player would be a superstar someday, they were correct. When they said the superstar would win all by itself, they were exaggerating. Although it made significant contributions during its adolescence, the player had difficulty living up to the top billing the fans had predicted. But during Desert Storm, it emerged a mature superstar. All the effort, training, and faith the staff had placed in the youngster finally paid off in a decisive performance.

Modern warfare is a team effort. As in team sports, on one day, against one team, on one particular field, a team member can turn in a decisive performance. That doesn't take anything away from the rest of the team. In fact on a *professional* team, the other members might walk up, slap the player on the back, and say, "We knew you had it in you! Way to go!" Then the player might modestly say, "Aw shucks, it was really a team effort. I was just trying to do my part." RBC

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Letters to the editor are encouraged. All correspondence should be addressed to the Editor, Airpower Journal, Walker Hall, Bldg. 1400, Maxwell AFB AL 36112-5532. We reserve the right to edit the material for overall length.

KUDOS TO THE AUTHORS

The Fall 1991 issue was the best I've seen in years. "Sex, Power, and Ethics: The Challenge to the Military Professional" by CMSgt Robert D. Lewallen and "A Revolution in Air Transport: Acquiring the C-141 Starlifter" by Dr Roger D. Launius and Betty R. Kennedy were outstanding!

Maj Gen Richard D. Smith, USAF
Kelly AFB, Texas

Congratulations on selecting and printing Chief Lewallen's outstanding article on "Sex, Power, and Ethics." The chief cut right to the heart of the matter. Use and abuse of sex in the workplace is definitely an ethical problem and has far more to do with politics and power than attractive physical characteristics or self-control.

I have seen many forms of office "horseplay" over the past 17 years. Most of them assuredly have not involved mixed-gender supervisors and subordinates, because the Air Force of my day has been preponderantly male. However, all involved questionable ethics, poor judgement in postsituation analysis, and competition for power and control. It has always been a mystery to me that people are surprised to learn that sexual harassment and crimes like rape are perpetrated out of greed and a desire for power—not physical lust.

I wholeheartedly agree with Chief Lewallen that ethics must come off the bookshelf and find a great deal more use in the "mission." Like time management and delegation, power is a concept that—in itself—is neither good nor bad. How these concepts are translated into physical reality has an unbelievable impact on mission accomplishment. The concepts are fully accepted in the workplace, but sometimes we tend to shed them with our uniforms at the end of a duty day. Many of us have already experienced the effects of force multiplication in our personal lives when these concepts are invoked as a life-style rather than a management style. The Air Force is a way of life—not a simple occupation. Like it or not, officers are public officials. We have an absolutely tremendous opportunity now, as perhaps never before, to exemplify duty, honor, and country for our fellow citizens. It is our tremendous advantage to have traditions and codes that we believe in and follow.

Lt Col Marie C. Shadden, USAF
Phoenix, Arizona

Jim Cunningham's article "Cracks in the Black Dike: Secrecy, the Media, and the F-117A" (Fall 1991) was great reporting! I was the managing editor of *Aviation Week* during much of this period (until October 1986) and found it the best-kept secret in my experience. We got an over-the-transom drawing from an eyewitness buff but never used it because we could not confirm the shape. Subsequent events proved it to be quite accurate. I have a barracks bag full of hindsight—yours for a dime.

Herbert J. Coleman
Washington, D.C.

CONGRESSIONAL CORRECTION

Understanding the technology of the F-117A takes a genius; however, I learned in the second grade the difference between a senator and a representative. Jim Cunningham's "Cracks in the Black Dike" refers to "Sen Barbara Boxer" (page 29), but if memory serves me, she has been Representative Boxer from California's Sixth District since January 1983.

James L. Crowder
Tinker AFB, Oklahoma

RICOCHET REJOINDERS

A letter by Col Haywood S. Hansell in the Summer 1991 issue of *Airpower Journal* refers to Lt

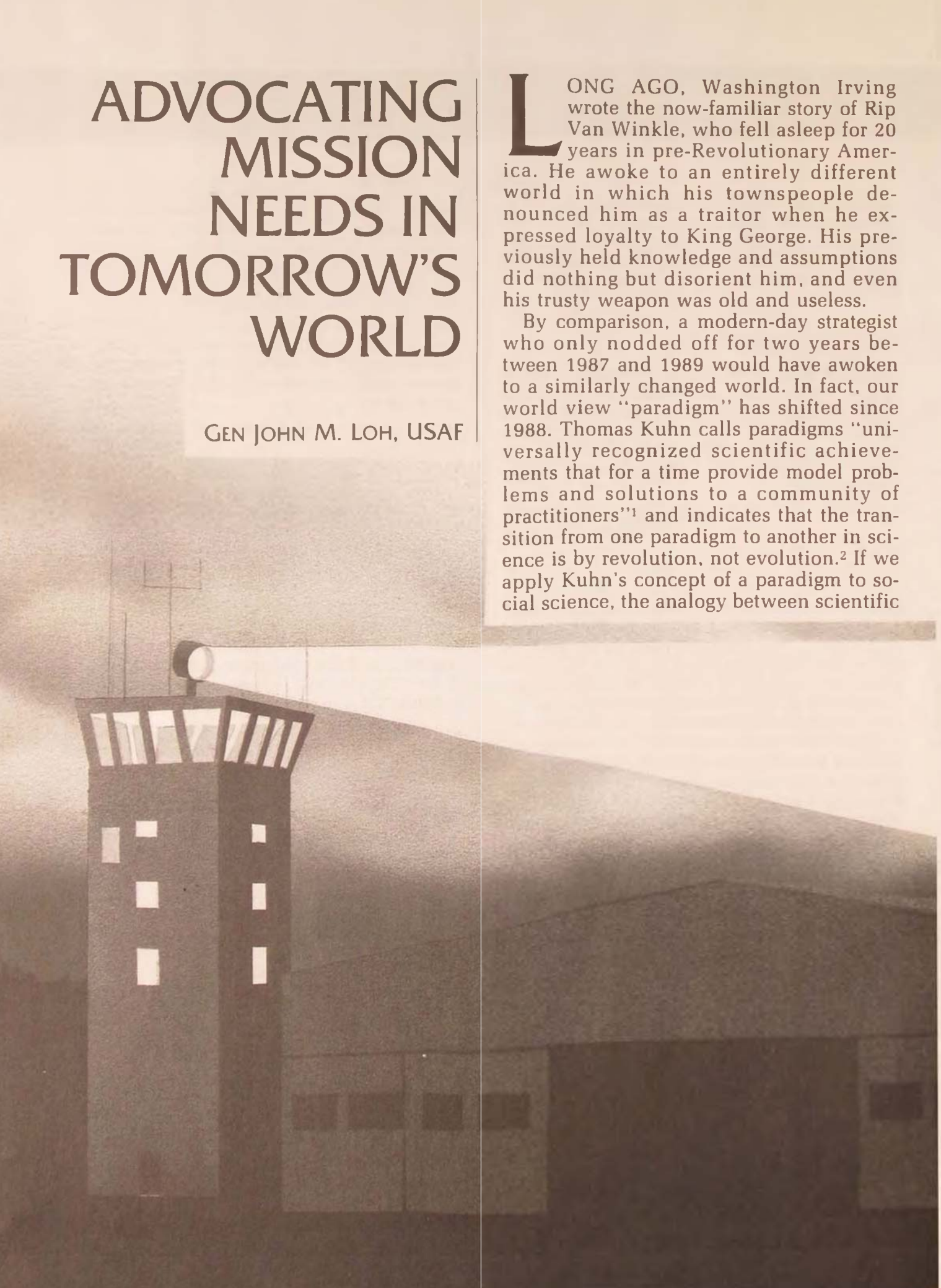
continued on page 67

ADVOCATING MISSION NEEDS IN TOMORROW'S WORLD

GEN JOHN M. LOH, USAF

LONG AGO, Washington Irving wrote the now-familiar story of Rip Van Winkle, who fell asleep for 20 years in pre-Revolutionary America. He awoke to an entirely different world in which his townspeople denounced him as a traitor when he expressed loyalty to King George. His previously held knowledge and assumptions did nothing but disorient him, and even his trusty weapon was old and useless.

By comparison, a modern-day strategist who only nodded off for two years between 1987 and 1989 would have awoken to a similarly changed world. In fact, our world view "paradigm" has shifted since 1988. Thomas Kuhn calls paradigms "universally recognized scientific achievements that for a time provide model problems and solutions to a community of practitioners"[1] and indicates that the transition from one paradigm to another in science is by revolution, not evolution.[2] If we apply Kuhn's concept of a paradigm to social science, the analogy between scientific



revolutions and recent world political changes is complete and perfect.

The old paradigm under which we determined our national security strategy is gone. It is totally inadequate for determining and articulating defense needs in today's world. Rather, we are operating under a new paradigm and need a new framework for defining and articulating mission needs. The old framework just won't do. My purpose here is to explain how I see this revolutionary paradigm shift, offer a framework for defining and advocating needs under the new paradigm, and illustrate the framework by discussing air superiority mission needs and operational requirements under the new paradigm as an example.

The Paradigm Shift

Since shortly after World War II, we operated under the old paradigm that assumed a bipolar, Eurocentric world. This world had two superpowers, and the major threat to our security was a Warsaw Pact attack on Western Europe.

The old paradigm focused on a European battlefield. We prepared for a high-threat conventional or perhaps a theater nuclear war. The battlefield was linear with little strategic depth. We were outnumbered by the adversary and planned a defensive campaign to protect our allies and reestablish prewar borders.

Our heavy, relatively fixed force structure matched this world view. Our strategy hinged on forward-basing, and we designed deploying forces to reinforce in-place forces rapidly. Deploying theater air forces planned and practiced operations as squadron-sized units operating from established bases in a mature theater with a well-developed communications and logistics infrastructure.

Under the old paradigm, our systems reflected this Eurocentric force structure and worldview. We designed systems to counteract a familiar enemy with known equip-

ment. Though our adversary modernized his equipment, the changes were marginal and our response manageable. In this environment, we became comfortable with our foe and the forces required to deter him. We also made constant, marginal improvements to our systems. Justifying improvements was easy—we had an obvious, definable, and threatening enemy. That world is gone, and we must begin to reorient our thinking, and especially our advocacy of new systems, toward the new paradigm.

The world of the new paradigm is no longer bipolar but unipolar. The United States is the world's only remaining superpower in all the elements of national power—industrial, economic, social, military, and political. Though the Soviet Union remains a threat, the danger of a large-scale conventional attack on Western Europe is greatly reduced. The Soviet Union, under the new paradigm, is but one, albeit the most formidable, of several regional powers or regional coalitions with which the United States must be concerned.

Last year, national leaders developed a military strategy to match this new paradigm. President George Bush, in a 2 August 1990 speech, reoriented our military strategy to likely regional battlefields and away from the unlikely large-scale European conflict.[3] Our new strategy is based on four fundamental pillars: to maintain an effective deterrent, to maintain US influence through forward presence, to respond rapidly and effectively to regional crises, and to retain the capacity to rebuild if the Soviet Union or some other power reemerges as a world threat.

Since our national military strategy underwent this fundamental change, we were forced to rethink our force structure. The character of our armed forces is significantly changing. It will be a smaller, expeditionary force based primarily in the United States. Forward presence instead of forward-basing is the watchword for the future. Deploying forces will be designed not for rapid reinforcement of in-place forces but for rapid global reach and power projection. Unlike the old paradigm, theater air forces are likely to deploy as wings to immature theaters with little infrastructure.

The Air Force developed its "Global Reach—Global Power" approach to realign thinking about air power to the new paradigm. A June 1990 white paper articulated the following five objectives of this strategy:

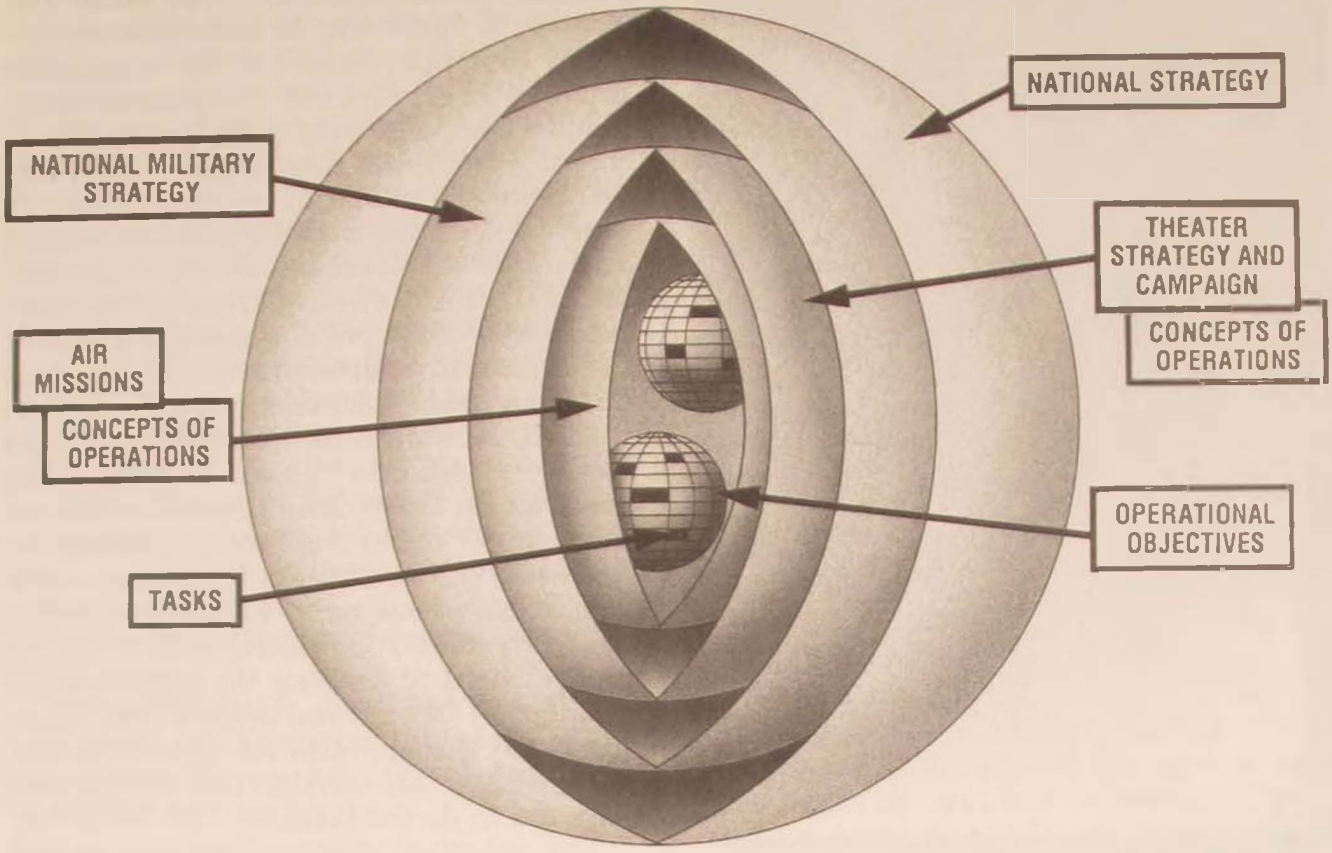
- Sustain deterrence (nuclear forces).
- Provide versatile combat forces (theater operations and power projection).
- Supply rapid global mobility (airlift and tankers).
- Control the high ground (space and command, control, communications, and intelligence [C³I] systems).
- Build US influence (strengthening security partners and relationships).[4]

We'll use these five fundamental objectives as a planning framework for air power in the next decade.

If our national military strategy and supporting force structure have changed, so must the systems we say are required to meet the needs generated by the new paradigm. For this reason, we must be able to articulate how a need or a system relates to our capability, mission, and strategy under the new paradigm. If we cannot clearly make this link, we are unlikely to find support for the need. Justifying needs under the old paradigm is simply inadequate.

A New Framework for Advocating Needs

As indicated earlier, the world view of the new paradigm requires a new framework for advocating needs. In Tactical Air Command (TAC), as the leader for stating operational requirements for the tactical air forces worldwide, we adapted Glenn Kent's "strategies-to-tasks" idea for our framework.[5] This framework shows a direct link between national strategy at the highest level and operational tasks. We illustrate our adaptation of the concept through the use of a multilayered spherical



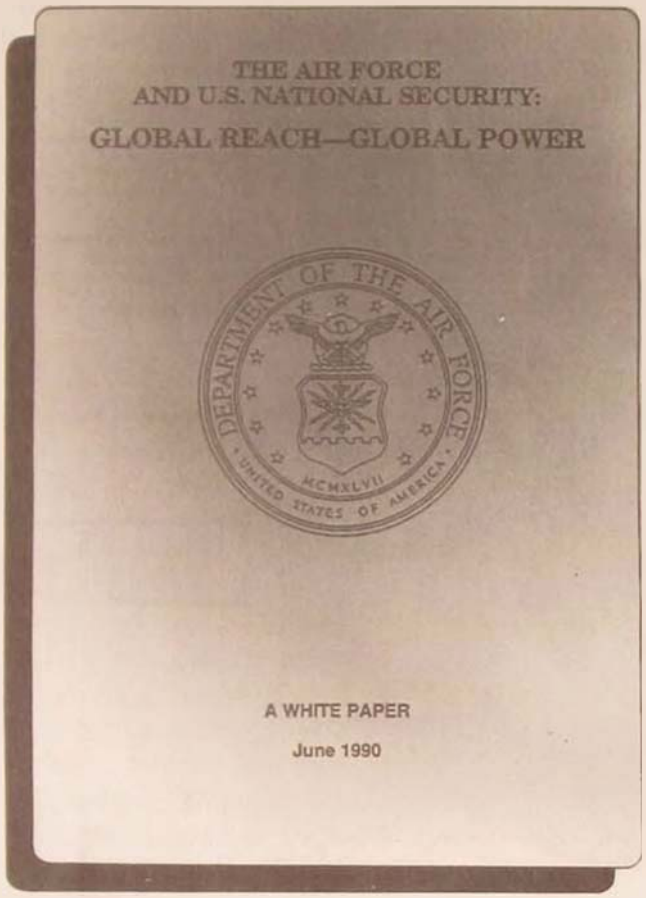
model (fig. 1). The largest sphere represents national strategy and objectives. Successively smaller spheres are national military strategy, theater strategy, air missions, and operational objectives that are made up of the various operational tasks. We use systems and people to perform these tasks. Concepts of operations are part of both the theater campaign sphere and the smaller air missions sphere.

The model suggests two important points. First, each successively smaller sphere is contained in, and draws its character from, the larger sphere(s). Thus, the nature of our national and theater military strategies has a profound impact on how we plan and execute our air missions and operational objectives. The second point is easily derived from the first: change in any of the larger spheres prompts changes to the smaller spheres since they draw their nature from the larger.

Figure 1. The Spherical Model

For example, in the early 1960s, national military strategy changed from massive retaliation to flexible response. Change in this larger sphere caused many changes to the smaller spheres. Most notably, theater strategies came into their own, and theater commanders developed plans to combat aggression at several levels, from unconventional warfare to theater nuclear warfare. We expanded theater conventional forces while reducing reliance on strategic nuclear forces. Eventually, an entirely new air mission subset (battlefield air interdiction [BAI]) grew from the need to slow enemy offensive tempo and to increase the viability of flexible response, which in turn created new operational objectives, tasks, and systems needs to fulfill the new mission.

So, change in national strategy or national military strategy causes change to



Global Reach—Global Power *outlines the new directions that the Air Force will be taking in the next decade and into the twenty-first century. This "white paper" is must reading for anyone needing to understand the employment of aerospace power in the emerging new world order.*

air missions, operational objectives, and tasks. We find ourselves in exactly this position today. As I noted, our nation substantially altered its military strategy last year, which should in turn change theater strategies and campaign plans, our air missions and the way we accomplish them, our operational objectives and the way we will perform them, and the accompanying operational tasks.

The "concept of operations" tag in both the theater strategy and campaign plan, and air missions spheres is necessary since the particular concept of operations a commander develops to achieve objectives also determines the nature of the sphere itself, and thus everything contained within the sphere. Many schemes for applying technology to systems fall apart because the proponent has failed to understand the concept of operations in both spheres.

For instance, consider the counterair mission in the recent US Central Command's campaign plan in Operation Desert Storm. The theater plan required early and complete attainment of air superiority, including defeating both Iraqi air forces and surface-to-air defenses. But the air commander could choose from an endless number of concepts of operation to fulfill that mission requirement and then could choose a concept for destroying enemy aircraft on a continuum from destroying all enemy aircraft in the air to destroying them all on the ground. Likewise, the air commander could deal with surface-to-air defenses on a continuum from only avoiding, to suppressing, to totally destroying these systems. Obviously, the mix of choices used to develop the commander's concept of operations helped define the nature of the operational objectives and tasks within this mission and the systems required to do the tasks.

The spherical strategies-to-tasks model, then, shows an unbroken link between the systems we use and our national strategy. Systems perform tasks that meet operational objectives within the concept of operations for air missions in a theater campaign. This campaign fulfills a national military strategy that supports an overall national strategy. "Requirements" are the features, characteristics, performance, and numbers of systems we need to perform the tasks that fulfill the objectives ... and so on up the chain of logic.

The model is useful in both determining and advocating requirements. We determine requirements by moving from the larger to the smaller spheres. We must first understand our national, national military, and theater strategies and the way each defines the subordinate air missions, operational objectives, and operational tasks. Once we understand the tasks required of us, we can determine the features, characteristics, performance, and the number of systems needed—in other words, our "operational requirements."

To advocate requirements, we move

within the model from the smallest to the largest sphere. Once we know what systems we need, we can show how a system performs a battlefield task that fulfills an operational objective within the concept of operations of one of our air missions. These missions, in turn, help to successfully complete a theater strategy or campaign plan that fulfills national military strategy in support of our national strategy. This is not just an academic exercise. It is an exercise in logic and intellectual rigor. Unless we can clearly establish this systems-tasks-objectives-missions-strategies link, we are unlikely to win Department of Defense (DOD) or congressional support for the systems we need. As noted earlier, we can no longer assume justification of our needs, and justification under the old paradigm is simply inadequate.

Let me illustrate, then, the use of this framework by discussing the needs for air superiority—our most critical mission—under the new paradigm.

Using the Framework: Air Superiority in the New Paradigm

As the model indicates, the initial step in determining needs is to understand the nature of our national strategy. This is the only sphere which has not changed under the new paradigm. US national strategy is a statement of overriding national interests and objectives and the way the government will meet them. President Bush, in a 1991 report to Congress, stated four fundamental objectives for the United States in the 1990s:

- The survival of the United States as a free and independent nation, with its fundamental values intact and its institutions and people secure.
- A healthy and growing US economy to ensure opportunity for individual prosperity and a resource base for national endeavors at home and abroad.
- A stable and secure world, fostering political freedom, human rights, and democratic institutions.
- Healthy, cooperative, and politically vigorous relations with allies and friendly nations.[6]

The report identifies challenges to these objectives and our political, economic, and defense agendas to meet the challenges. These three are the major subspheres to national strategy. But it is the defense sphere, expressed in our national military strategy, with which we are concerned here.

National military strategy significantly changed last year, and earlier in this article I noted the new strategy's four fundamental pillars. Because it focuses on regional contingencies and relies less on forward-based forces, it will considerably alter theater military strategies that support it. We have not seen the results of this change in specific theater strategies (though Operation Desert Storm provided a view of what they might be like), but we might conceive of three general models for theater military strategies in future regional crises: defensive, defensive-offensive, and offensive.

Our strategic aim in the defensive model is, together with an ally, to retain the status quo, usually the existing political boundaries. In this scenario, we are most likely outnumbered by the adversary and would deploy to reinforce an ally and any forward-based forces we had in the theater. We would deploy only the number of forces necessary to deter an aggressor or fight a successful defensive campaign. Since we are operating within the sphere of our new military strategy, we must assume that the bulk of the forces would deploy from the United States under crisis conditions. Should hostilities break out before deployment, we may face conditions requiring a forced entry to the theater.

Air superiority (part of our "air missions" sphere) will probably be most difficult to achieve under this model since we would begin it from a position of disadvantage. Defensive counterair (DCA) would be the most important element of

air superiority during the initial phases of the campaign, followed by offensive counterair (OCA) and suppression of enemy air defenses (SEAD) as we establish offensive air capability in the theater.

The second model I call defensive-offensive. In this campaign model, our forces would join with allies to deter or fight a defensive phase while planning an offensive phase in the theater to meet national strategic objectives. Though we may be outnumbered initially, we would establish numerical superiority and build a logistics and base structure before the offensive phase began. In most cases, this theater strategic model will require the majority of our deployable forces. This model best represents the Desert Shield/Storm scenario.

Air superiority under this model would be less difficult to achieve than in the purely defensive model since we assume in the defensive-offensive model that we will eventually establish numerical superiority. Like the previous model, our counterair forces will initially focus on DCA, but OCA and SEAD will be the heart of the counterair effort, especially during the offensive phase.

The final theater strategy model is the offensive model. It envisions the use of any in-place and rapidly deployable forces to achieve a limited strategic aim in a surgical, fast offensive campaign. This is the only conceivable purely offensive model since (again under the new national military strategy "sphere") we will not be postured for a purely offensive use of force except in limited-objective scenarios.

Air superiority should be the easiest to achieve under this scenario; we would not undertake the offensive action unless air superiority is assured. The most likely requirement for our counterair forces in this model is a quick OCA/SEAD strike to neutralize air forces and air defenses, leaving only a low-density, surface-to-air threat remaining.

Already we see some of the needs for an air superiority fighter emerging. Because of our national military strategy, we can expect to need force under crisis conditions, and nearly all the forces will deploy from the United States to the crisis area. For that reason, our aircraft and people must maintain a very high state of readiness and be able to travel long ranges with little supporting airlift. And we must provide a sanctuary free from air attack for all deployed forces in friendly territory. But we cannot completely define our needs until we determine the objectives and tasks that lie within the theater strategy and national military strategy spheres. Rather than discussing objectives and tasks for all three models, we will, for the sake of brevity, arbitrarily choose the middle (defensive-offensive) model and develop objectives and tasks under that concept.

An air commander will have many objectives under any theater strategy model, and the following list is certainly not exhaustive. But it does include the major objectives of the counterair mission required to fulfill theater strategic goals. And, of course, the commander's concept of operations clearly affects which objectives are accomplished and in what order.

The defensive phase of the defensive-offensive model would include these objectives:

- Deploy quickly with as little airlift as possible and with air refueling.
- Rapidly bed down units and C^3I elements in an immature theater.
- Establish theater air defense and C^3I network.
- Establish 24-hour DCA coverage immediately.
- Defeat enemy air attacks on friendly airfields, forces, ports, and depots.
- Build theater air forces to support offensive campaign.

The offensive phase of the model would add these objectives:

- Suppress, disrupt, and destroy the enemy air defense network.
- Destroy enemy air forces on the ground and in the air.
- Defend friendly bases, forces, and offensive air packages.
- Maintain a theaterwide C^3I network.

Each of these objectives includes thousands of tasks that, when properly accomplished, achieve the objectives. Again, for the sake of illustration, we'll discuss here only a few of the tasks required of air-to-air fighter aircraft. Obviously, we're viewing only a small portion of the entire strategies-to-tasks model.

Air-to-air fighters must do these tasks in the defensive phase:

- Deploy within 24 hours of notification.
- Defend themselves during theater entry.
- Operate from short airfields with little infrastructure at some distance from the expected engagement area.
- Detect and destroy numerically superior enemy air forces attacking friendly forces and bases.
- Avoid enemy surface-to-air missiles.
- Operate autonomously or in conjunction with airborne and ground command and control elements.
- Fly a sortie rate of "x" sorties per day.

And, during the offensive phase, these tasks are added:

- Avoid enemy surface-to-air missiles while ingressing enemy airspace.
- Operate autonomously or in conjunction with airborne command and control elements in enemy airspace.
- Destroy enemy aircraft in friendly or enemy airspace.
- Fight successfully while temporarily outnumbered in enemy airspace.

Having worked from the largest to the smallest sphere defining our strategies, missions, objectives, and tasks, we are now in a position to say what characteristics and systems we need on future air superiority fighters—our requirements. And these are not just arbitrary requirements. We need them to be able to do the tasks which support the objectives that fulfill our air mission goals in a specific theater strategy.

Earlier, I noted the high readiness and long-range characteristics required by our new national strategy. In addition to those characteristics, a future air superiority fighter needs:

- High reliability because of the expected poor theater infrastructure and the need for 24-hour DCA coverage.
- Long-range, high-volume radar coverage because of the need for self-defense during theater entry, the need to

The F-15 Eagle was designed primarily for air-to-air roles in conventional force deployments. As was seen in Desert Storm/Desert Shield, and as is foreshadowed by the dissolution of the Soviet Union, the US will need to redirect its national resources into developing defense forces that can perform multiple roles and deploy rapidly to any theater anywhere in the world on short notice.

Lockheed's YF-22 is a fighter aircraft for the next century. The fighter of the future must allow Air Force units to quickly achieve and exploit air superiority through a capability to shift rapidly between offensive and defensive roles.

conduct autonomous operations, and the need to fight effectively when outnumbered.

- High loiter time because of the 24-hour DCA coverage requirement.
- Short takeoff and landing distance because of poor infrastructure.
- High speed since poor infrastructure will induce malpositioning of air superiority forces in theater.
- Superior technology, including assured first-look, first-kill capability because of the need to fight effectively while outnumbered.
- High speed and low signatures, which we require to fight outnumbered and to avoid enemy surface-to-air threats during the defensive and initial portions of the offensive phases.
- An onboard self-protection suite for the same reasons.
- Passive detection to protect low signatures.

Again, though this is not an exhaustive list of requirements, it serves our purpose here of illustrating the process. These are not simply elaborate requirements we dreamed up but real requirements that result from actual tasks and objectives a theater commander wants from an air superiority force.

Having defined our operational requirements, we are able to design a system that best fulfills them. A new aircraft is needed to achieve the requirements I have just described. The Air Force has chosen the F-22 as that aircraft. Some have argued that our future air superiority requirements may be met by upgrades to the F-15, or some F-15 derivative. This is a flawed and incorrect conclusion for three reasons.

The first reason we need a new aircraft is the overriding importance of air superiority. It is every theater commander's first objective. The foregoing national military strategy and theater strategy models predict that we will have to establish air superiority after a lengthy deployment under crisis conditions. The models also indicate that we may have to force an entry into a theater. Two of the three models predict that air superiority forces will be fighting outnumbered far from home.

For these reasons, our technology and equipment must be clearly superior. Air superiority is not a mission we can win 101-98 in overtime. We must triumph in the air convincingly and quickly to be able to do other theater missions. Today's fighters are inadequate to ensure decisive victory on tomorrow's battlefield.

The second reason we need the F-22 is the spreading sophistication of the air defense threat around the world. No matter where the next conflict occurs, we can expect to face a highly developed air defense system. The next-generation air superiority fighter must avoid sophisticated surface-to-air threats while defeating advanced enemy air forces. In many cases, it will be required to do these tasks while outnumbered. No modification or derivative of existing fighters gives us the combination of

low signatures, weapons, avionics, and supportability required to meet these needs.

Finally, we need the F-22 because of the F-15's advancing age. When we field the F-22 nine years from now, the average F-15 will be 25 years old. Some will be over 30. The F-22 is an aircraft for the next century, not the 1990s. Had we used the modification/derivative concept when developing the F-15, we would now have an F-4 derivative as our frontline air superiority fighter facing MiG-29s, Su-27s, and Mirage 2000s on the battlefield. We would have given away air superiority—our most critical need.

This is a brief example of the new thinking required in today's world. The strategies-to-tasks framework provides a systematic, logical approach for developing new systems and improving our training, readiness, and sustainment programs. More importantly, it rests on the solid foundation of the new paradigm.

In A.D. 150, Ptolemy of Alexandria developed an earth-centered model of the universe. Astronomers used this paradigm for nearly 1,400 years to explain planetary motion until Nicolaus Copernicus theorized that the earth actually rotated around the sun. The paradigm changed. A post-Copernican astronomer who attempted to explain planetary motion with the Ptolemaic model would not only have been wrong, but also foolish. Should we continue to advocate mission needs and operational requirements based on the old paradigm, the evaporating bipolar paradigm that is so tempting and easy to do, we too would be wrong—and foolish. □

Notes

1. Thomas S. Kuhn, *The Structure of Scientific Revolutions* (Chicago: University of Chicago Press, 1970), viii.

2. Ibid., 12. As an example, Kuhn traces three paradigms present in the history of physical optics. In the seventeenth century, light was seen as material corpuscles. In the eighteenth century, the paradigm changed and scientists saw light as transverse wave motion; and after Albert Einstein, Max Planck, and others, the paradigm changed again. Scientists now see light as photons that exhibit some characteristics of waves and some of particles of motion.

3. President George Bush, "In Defense of Defense," speech to the Aspen Institute Symposium, 2 August 1990.

4. Secretary of the Air Force Donald B. Rice, *The Air Force and U.S. National Security: Global Reach—Global Power* (Washington, D.C.: Department of the Air Force, June 1990), 5.

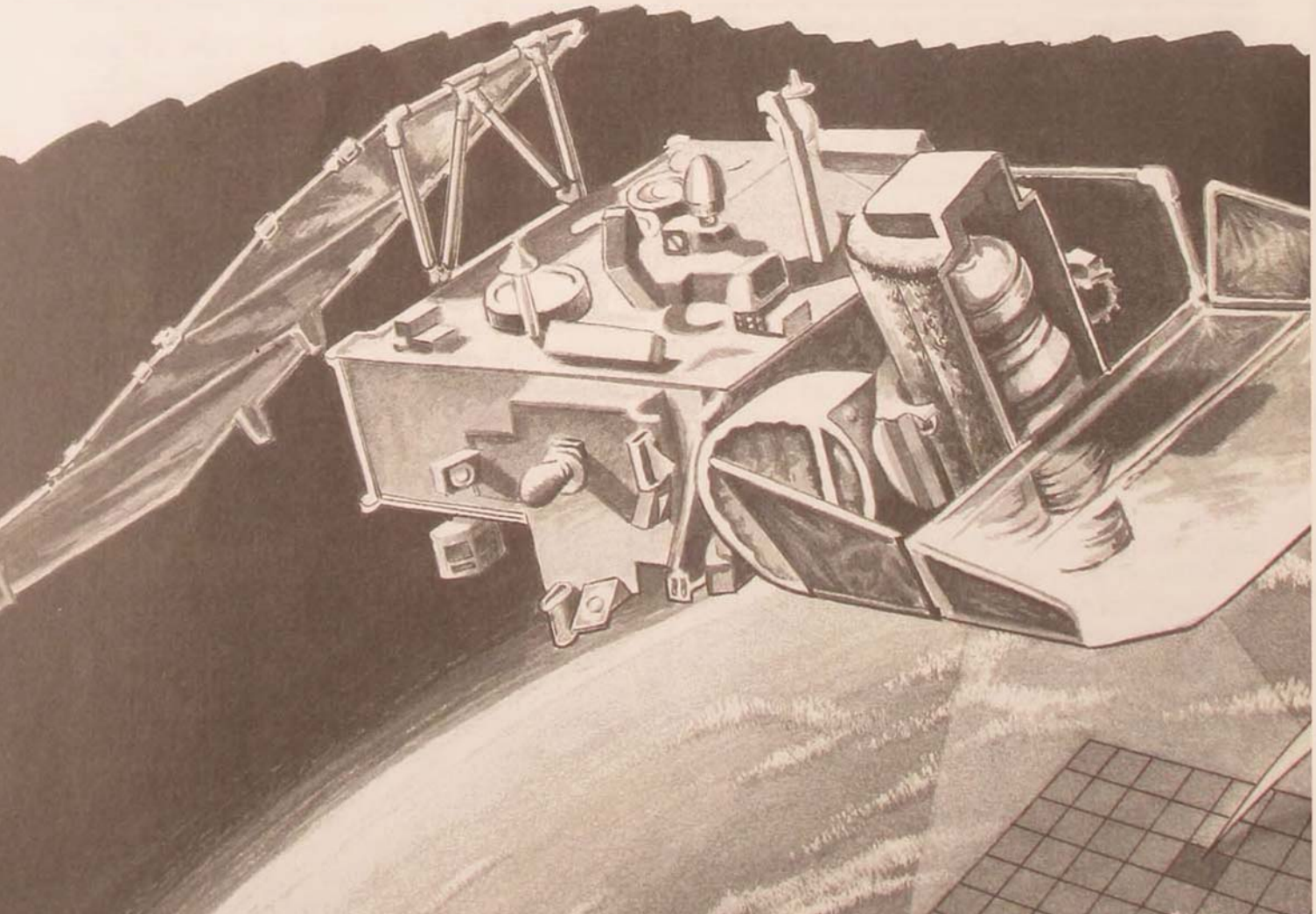
5. Glenn A. Kent, *A Framework for Defense Planning* (Santa Monica, Calif.: Rand Corporation, 1989).

6. President of the United States, *National Security Strategy of the United States* (Washington, D.C.: The White House, 1991), 3–4.

SPACE
A NEW STRATEGIC FRONTIER

LT GEN THOMAS S. MOORMAN, JR., USAF

THIS article considers how the unique medium of space can help meet the challenges facing our nation. The subject is timely in that space operations are finally coming into their own—specifically, the application of space assets to support Air Force missions. The article's title may be a misnomer, for space systems are not really very new but clearly will become more important to the Air Force and to the nation during the remainder of the 1990s and beyond. For over 30 years, the Air Force has evolved its space capabilities to provide national decision makers and operational commanders on the battlefield with information critical to the prosecution of hostilities. Since the formation of Air Force Space Command in the early 1980s, the space community has been working hard to develop the requisite policy, strategy, acquisition, and operational underpinnings to meet the challenge of a range of military conflicts. However, it was not until Operation Desert Storm that space systems were able to make broad, critical contributions to the outcome of a conflict. To better appreciate what the future holds for space in the Air Force, one must review how our presence in space evolved to this point.



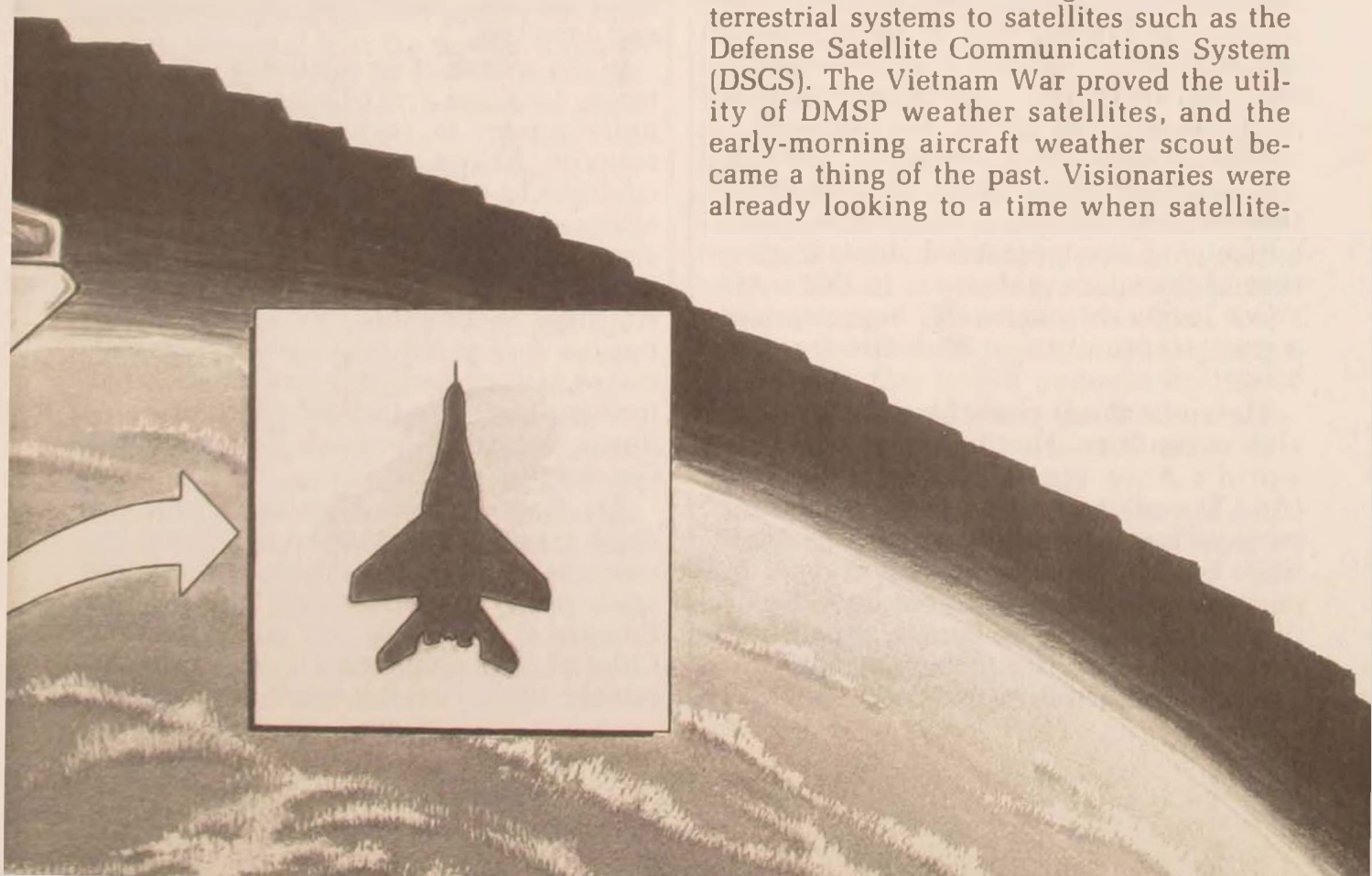
Evolution

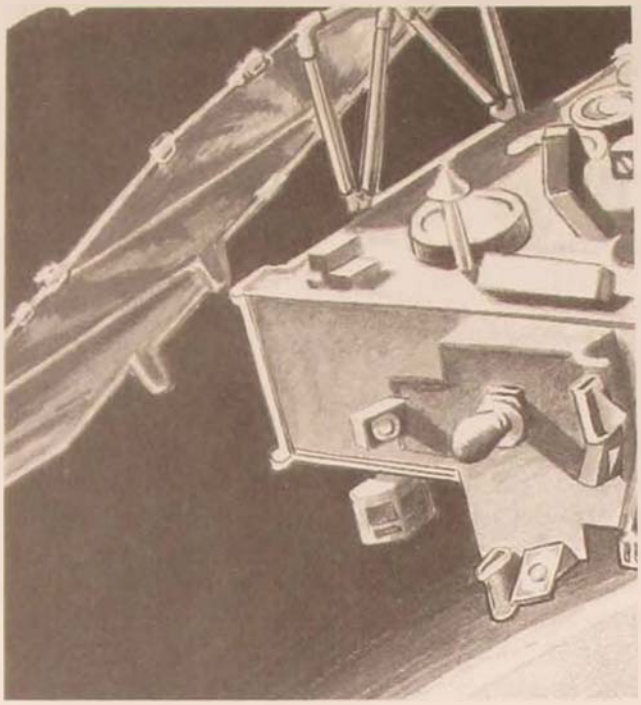
With the launch of Sputnik I in 1957, the United States—particularly the US Air Force—was galvanized into action to meet the threat posed by the potential Soviet domination of space. Because the new medium had uncertain operational applications, the research and development (R&D) community took the lead in acquiring and operating our space programs. Our launch vehicles were, by necessity, converted intercontinental ballistic missiles (ICBM), and a wide range of space-based capabilities were developed. Satellite systems pushed the state of the art and were understandably technology-driven.

The early satellites focused on meeting strategic missions. For example, a missile warning system known as the missile defense alarm system (MIDAS)—the forerunner of our currently deployed Defense Support Program—became one of the first "operational" Air Force satellites in the early 1960s. To provide detailed meteorological data to strategic users, the Defense Meteorological Satellite Program (DMSP) became operational in the mid-1960s. A host of military and civil communications satellites were developed, especially on the civilian side, spawning an enormously profitable industry within the United States—one which still leads the world.

Early space pioneers such as Gen Bernard A. Schriever built systems which pushed the technology barriers. To keep abreast of the rapidly expanding technology base, scientists incorporated the latest in the state of the art in each new satellite, making each one slightly different from its predecessor. A number of experiments also grew into major satellite programs. Institutionally, the Air Force space community during this time was essentially guided by Air Force civilian leadership.

The nature of the Air Force space business began to change in the mid- to late 1970s due to a variety of factors. One of the most important was that US military forces were gradually becoming more dependent upon space systems as applications were developed from new or evolving satellites. More and more communications traffic was being moved from terrestrial systems to satellites such as the Defense Satellite Communications System (DSCS). The Vietnam War proved the utility of DMSP weather satellites, and the early-morning aircraft weather scout became a thing of the past. Visionaries were already looking to a time when satellite-





based navigation using the global positioning system (GPS) would revolutionize navigation and weapons delivery. Finally, the tactical utility of data from space programs began to be explored.

With the expansion of space missions came corresponding increases in the size of the Air Force space budget. Space-related funding climbed from 2 percent of the total Air Force budget in the 1960s to 6-7 percent in the 1980s. Another important and related figure is that the Air Force was spending about 75-80 percent of the Department of Defense's (DOD) space budget and also possessed about 85 percent of the space manpower in DOD. Air Force leadership naturally began to pay more attention to a $6-billion space budget.

The space threat posed by the USSR was also expanding. The Soviets fielded the world's only operational antisatellite (ASAT) system and a full complement of reconnaissance and communications satellites. Further, the Soviet Union—year in and year out—demonstrated an extraordinarily robust space-launch capability, including the ability to launch satellites rapidly. Compared to Air Force systems, Soviet military space systems were not as sophisticated, technically capable, or as long-lived; nevertheless, the Soviets were beginning to integrate them into their overall force posture.

Air Force Space Command

These factors led the Air Force to begin studying ways to improve its organizational structure for prosecuting space operations. A series of studies in the late 1970s and early 1980s led to the conclusion that the time had come for a more comprehensive and operational focus on Air Force space programs. This decision was based upon the belief that an operational space command was required for the Air Force to expand its potential in space. Thus, Air Force Space Command was established in the fall of 1982. A year later, Naval Space Command was created, followed in 1985 by United States Space Command and in 1988 by Army Space Command. These organizations now serve both as the advocates for space systems within their respective services and as the operators of these systems, once they are developed and deployed.

In the course of its relatively brief existence, Air Force Space Command has gradually grown in responsibility and resources. At the outset, its mission was confined to operating missile-warning satellites and sensors, and conducting space-surveillance activities. In 1985 it assumed satellite command-and-control responsibilities. In 1990 the space-launch function, as well as the responsibility for associated launch facilities and down-range tracking sites, was transferred to Air Force Space Command from Air Force Systems Command.

Air Force Space Command and the space mission also received significant impetus with the enunciation of Air Force space policy by Secretary of the Air Force Edward C. Aldridge, Jr., and Air Force Chief of Staff Gen Larry D. Welch in December 1988. Two key tenets of the policy

were that (1) the future of the Air Force is inextricably tied to space and (2) space power will be as decisive in future combat as air power is today.[1]

Another key tenet of the space policy was that the Air Force made a solid corporate commitment to integrate space throughout the Air Force. This direction resulted in a number of initiatives: incorporating space into Air Force doctrine; establishing personnel policies to stimulate the cross flow of space-trained people between Air Force Space Command and other combatant commands; and expanding space education in the Air Force professional military education curriculum. This policy and the commitment inherent in these statements have far-reaching implications.

A Changing Environment

As we look to the challenges of the 1990s and beyond, the essential ingredients that lead to an expanded role for space are coming together. The Air Force has clearly stated an aggressive space policy to guide its actions; technology has matured to the point that the tactical benefits of space systems can be readily available to our combat forces; and we have in place the organizational structure—a rapidly maturing operational command for space (Air Force Space Command)—to provide the stimulus and advocacy for new space applications.

The environment in which space systems will be employed has changed dramatically over the past few years. Today and for the foreseeable future, the Air Force faces significant reductions in its budget and force structure. These reductions result primarily from two factors: (1) domestic budget imperatives, as the nation tries to bring the deficit under control, and (2) the startling political and social transformations in both the Soviet Union and Eastern Europe. The latter also implies a reduced strategic and conventional threat from traditional adversaries.

Indeed, as Gen George L. Butler, commander in chief of Strategic Air Command, suggested in a recent speech on the changing geopolitical environment, multipolar relations and emerging nation-states that are asserting their independence from the boundaries of World War II may well lead to increased factionalism and a higher potential for low-intensity conflict.[2] This is already occurring in Iraq, in the Baltic states' press for independence, and in the secession movements within Yugoslavia. Though the imminent threat of global nuclear war has diminished, the geopolitical transformations in the Soviet Union and Eastern Europe do not necessarily promise a reduction in the conventional threat to US interests throughout the world. The 1990s are likely to be characterized by the military growth of nonaligned countries—the military multipolarity which Dr Robert L. Pfaltzgraff, Jr., has described so well.[3] The decade will also likely be characterized by continued economic dislocation and regional political instability.

What this means for the Air Force was captured by Secretary of the Air Force Donald B. Rice in his white paper *The Air Force and U.S. National Security: Global Reach—Global Power*. In this paper, the secretary stressed the strengths of the Air Force—its inherent characteristics of speed, range, flexibility, precision, and lethality—to meet national objectives. One of his stated objectives for the Air Force is to support US defense strategy by controlling the high ground through space, as well as command, control, and communications systems.[4] The secretary's vision that space is the ultimate high ground certainly underscores that it will undoubtedly play a more prominent role in the future of the Air Force and in our national security strategy.

As the Air Force gradually contracts and reduces its presence in Europe and in the Pacific, it will also draw down the forward-deployed, terrestrial support systems which it has counted on over the years. Many communications sites, navigational aids, weather stations, and collec-

tion activities will be disbanded. Inevitably, as the United States projects forces to future trouble spots, many of these essential support functions will be replaced by space systems.

Many people speak of air power projection and the speed with which air power responded to the events in Southwest Asia. Space power plays an important power-projection role as well: at the instant that Iraq invaded Kuwait, space systems were the first forces on the scene. This fact is very significant when one considers that the next conflict may be a come-as-you-are war. Air Force communications satellites will provide secure, reliable command and control of our forces anywhere on the globe. Space-based navigation will be readily available to provide unprecedented accuracy worldwide to soldiers, sailors, and airmen. In addition to providing high-resolution global weather data for forecasting and environmental monitoring, data from weather satellites will be directly integrated into mission planning and the selection and allocation of weapon systems.

Space will be the primary source of warning of impending attack and will characterize that attack. Highly capable satellites will also continue to monitor arms control agreements and to assess the world situation to avoid surprises. In Secretary Rice's words, "Collectively, these capabilities add up to global knowledge and situational awareness."[5] The accuracy of his comments about space would be graphically illustrated a few months later in Operation Desert Storm.

Combat Operations

Although space systems were used in operations Urgent Fury (Grenada), El Dorado Canyon (Libya), and Just Cause (Panama), the employment was incomplete and often ad hoc. That is, only a subset of the full range of space systems was used. Moreover, the individual commander's knowledge of space often determined the employment of space capabilities. For example, Gen Carl Steiner—joint task force commander in Panama—was very familiar with the tactical utility of space, having spent time with XVIII Airborne Corps at Fort Bragg, North Carolina. Consequently, when reviewing the lessons of the brief conflict in Panama, General Steiner stated that "'space doesn't just help.... I cannot go to war without space systems'."[6]

Despite some of their shortcomings, the operations in Grenada, Libya, and Panama were key milestones for space operations and contributed to our knowledge of the employment of space capabilities. The real test, however, was Operation Desert Storm. Air Force Chief of Staff Gen Merrill A. McPeak has described Desert Storm as "the first space war."[7] This war was a watershed event in military space applications because for the first time, space systems were both integral to the conduct of terrestrial conflict and crucial to the outcome of the war. During the five-month period of Operation Desert Shield, while the terrestrial logistic tail was being established to support the coming Desert Storm operation, the space infrastructure was also being created in-theater. A robust mix of user sets, mobile terminals, and portable receivers for receiving and disseminating space-based surveillance, weather, communications, and navigational data was deployed. Other major commands also began considering space solutions to improve their mission effectiveness. Once hostilities began, space systems were ready and made vital contributions.

Desert Storm

The global positioning system came of age in the desert of the Arabian Peninsula. The setting—miles and miles of sand dunes with few distinguishable landmarks—was perfect. GPS provided real-time, passive navigation updates to virtually every weapon system in-theater. Planes, helicopters, tanks, ships, cruise

missiles—even trucks used to deliver food to the front—relied on GPS receivers to precisely establish their position, speed, and altitude (for aircraft).

During the early days of our buildup in Saudi Arabia, only a few hundred GPS receivers were in-theater. The demand—particularly by the US Army—outstripped normal production and even resulted in soldiers writing contractors directly for the small GPS lightweight receiver. The industrial base turned to, and by war's end 4,500 receivers were in use. That scenario has to be the ultimate in operational pull.

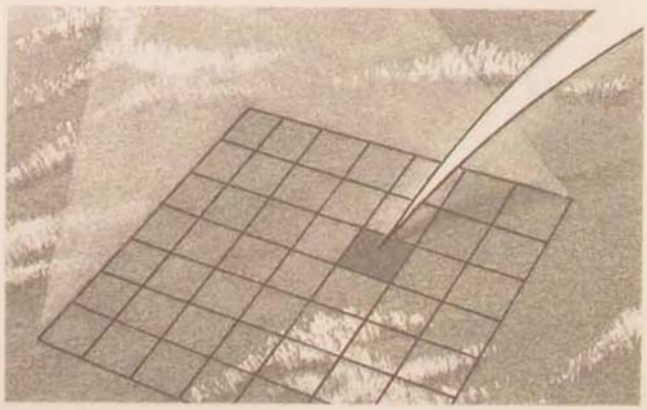
Air Force special operations forces employed GPS in all their aircraft to ensure the silent and very accurate navigation that is so essential to their survival. Special Pave Low helicopters used GPS receivers to fly nap-of-the-earth missions both day and night with equal confidence. GPS provided Air Force F-16s passive navigation to the initial point on their bomb runs. British Puma helicopters were outfitted with GPS, and, according to Squadron Leader Alexander Smyth, commander of the 33d Air Rescue Squadron, "[GPS is] essential now, especially for night flying in the desert. I am sure with GPS we will lose fewer helicopters."[8] In all cases, the system performed magnificently—well beyond expectations.

Communications capacity and channel availability have historically been shortfalls in conflict. The need to communicate easily and securely is critical to prosecuting military operations. As demand grew during Desert Storm, we moved a DSCS satellite from Pacific Ocean coverage to Indian Ocean coverage to augment our communications capacity. This was the first time a DOD satellite had been repositioned to support US combat operations, illustrating the inherent flexibility of our sophisticated geosynchronous satellites.

With three DSCS satellites, we were able to allocate sufficient channels and bandwidth to support 128 tactical terminals for the duration of the conflict. This network was so effective that Gen Colin L. Powell, chairman of the Joint Chiefs of Staff, remarked that "satellites were the single most important factor that enabled us to build the command, control, and communications network for Desert Shield."[9] The key point is that space systems for the first time were the primary means for 85 percent of intratheater as well as intertheater communications.

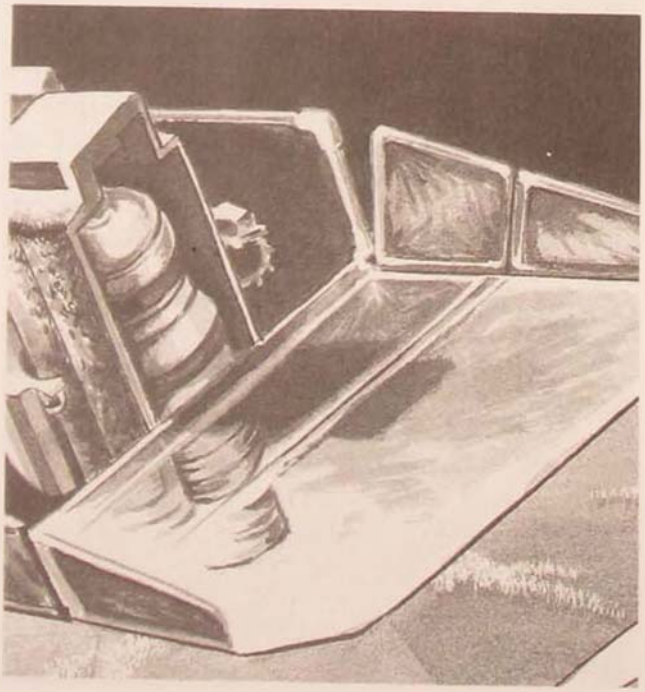
As for weather information, DMSP provided an unprecedented volume of meteorological data to our forces. DMSP transportable vans distributed weather data directly to the Air Force component command, to aircraft carriers, and to Marine aviation units. Because our DMSP vans are large, they are airlift-intensive. Therefore, late in the war we introduced two prototype portable satellite-receive terminals that were small enough to be carried in the back of the Army's high-mobility multipurpose wheeled vehicle.

Coalition air forces routinely planned and flew aircraft sorties based upon satellite-derived weather information. Indeed, the selection of weapons was based upon the weather conditions over the target. Accurate weather forecasting was critical in deciding whether to employ precision guided munitions, because target visibility was essential for laser designation. Further, by doing channel comparison of DMSP's microwave imagery, analysts were able to determine the moisture content of soil and thus identify routes which would support the weight of armored forces that would conduct Gen Norman Schwarzkopf's brilliant "left hook" into Iraq in late February 1991.



In addition, space-based, multispectral imagery (MSI) products provided by land satellite (LANDSAT) proved useful to all the military services. This imagery was used to identify beach landing zones in coastal areas, to update maps, and to prepare route plans and weapons-delivery plans. All phases of the preparation and execution of air, land, and sea attack were carried out more effectively due to the availability and accuracy of this multispectral environmental data.

The importance of Operation Desert Storm as a catalyst for accelerating the future development of tactical space applications cannot be overstated. However, this conflict also underscored certain shortcomings in our use of space. Operational planning for the use of space systems was not well developed when Iraq invaded Kuwait in August 1990. Military planners took advantage of the five months preceding Desert Storm to get ground- and space-based assets into the theater and to school the users in how to better employ space products. In addition, because some of the equipment used to receive signals was not standardized and not supportable by blue suiters, it ultimately had to be maintained by contractors. Last, although the Air Force demonstrated the flexibility of space systems by repositioning a satellite to support the communications demands of the Southwest Asia conflict, this feat nevertheless highlighted our need to be able to more rapidly augment our on-orbit capabilities.



The Future

What can we anticipate for the Air Force in terms of its role in space in the 1990s and beyond? First and foremost, there is no question that the flying commands of the Air Force will become much more deeply committed to integrating space systems into their force structure and operational planning.

Global Positioning System

We can anticipate that the demand for GPS receivers will increase dramatically. The Air Force has a long-range plan to install GPS capabilities into the cockpits of our first-line aircraft. Due to budget considerations, the integration plan will proceed very gradually. But the performance of GPS during Desert Storm may accelerate that process. As Air Force pilots become more familiar and comfortable with GPS, they will discover new and unanticipated applications to enhance combat capabilities. The important fact is that the user—the crew member—rather than the engineer or space operator, will develop these new applications. GPS will ultimately be like air-conditioning—people will wonder how they did without it.

Launch

The Air Force must improve its launch capacity if it wishes to maintain control of the space theater. Derived from ICBM systems, our current launch vehicles and the associated processes do not provide the re-

sponsiveness needed to replace or augment on-orbit assets.

Our space launchers have served us well, but the space community is launching the equivalent of the F-4 series fighter into space. Space launchers need the same relative modernization that our modern-day fighters have had. The Air Force and the National Aeronautics and Space Administration are currently cooperating on a national launch system to meet a variety of civil, commercial, and military launch requirements. The military requirements for this system are affordability, responsiveness, flexibility, and maintainability. This system will mark the transition from the 1950s-based space-launch equipage to a more sustainable launch system for the twenty-first century. The United States must pursue this course if it is to remain the world's premier space power and space-faring nation.

Missile Defense

Desert Storm also gave the concept of strategic defense a substantial shot in the arm. The success of the Patriot missile against Scud missiles should win public approval—and thus congressional support—for a missile-defense system. The Patriot, which is basically a 1970s design, has shown that with today's technology it is possible to develop a system to counter far more sophisticated threats than the relatively primitive Scud. By the turn of the century, at least 20 countries will possess the capability to launch ballistic missiles of some type. If numerous countries obtain sophisticated missile inventories—combined with chemical, biological, or nuclear warheads—the Air Force will have to respond with more advanced space-based warning sensors to track, discriminate, and target them. Ultimately, the United States will rely on space-based interceptors to negate threatening missiles, and the Air Force will continue to need a responsive surveillance-and-warning capability to deal with this multifaceted threat.

Multispectral Imagery

The military utility of multispectral imagery was also shown in Southwest Asia. MSI was the only source of wide-area coverage available, and it played an important role in trafficability and terrain analyses, as well as invasion planning. LANDSAT provided the majority of this data.

Composite Wing

Organizationally, the Air Force is taking direct steps to integrate and operationalize space. It may be able to go further by studying the possibility of establishing wings with the full spectrum of combat capabilities—deep strike, interdiction, electronic warfare, and refueling—organic to the unit. If the Air Force moves in that direction, these composite wings must also include people trained in space operations, as well as the requisite terminal and receive equipment. This would be the ultimate integration of space within the Air Force and would assuredly enhance the utility of space to our combatant units.

Onboard Processing

The Air Force also needs space systems designed to provide user-friendly data streams. One approach is to employ satellite onboard processing. Satellites on orbit collect information, do the requisite data processing and reduction on board, and then downlink the final product directly to the combatant in the field or in the air. This capability would have been a powerful tool in the Scud-hunting operations of Desert Storm. Currently, this capability is very expensive to incorporate on our satellites. But great technological strides in microminiaturization are being made so that in the foreseeable future, military space systems will no longer need the terrestrial ground-processing infrastructure associated with today's satellites.

Advancements are also needed in developing techniques and equipment to fuze satellite bit-streams of data together.

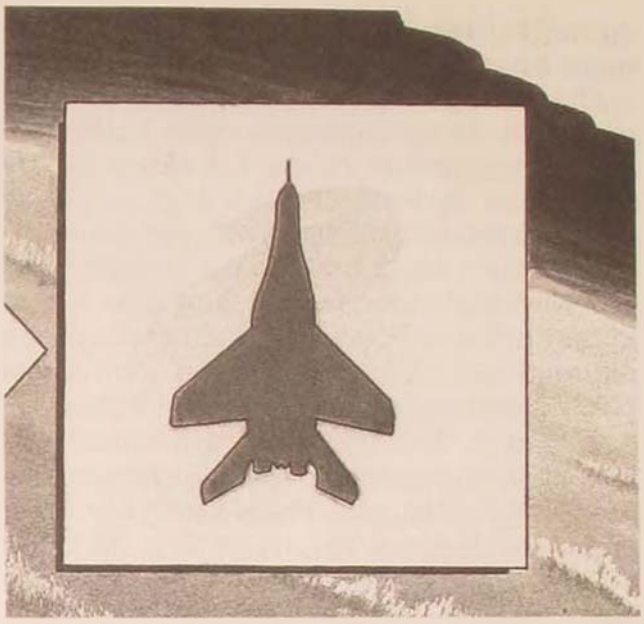
In the past, architectures for individual space systems were developed in relative isolation or in a stovepipe fashion. Modern computer advances will enable Air Force planners and operators to receive and centrally exploit fuzed bit-streams of weather, warning, navigation, surveillance, and communications.

Antisatellite Systems

It is also quite reasonable to expect that as the world evolves into a more multipolar environment, space capabilities will mirror that expansion. Simply put, space technology for the range of military functions will become available to many nations.

The successful conclusion of hostilities in Southwest Asia necessarily requires a look at what could have changed the tempo of the campaign. The ability of the United States to maintain the initiative and to sustain surprise by masking its military actions would have been much more difficult if Saddam Hussein—or a future adversary—had his own space-reconnaissance assets.

This prospect argues for an ASAT system to assure that, just as US forces achieved control of the air and the battlefield, we can control space as well (i.e., achieve space superiority). Such a proposal speaks to the idea of an indivisible regime between air and space that Gen Thomas D. White, former Air Force chief of staff, captured over 30 years ago in coining the term *aerospace*.[10] Dr Pfaltzgraff and Dr Edward N. Luttwak also refer to this as a "seamless" regime between air power and space power projection.[11] Just as it would be unthinkable in a future conflict to permit an adversary to use an aircraft to reconnoiter our battle lines for intelligence and targeting, so is it equally unacceptable to allow enemy reconnaissance satellites free and unhindered flight over US military positions. An operational ASAT capability designed to eliminate an adversary's space capabilities must be considered an integral part of this country's force structure.



Space-Based Weapons

One final observation concerns the need to fully explore the concept of space-based force application. This subject has many political overtones, but the Air Force should—consistent with treaty obligations—conduct the research and planning necessary to assess the feasibility of such systems and the national security implications.

Conclusion

Looking ahead a few years, one can speculate that advocates of both air power and space power will likely be talking about similar issues. It is equally reasonable to expect the leadership from Air Combat Command, Air Mobility Command, Air Force Special Operations Command, and other commands to espouse the value of space-based sensors that provide real-time communications, weather, navigation, early-warning, and surveillance inputs directly into both the aircraft and their weapons loads. They would also be relying on satellites that designate targets, silently guide aircraft toward the objective, and identify enemy defenses as part of mission execution.

Finally, the commander of Air Force Space Command may well address the advances in defensive and offensive space-based force-application systems. The Air Force is fully committed to meet the twenty-first century by fulfilling the 1988 space policy tenet to ensure "the evolution of space power from combat support to the full spectrum of military capabilities."[12] □

Notes

1. Memorandum, Secretary of the Air Force Edward C. Aldridge, Jr., and Air Force Chief of Staff Gen Larry D. Welch, to all Air Force major commands and special operating agencies, subject: Air Force Space Policy, 2 December 1988.

2. Gen George L. Butler, commander in chief, Strategic Air Command, speech to the Center for Defense Journalism, National Press Club, Washington, D.C., 29 September 1990.

3. Dr Robert L. Pfaltzgraff, Jr., "The United States as an Aerospace Power in the Emerging Security Environment," in *The Future of Air Power in the Aftermath of the Gulf War*, ed. Robert L. Pfaltzgraff, Jr., and Richard H. Shultz, Jr. (Maxwell AFB, Ala.: Air University Press, forthcoming).

4. Secretary of the Air Force Donald B. Rice, *The Air Force and U.S. National Security: Global Reach—Global Power* (Washington, D.C.: Department of the Air Force, June 1990), 12.

5. Ibid.

6. Quoted in *The United States Air Force Report to the 102nd Congress of the United States of America, Fiscal Year 1992/93* (Washington, D.C.: Government Printing Office, 1991), 25.

7. Gen Merrill A. McPeak, Air Force chief of staff, briefing, National War College, subject: Desert Shield/Desert Storm, 6 March 1991.

8. Capt Mark Brown, "British Totally Sold on GPS," *Space Trace: The Air Force Space Command Magazine*, April 1991, 7.

9. Gen Colin L. Powell, chairman of the Joint Chiefs of Staff, speech to the Armed Forces Communications Electronics Association, Washington, D.C., December 1990.

10. House, *Testimony of General Thomas D. White before the House Committee on Science and Astronautics*, 86th Cong., 1st sess., February 1959.

11. Pfaltzgraff; and Dr Edward N. Luttwak, "Air Power in US Military Strategy," in Pfaltzgraff and Shultz (forthcoming).

12. Memorandum, Aldridge and Welch.

THE PROBLEM WITH OUR AIR POWER DOCTRINE

LT COL PHILLIP S. MEILINGER, USAF

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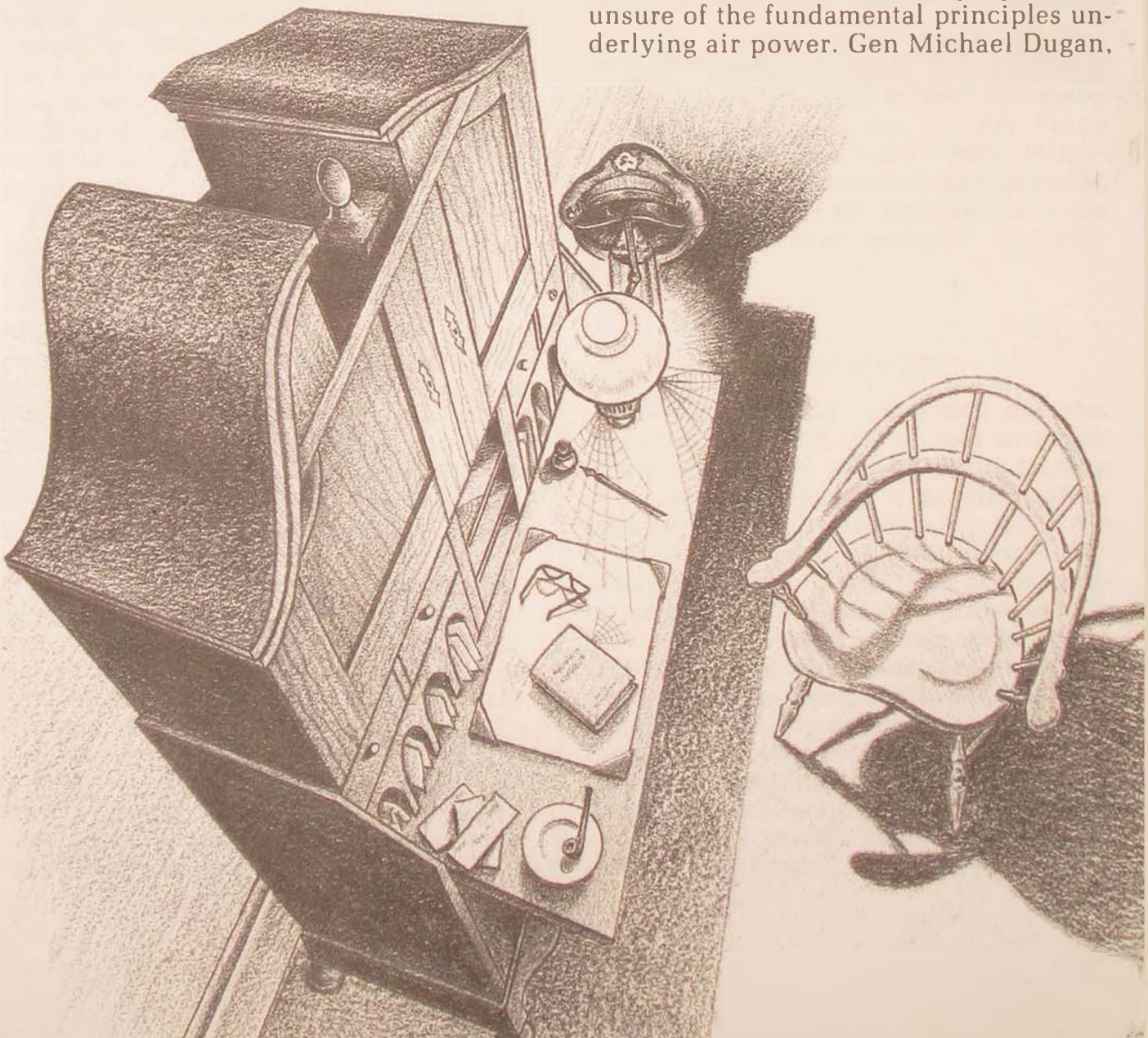
SELDOM in military history has there occurred a series of events as momentous as those of the few months between November 1990 and March 1991. The Warsaw Pact threat that had been in some ways so comfortable, so stable, and so predictable for the past 45 years has now dissolved. Yet the unexpected rise of the Saddam Hussein menace demonstrates that the world is still a dangerous place. The threats to our national interests have transformed; they have not disappeared. As the world changes, the Air Force must change with it. Unfortunately, it is ill-prepared to move into the new world; in fact, the Air Force was becoming increasingly unable to deal effectively with the old world. Since the end of the Vietnam War, our service has been uncertain of its overall purpose and unsure of the fundamental principles underlying air power. Gen Michael Dugan,



former Air Force chief of staff, reportedly said in exasperation a few years ago,

> Ask a sailor about sea power, and he'll give you a speech on the maritime strategy. Ask a soldier about ground power, and he'll tell you about AirLand Battle. But ask an airman about air power, and he'll tell you what time happy hour starts at the club.

This has not always been the case. I have no doubt that if someone had asked the average Air Force officer in 1960 about the purpose of air power, he or she would readily have been able to explain its importance to national security. What has gone wrong? Why are we now so unable to articulate the most basic beliefs concerning our profession—how air power should be employed in war?

Although the roots of the problem are decades deep, the catalyst that brought matters to a head was the Vietnam War. All the services had fought hard but were troubled by some aspects of their performance. The responses of the various services, however, were dissimilar. The Vietnam War caused deep soul-searching within the Army, both in public and private. Books by Richard Gabriel and Paul Savage; Gen Douglas Kinnard; the pseudonymous "Cincinnatus"; and others were visible expressions of the unease that permeated the Army.[2] All of them stressed how unprepared the Army had been, both structurally and psychologically, for unconventional war. As a result, the Army made great changes but, somewhat surprisingly, maintained its strategic focus on a Fulda Gap scenario that emphasized heavy divisions and maneuver warfare. The Navy and Marines endured less turmoil during the war and therefore engaged in little public or private introspection afterwards. In reviewing their role in national security, they elected to organize and equip themselves as they had prior to Vietnam; hence, the Navy's focus remained on the carrier battle group and the Marines' on amphibious assaults. In other words, the Army, Navy, and Marines reacted to the war as if it were an aberration.

The Air Force, on the other hand, significantly reoriented its strategy, doctrine, and technology. Also of fundamental importance, the leadership of the USAF changed hands as tactical airmen took over. This process was solidified when Gen Charles Gabriel became chief of staff in 1982—the first fighter pilot to hold that position in three decades. Since then, not only has every chief been a fighter pilot, but two have even held the position of commander in chief, Strategic Air Command (CINCSAC). Indeed, Gen George Butler, current CINCSAC, is the first bomber pilot to head the command in six years. Today, tactical airmen hold all of the following positions: chief and vice-chief of staff; the commanders of Tactical Air Command (TAC), Air Training Command, Air Force Systems Command, United States Air Forces in Europe, Pacific Air Forces, Air University, US Air Force Academy, Air National Guard, and Air Force Reserve; as well as the key staff positions of operations and plans, logistics, acquisition, personnel, legislative liaison, and inspector general. This shift in personnel has changed the entire culture of the Air Force over the past decade.

Since the mid-1930s, bombardment advocates had dominated American air power. The great commanders of the Second World War who later went on to run the new Air Force were ideological descendants of Gen William ("Billy") Mitchell. These included Gens Henry ("Hap") Arnold, Carl ("Tooey") Spaatz, George Kenney, Nathan Twining, Lauris Norstad, Curtis LeMay, and others.[3] These men and their ideas regarding the primacy of strategic bombing rose to power for three main reasons: (1) the trench carnage of World War I that killed millions of people had a profound impact on soldier, civilian, and airman. They sought to avoid such slaughter, and strategic air power offered hope; (2) technological development in the interwar years—the era of the Great Depression—favored safe, reliable, economical, and long-range aircraft like the airliner and its military counterpart, the bomber. This development nudged aviation technology—and, therefore, air

power doctrine—in a specific direction; (3) the final reason for the emphasis on bombardment was pragmatic: airmen wanted independence from the Army. In order for them to justify that status, air power had to perform an independent mission—something not tied to the direct support of surface forces. Strategic air power, because of its ability to strike directly at a nation's centers of gravity, performed that mission. To a great extent, the awesome power of the strategic air forces—especially reflected in the two atomic strikes against Japan—contributed significantly to the surrender of the Axis and ensured that an independent Air Force would become a reality. The main combat component of the new Air Force was Strategic Air Command.

On the other hand, the tactical air force fell on hard times even though it had played a crucial role during the war. The American people had endured 15 years of the Depression, followed by a world war, and were weary of belt-tightening. Large defense expenditures were unacceptable, and budget cutting was the order of the day. Because TAC seemed less relevant in an era of atomic weapons, it suffered the brunt of the cuts.[3] There was a brief resurgence of interest in tactical air during the Korean War, but the budget axe fell again after the armistice in 1953.

Under President Dwight Eisenhower, "massive retaliation"—to be carried out by SAC—became the national military strategy. During the two decades of SAC domination, the rest of the Air Force came to see itself as isolated, ignored, and inferior. Most high command and staff positions were reserved for officers who had been "SACumcized." Furthermore, SAC's "spot promotion" system, which immediately jumped crew members one grade when they were selected to serve on lead bomber crews, caused widespread resentment.[4] SAC saw itself as a worldwide, all-weather, day-and-night, war-fighting organization—the tip of America's nuclear spear—while the rest of the Air Force was merely "in training status."

Change began in the late 1950s when retired Army general Maxwell D. Taylor challenged the logic behind massive retaliation, calling instead for a more "flexible response" to deal with "small" wars.[5] General LeMay, Air Force chief of staff, shrugged off such criticisms with the response, "'If you have the power to stop a big war, certainly the same power ought to be capable of stopping a small war'."[6] Taylor's thoughts appealed to the new Kennedy administration, however, and he was recalled to active duty as chairman of the Joint Chiefs of Staff. From that position, he worked to reorient American defense policy. Simultaneously, the US stumbled more and more deeply into the Southeast Asia imbroglio.

The US military, including the Air Force, was trained and equipped to fight a nuclear war with the Warsaw Pact, not a limited war in Vietnam. A strategic air campaign—the main tenet of US military doctrine—was not launched against North Vietnam and could not be launched against the Vietcong.[7] At the same time, however, tactical airmen who had devoted much of their training to nuclear delivery over the previous decade found themselves having to relearn the tactics of interdiction and close air support. In the after-

For many years, Air Force leadership was dominated by advocates of strategic bombing, such as then-Maj Gen Curtis LeMay (center, with Brig Gen William F. McKee, left, and Maj Gen Earle E. Partridge). The tactical air force experienced most of the budget cuts in the 1950s, an era noted for a strategy of massive retaliation with atomic weapons.

math of the war, the USAF—like Congress and the American people—was disillusioned by the seeming inability of strategic air power to produce a victory. Many felt that tactical air power had borne the brunt of the air war. Moreover, low-intensity conflict seemed ever more likely in the future, and SAC seemed irrelevant in a counterinsurgency.

As a consequence of these currents, tactical airmen slowly began to dominate the top positions within the Air Force. In many cases, however, these airmen had not developed an appreciation for air power's full potential across the spectrum of conflict. Several reasons accounted for this deficiency: First, technology limited not only the range and capability of fighter aircraft—even when armed with nuclear weapons—but was so complex that just learning to fly single-seat, supersonic aircraft equipped with various onboard computers, communications, and delivery systems was a full-time job for any pilot. Becoming proficient in an F-15 or F-16 could easily dominate an aviator's life, and little time remained to consider anything other than the tactical aspects of air war. (In addition, of course, "flying is so much sheer fun that no normal fighter pilot would want to consider something more abstract."[8])

Second, Congress and the Department of Defense had agreed over the years that strategic air power was an economical method of assuring deterrence and defense, so they had not encouraged the development of tactical air power. Third, and perhaps most importantly, TAC had been so busy fighting for its institutional life from 1945 to 1975 that its leaders did not always have the inclination or incentive to understand air power in its broadest sense. These factors conspired to produce a narrow focus exemplified by a TAC commander who stated that "'the missions of the tactical air forces are the strategic air defense of the United States and support of the army. It's as simple as that'."[9]

This problem of insufficient attention to conventional strategic operations was exacerbated by a NATO strategy that stressed the defense of alliance territory. The objective of NATO war plans was to deter war, but if deterrence failed, to repel an invader and maintain alliance boundaries. For air power, this meant establishing air superiority throughout the alliance area and interdicting the follow-on echelons of invading forces. There were no plans for allied air power in Europe to conduct strategic, conventional strikes deep in enemy territory. In short, for 40 years the NATO political decision to appear nonaggressive dictated a military strategy that emphasized defense, not offense, and envisioned air power in a purely tactical and reactive role. Since our forces in Europe constituted the largest bloc of air assets outside the US, this policy inhibited broad strategic thinking throughout the Air Force. Thus, air commanders of our largest combatant command have been virtually prohibited from planning strategic air operations.

One must note that SAC had also developed a flawed view of air power over the years. Although it saw a different facet than did TAC, the overall picture was similarly incomplete. SAC saw strategic nuclear operations and little else. In time, the command became so absorbed with deterrence instead of war fighting that it lost track of how to employ and exploit strategic air power in nonnuclear operations. In a sense, nuclear weapons retarded the maturation process because merely selecting targets and scheduling warheads became so easy to do. SAC seemed unable to discuss air war except in terms of a largely hypothetical and increasingly unlikely nuclear exchange.[10] At the same time, SAC became equated in the eyes of the public with environmentally suspect nuclear power, Dr Strangelove, "carpet bombing," and immorality. All of these factors put SAC on the defensive in attempts to defend its mission and articulate its needs.

It is no surprise, therefore, that SAC had difficulty projecting a mission for the B-2 in the face of a declining Soviet threat. Although the stealth bomber has always been billed as an effective aircraft across the spectrum of conflict, the emphasis was on

its utility as a nuclear deterrent and as a hunter of mobile nuclear missiles.[11] It was Secretary of the Air Force Donald Rice who initially pushed hard for the B-2's conventional role, and Operation Desert Storm convincingly demonstrated the requirement for a stealth bomber with a conventional capability.[12] Let me now summarize what I see as the problem.

In 1951 Gen Hoyt Vandenberg, Air Force chief of staff, preached the "indivisibility" of air power. The terms *strategic* and *tactical* were anathema to him because they tended to split air power into artificial camps identified by aircraft nomenclature; weapons type; or weight of ordnance, range, and the number of crew members.[13] Vandenberg knew, however, that the true issue was the nature of the target—not the aircraft. There were strategic targets and there were tactical targets, but one should use the most appropriate aircraft for the specific objective, regardless of its nomenclature. Airmen learned this concept of indivisible air power through long and painful experience in World War II, but over the next two decades those lessons and experiences faded. The bomber and fighter camps increasingly polarized. When the crisis of Vietnam struck, a divided Air Force had no intellectual foundations to fall back on, so it stumbled towards Army doctrines that eventually culminated in AirLand Battle and deep operations that viewed air power in a supporting—not complementary—role. Air leaders allowed their limited experience to become their even more limited theory. As a result, we now have airmen who believe that the primary mission of the Air Force is to support the land battle.

One would think that the Gulf war, the most decisive air war in history, would sweep away the doubts and uncertainties regarding the potentialities of air power. Unfortunately, that may not be the case. Some leading airmen are still reluctant to draw lessons regarding the role of air power in future wars. Instead, they are quick to downplay the decisiveness of air power in the Gulf war and point out the unique circumstances that supposedly

By the 1960s, the Air Force was better equipped for nuclear war instead of the low-intensity conflict being fought in Vietnam. Many tactical airmen who were trained in nuclear delivery had to relearn the tactics of air interdiction and close air support. Here, F-4 crew members climb aboard their jet at Cam Ranh Bay Air Base, South Vietnam, in 1968.

make that conflict a poor model for the future. One retired Air Force chief of staff stated that "'[air power] continues to prepare the ground for land warfare.... I do not believe it can win any land battles alone'."[14] Unique though the specifics of the Gulf war may be, airmen had been predicting the general results since 1920. Air power had always promised decisive results, and although it had indeed delivered on those promises over Germany, Japan, the Sinai in 1967, and North Vietnam in 1972, many people insisted on muting or diluting those lessons. Even our overwhelming victory in the Gulf air war seems not to have removed all of these doubts.

The Air Force is ideologically adrift, encumbered with a doctrinal gap that dis-

torts both its self-image and the image it presents to others. On the one hand, SAC has developed a highly complex nuclear deterrent and nuclear war-fighting strategy; on the other hand, the tactical air force has honed its abilities to complement the ground forces to a fine pitch. The gap lies between these two extremes. The concept of conventional strategic air power—together with its ability to be decisive at the operational and strategic levels of war—has been forgotten. Indivisible air power has been utterly divided—organizationally, bureaucratically, and doctrinally. We have misplaced our concepts of conventional strategic operations. The rapidly evolving world now confronting us requires that we find those concepts again—quickly.

All is not gloom. The new commanders of SAC and TAC have already stated their intention of examining their commands' doctrine and force structure. The current targeting review at SAC appears to be the first step in revising the nuclear war plan and ending the mechanistic cycle of scheduling more targets in the single integrated operational plan (SIOP) merely because more warheads are available. At the same time, conventional operations are receiving greater emphasis.[15] Similarly, TAC is working closely with the Army to rewrite the increasingly obsolete AirLand Battle doctrine to reflect the realities of Desert Storm, which saw ground forces supporting the dominant air effort. Of related interest, the Air Force will soon establish composite air wings composed of several different aircraft types, similar to those in Proven Force, the joint task force that operated from Turkey during the Gulf war. These new organizations should help reduce the distinction between "fighter wings" and "bomber wings." Of far greater import for the future, however, are the lessons of the Gulf war.

Air power's greatest asset has always been its flexibility: the range, speed, precision, and punch of aircraft make them ideal weapons for waging war at the operational and strategic levels. Desert Storm demonstrated how a strategic air campaign

Air War College students listen to a lecture in 1973, a time when the Air Force risked learning the wrong lessons from the Vietnam experience. The concept of "indivisible air power" faded in the two decades following World War II to the point that the service, so long divided into fighter and bomber camps, had no solid intellectual base to fall back on during the Vietnam era.

can paralyze and immobilize a modern, industrialized nation. Saddam Hussein was virtually cut off from his people and military forces, often resorting to the centuries-old method of using couriers to pass instructions. Iraqi communications, transportation, and the electrical power grid were rendered inoperative. The military infrastructure of Iraq was similarly devastated, as was its capability to produce weapons of mass destruction.

Most impressively, the coalition conducted this strategic air campaign at the same time its operational-level air campaign was destroying the Iraqi army. After six weeks the Iraqi military infrastructure was a shambles, and Saddam's military forces were broken, wanting only to surrender. Air power achieved the main political goals of the coalition and produced one of the most lopsided victories in history. At a cost of fewer than 200 coalition lives, nearly 100,000 Iraqi troops were killed or captured, while at the same time the number of civilian casualties as well as

With the creation of composite wings, consisting of a variety of aircraft, the distinction between "fighter wings" and "bomber wings" will diminish. Here, RF-4s of the 7440th Composite Wing, Incirlik Air Base, Turkey, prepare for a mission during the Gulf war.

the amount of collateral damage was remarkably small.[16] We must not underestimate or overlook the ability of air power to achieve such results in the future as well.

In the years ahead, the US will no doubt continue to need the military weapon, but the American people—always impatient with long wars and heavy casualties—will insist on short, surgical, and near-bloodless operations. The success of Operation Desert Storm will heighten these imperatives, and—coupled with a decline in the number of our overseas bases—we will place a premium on the ability to project power—precisely and over great distances. Although air power seems the logical tool for this strategic mission, the Air Force as an institution has been curiously reluctant to embrace it.[17] We must overcome that hesitation, and the time is propitious. Fortunately, the train that left the station without us several years ago while we were looking the other way has now momentarily stopped. It's time to climb back on board. □

Notes

1. Richard A. Gabriel and Paul L. Savage, *Crisis in Command: Mismanagement in the Army* (New York: Hill and Wang, 1978); Douglas Kinnard, *The War Managers* (Hanover, N.H.: University Press of New England, 1977); and "Cincinnatus," *Self-Destruction: The Disintegration and Decay of the United States Army during the Vietnam Era* (New York: W. W. Norton and Co., 1981).

2. A possible exception was Gen Hoyt Vandenberg. Although a bomber advocate during and after the war, he had started his career as a fighter pilot and in Europe commanded the Ninth Air Force, the largest tactical air unit in history.

3. TAC actually disappeared for two years as a separate command. For budgetary reasons, it was combined with Air Defense Command in 1948 to form Continental Air Command. TAC reemerged in 1950 as a result of the Korean War.

4. The dominance of SAC in the early 1960s was even

more pervasive than that of TAC today. Virtually every key Air Staff and major command position—including the command of TAC—was held by bomber pilots.

5. Gen Maxwell D. Taylor, *The Uncertain Trumpet* (New York: Harper & Brothers, 1959).

6. Quoted in Robert Frank Futrell, *Ideas, Concepts, Doctrine: Basic Thinking in the United States Air Force*, vol. 2, 1961–1984 (Maxwell AFB, Ala.: Air University Press, December 1989), 85.

7. One could argue endlessly over the role and impact of air power in the Vietnam War. Most airmen maintain that Rolling Thunder was not strategic bombing at all, merely a halfhearted interdiction campaign. The "94-target plan" advanced by airmen in 1964—a true strategic air campaign—was rejected by President Lyndon Johnson and his civilian advisers. Air power advocates would further argue that the closest the US came to strategic bombing was the Linebacker II operations of December 1972. In 11 days, the B-52s achieved what ground forces had failed to achieve in 11 years. What if this air campaign had been tried earlier? The rejoinder to this argument is found in Mark Clodfelter's *The Limits of Air Power: The American Bombing of North Vietnam* (New York: Free Press, 1989).

8. Lt Gen Charles G. Boyd, commander, Air University, remarks to the first class of the School of Advanced Airpower Studies, Maxwell AFB, Ala., 22 July 1991.

9. Quoted in Lt Col Thomas G. Runge, *Firepower and Follow-On Forces Attack: Making Every Round Count* (Maxwell AFB, Ala.: Air University Press, March 1991), 65.

10. Ironically, Gen John T. Chain, Jr., a career fighter pilot, argued loudest for SAC to expand its conventional bombing capabilities in his important article "Strategic Bombers in Conventional Warfare," *Strategic Review*, Spring 1988, 23–32.

11. In a letter to the editor, SAC's vice-commander gave four reasons why the B-2 had to be built—all four defended its nuclear mission. *Long Island Newsday*, 22 October 1989, II-2.

12. Secretary of the Air Force Donald B. Rice, *The Case for the B-2: An Air Force Perspective* (Washington, D.C.: Department of the Air Force, June 1990).

13. Maj Grover E. Myers, *Aerospace Power: The Case for Indivisible Application* (Maxwell AFB, Ala.: Air University Press, September 1986), 9–15.

14. Quoted in Barbara Opall, "Desert Storm Lifts U.S. Air Power Role," *Defense News*, 15 April 1991, 38. Similarly, an air commander in Desert Storm commented, "'People should not read this as the dawn of a new era of warfare'." David A. Fulghum, "Desert Storm Highlights Need for Rapid Tactical Intelligence," *Aviation Week & Space Technology*, 11 February 1991, 19.

15. Robert C. Toth, "U.S. Scratches Nuclear Targets in Soviet Bloc," *Los Angeles Times*, 19 April 1991, 1; and Jeff Gauger, "LeMay's Spirit Guides Gen. Butler as He Leads SAC into 'New Era'," *Omaha World-Herald*, 28 April 1991, 1.

16. The Greenpeace organization disputes the idea that the war did minimal damage to the Iraqi population and infrastructure; however, it concedes that most of the devastation was caused by Saddam's own forces after the war when they crushed the Kurdish and Shiite rebellions. In addition, Iraq's inability to restore functions such as reliable electrical production is the result of the United Nations embargo—still in force as of late July 1991—that prohibits the sale of Iraqi oil to obtain spare parts or foreign expertise. William M. Arkin, Damian Durrant, and Marianne Cherni, *On Impact: Modern Warfare and the Environment, A Case Study of the Gulf War* (London: Greenpeace, May 1991).

17. The clearest call for the Air Force to conduct power projection is found in Secretary of the Air Force Donald B. Rice, *The Air Force and U.S. National Security: Global Reach—Global Power* (Washington, D.C.: Department of the Air Force, June 1990).

A CARRIER AIR WING FOR THE AIR FORCE

CHALLENGES FOR THE COMPOSITE WING

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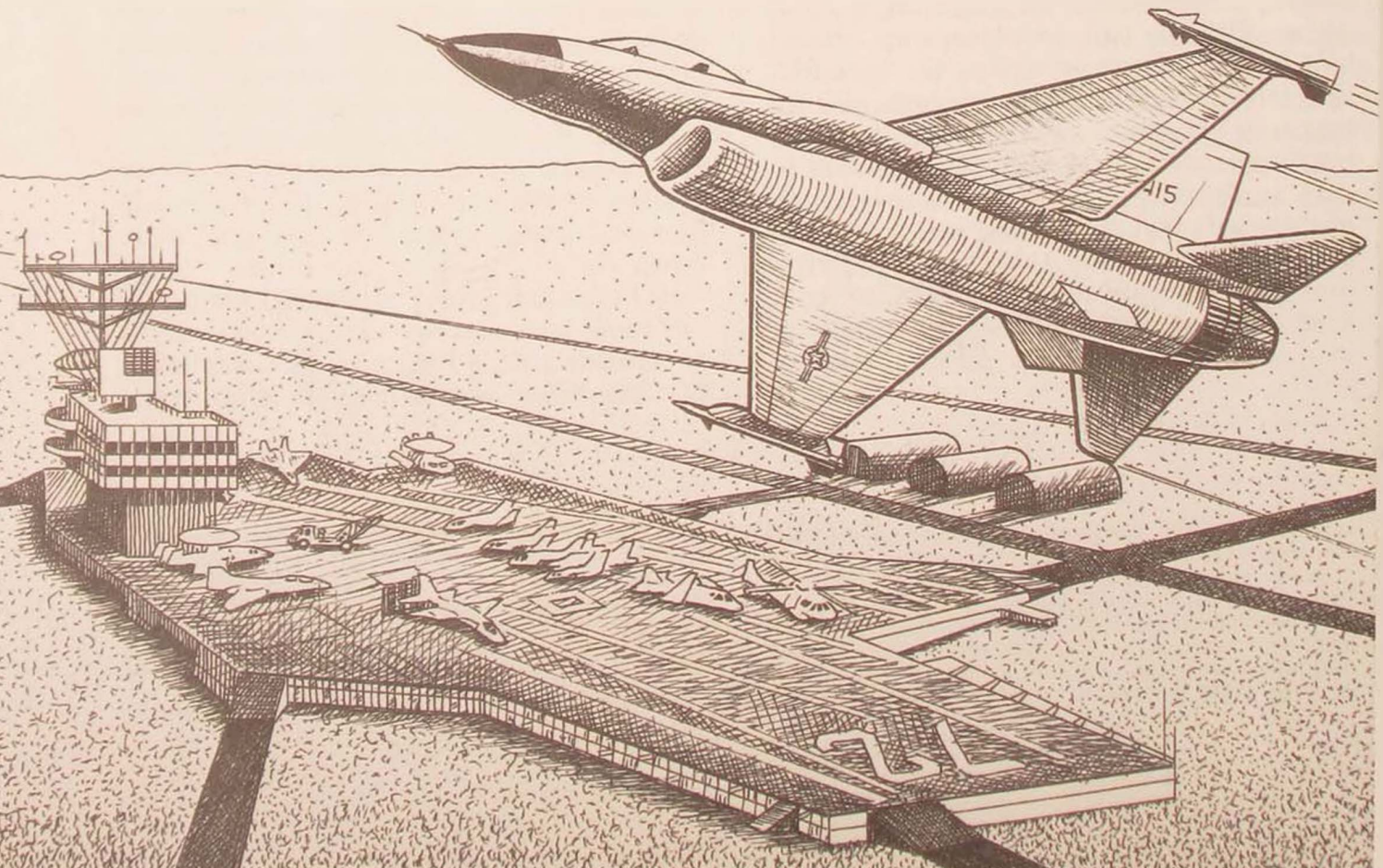
WHILE meeting informally with Air Force students attending the US Naval War College in early March 1991, Gen Merrill A. McPeak, the Air Force chief of staff, disclosed that the Air Force would soon organize new "composite wings."[1] He went on to say that several bases had already been identified as possible sites for the new units. Those remarks were among the first public acknowledgements of high-level approval of plans that had been under consideration for some time.

Composite wings—units combining the various aircraft necessary to form complete mission packages—stand to be a major change to the present USAF force structure. Their advent also represents a doctrinal shift away from today's monolithic wings and squadrons of specialized, homogeneous aircraft.

Change Prompts Search for Alternatives

The 1992 defense budget marks the true start of massive restructuring of the mili-



*In the process of writing this article, I spoke with many of the Navy carrier aviators who attended the US Naval War College with me. I want to thank the pilots, flight officers, maintenance officers, and air "bosses" who gave me a much appreciated insight into how an aircraft carrier and its air wing operate.

tary that will shrink total US forces by one-fourth over the next five years. Staying combat ready while scaling down is arguably the single greatest challenge for the Air Force throughout this time span. In order to absorb its share of the reductions, the Air Force is examining alternatives to the way it is presently equipped and organized. Possibilities include reducing personnel, radically realigning and streamlining organizational units from the wing to the major command (MAJCOM) level, and closing numerous overseas and stateside bases.

The total number of Air Force combat units also will be cut over the next five years. Tactical air forces will shrink from approximately 33 wings (24 of which are in the active Air Force) to about 26 (15 active) under the Department of Defense's plans.[2]

In order to confront potential threats yet remain within the new force-structure limits, the Air Force will require a smaller, more capable force that emphasizes the traditional virtues of air power: speed, range, power, flexibility, precision, and economy of force. The cuts may also prompt a new look for forward-deployed units, which will continue to play an important role in exercising the "global reach—global power" that Secretary of the Air Force Donald B. Rice espoused in his white paper of June 1990.[3]

In the future, more of the striking power that goes with US commitments to its allies and to collective security arrangements will be based on US soil. Thus, the Air Force must design and field forces that have more mobility and flexibility. Further, aerospace forces will have to bring appropriate power to bear across the entire spectrum of conflict and be able to act on short notice. In brief, the Air Force must explore different organizational and operational schemes to accommodate this new strategic environment.

Why the Composite Wing?

Composite wings are both an organizational and operational alternative for optimizing a combination of factors. Among the most important are streamlined planning, combat punch, and rapid response. Before we had a clear idea of the severity of the cuts to our present and prospective defensive forces, the composite idea originated with improved combat capability as its sole focus. Nevertheless, the composite wing could also be one of the solutions to the challenges of shrinking forces and a changing national security environment.

Planned composite wings will place at one base, under one commander, all the air forces necessary to form complete warfighting packages having maximum efficiency and combat effectiveness. Central to their existence will be the union of groups of different aircraft, each contributing a specialized capability. Wings styled primarily to deliver firepower might mix counterair fighters, long-range bombers, shorter-range interdiction aircraft, and close air support aircraft, along with surveillance and command-and-control (C^2) aircraft. Composite units tailored more for logistics and combat support would have a larger proportion of transports and tankers. These organizations will also allow crews from a wide range of aircraft to train under a single command. Such integrated training is intended to build unit familiarity, cohesion, and esprit de corps that will improve overall combat effectiveness.

The composite wing concept received a critical boost during the Persian Gulf war, which validated the need for organizational changes to help the Air Force meet the strategic challenges of the post–cold war era. The experience of the Gulf war affirmed that air power's effectiveness will be enhanced if aircraft can be deployed in integrated units ready for immediate operations. During Operation Desert Shield, we had more than five months to bring together the collective capabilities of the allied air forces and prepare them for the integrated air operations of the war, which began on 16 January 1991. Time to assemble such an ad hoc composite force may not exist in the next contingency.

A Moving Picture, Not a Snapshot

The Naval War College was an especially appropriate setting for General McPeak's remarks because in his landmark article on the composite wing he wrote, "The best example of a composite wing is provided by the modern aircraft carrier, where the typical deck loading creates a true composite unit with a range of capabilities tailored to the mission."[4] If the analogy of the aircraft carrier is to be instructive to the Air Force as it forms composite wings, then a "moving picture" of the carrier wing is more helpful than a static image or "snapshot." The popular notion of the complete carrier air wing, with its assortment of aircraft on board and ready for integrated operations, represents only one day in the life of the wing. This single image does not convey the life of the wing in the days before, during, and after deployment. We need some insight into these activities if we are to visualize the challenges and realities the Air Force will face in organizing and "fighting" a composite wing. Further, other ideas and issues unique to the Air Force (e.g., doctrinal, fiscal, and institutional) need discussion, revision, and refinement to prepare the composite wing for active duty.

Basing for the Composite Wing

The ship itself is the carrier air wing's forward operating location for integrated operations. When not embarked for a cruise or deployment, aircraft of the same type are based ashore at various naval air stations. For example, all the F-14 Tomcat aircraft and squadrons for all the East Coast aircraft carriers are based at Oceana Naval Air Station, Virginia. Similarly, the rotary-wing aircraft of the East Coast carriers are based with each other; the antisubmarine aircraft are together; and so forth throughout the Navy's carrier air wings. Although designated as part of a specific carrier air wing, a squadron is also joined with other units of like aircraft in homogeneous groups known as functional wings. During peacetime, these "funcs" remain ashore at home bases, providing economies of scale for the logistics and maintenance of similar aircraft and furnishing overall standardization and necessary training systems for both operators and maintainers.

The Navy's air wings are based and organized this way to deal with the very issues that will also affect a new Air Force composite wing. In the Navy's view, functional wings of like aircraft yield economies of scale that accrue cost savings and benefits for a variety of factors: logistics, maintenance, standardization, training, personnel, and support services. The Air Force may have to further expand its search for new organizational and operational ideas that preserve the essence of composite forces, yet reap the substantial benefits of its present homogeneous basing. Perhaps the diversity of forces necessary to form a composite wing can be found in units in geographic proximity to one another. In such a fortunate situation, these units could retain their present bases to operate and train more closely and frequently; share common training areas; and ultimately prepare for rapid, integrated response.

Readiness of the Composite Wing

Embarking an entire integrated wing aboard a carrier is the culmination of a lengthy and extensive cycle of preparations known as a workup. The process begins with individual aircrew training and competence at home bases, gradually progresses to unit proficiency, and finishes with integrated operations training—both on and off the carrier—for the entire air wing. A wing is not considered ready for integrated air operations until it completes the final phase of its workup. Further, a carrier—together with its embarked air

wing—may not be considered ready for combat operations until it finishes a training exercise with other ships in the battle group to coordinate the inner and outer air battle. Once the high-tempo deployment is complete, the wing enters a stand-down period. At this point, the cycle has come full circle, and the air wing begins the process all over again.

Because workup cycles coincide with carrier deployments—which in turn drive personnel turnover—the Navy must monitor the status of the various wings, coordinate their workup cycles, and establish a deployment rotation among the carriers. This scheduling maintains a portion of the carrier force in a combat-ready state while the remainder is in varying stages of repair, preparation, and training.

The Air Force will have to consider the implications of such a training cycle for composite wings. Can the service accept the potential degradation of combat readiness resulting from a phased training cycle? Currently, within a narrow margin of capability, the Air Force attempts to continuously maintain all active-duty tactical fighter wings in a combat-ready status. If a composite wing must go through a preparation cycle to achieve fully integrated operations capability, the Air Force will have to rotate combat-ready status among the wings to accommodate the different stages of preparation and readiness.

Command, Control, Communications, and Intelligence

Success in the recent air campaign against Iraq was a result of the synergy between two important factors: unification of the command system and technological improvements. Both factors played important roles in developing a system of command, control, communications, and intelligence (C^3I) that reached new levels of effectiveness and efficiency during the war. Future composite wings—and air forces in general—will greatly benefit from the advances and experience gained in the Gulf war. The C^3I capability presently available gives the Air Force and any new composite wing an extraordinary ability to plan, coordinate, synchronize, and execute complex air operations against determined opposition.

As the Air Force assembles composite wings, it would do well to study how the Navy operates its carrier air wings. The composite nature of the carrier air wing is evident from this deck shot of the USS Theodore Roosevelt, *CVN-71, and its complement of aircraft.*

The most important C^3I development during Operation Desert Storm was the integration of air power under one air component commander, with one air tasking order (ATO) and one set of objectives. These simplified lines of command were enhanced by modern equipment and techniques, enabling unprecedented ease of communications among Air Force, Army, Navy, Marine Corps, and allied air assets. The system allowed US Central Command's air component (CENTAF) to "'use

a single [ATO] for all services for the first time ever'" to provide effective, detailed, central direction under stressful conditions.[5]

These advancements imply that the composite force-package "gorilla"[6] will operate in a much more orderly environment, thus easing the integration of diverse Air Force assets in theater operations. One may also reasonably assume that the Air Force composite wing will not be the gorilla, but only a major body part. In theater air warfare (as was the case in the Desert Shield and Desert Storm operations), the ultimate composite force package will be made up of Air Force, Navy (including ship- and submarine-launched cruise missiles), Marine, Army, and allied aerospace forces. A present and future requirement for the C³I system, therefore, is to communicate with and incorporate all joint and allied air forces in the theater.

The C³I advances displayed during Desert Storm also provide a way to streamline the planning and execution cycle for future air operations. The length of the present cycle is one of the great concerns that General McPeak addressed:

> It is worth noting that the battle situation and friendly force status are likely to change more or less continuously, with the effect that the ATO, when eventually executed, is quite likely to have been overtaken by events....
>
> It is a disgrace that modern air forces are still shackled to a planning and execution cycle that lasts three days.[7]

The modern equipment available to shorten and streamline that cycle includes new airborne battlefield command and control center (ABCCC) aircraft. In Desert Storm, ABCCC technology allowed CENTAF's airborne battle staff to carry out the ATO for close air support and, if necessary, revise it while airborne. "Revisions included adding targets for attack aircraft with leftover ordnance and calling for additional strikes on targets that had survived the first time around." In addition, the fact that the ATO was computerized meant that it could be "'searched and sorted any number of ways'."[8] This technology gave CENTAF unparalleled understanding of the entire situation in the air and the ability to adjust air power much more quickly to rapidly changing conditions within the theater. Indeed, if the C³I capability of Desert Storm is continually improved, made available during training, and used in exercises by joint and combined aerospace forces, we can expect great improvements in the planning and execution cycle of integrated theater air operations.

Maintainability and Logistics

Physical space on the aircraft carrier is a precious commodity that forces the air wing to be as lean an organization as possible, while retaining maximum capability. Yet the Navy has not developed a better alternative to keeping two levels of maintenance—organizational and intermediate—aboard the ship.

An intermediate maintenance capability is essential to the sustainment of operations and provides an important repair capability that often supplants the remove-and-replace type of repair at the organizational level. Engine, airframe (for battle-damage repair), and hydraulics are examples of "shops" that provide essential services which a mere surplus of spare parts cannot replace. If one anticipates sustained theater operations, the composite organization should not pare away intermediate-level sustainment capability in the interests of mobility, as is currently being proposed.[9]

Logistics could also influence the dispersal of composite wing aircraft to separate locations and thereby influence the conduct of integrated operations. For instance, a forward base's runway and tarmac systems designed for fighter operations may not support sustained "jumbo" or heavy-aircraft operations of tankers, bombers, or transports because these sys-

tems' width, length, or weight-bearing capacity may be insufficient.

Another example comes from Operation Desert Storm. One of the primary reasons for operating B-52s from bases outside the Middle East was "the absence of local port facilities that could accommodate the large number of heavy, unguided conventional munitions needed by the bombers."[10] That is, finding an operating location for the *aircraft* was not the problem. Rather, finding one that could handle the *bombs* was the difficulty. Furthermore, a forward base with fuel storage adequate for fighter operations may not be able to support the greater demand of tankers, bombers, or transports.

If a composite wing is deployed to forward operating locations for sustained theater operations, logistical considerations may force the wing to disperse its forces and conduct integrated operations from several bases. These arrangements revert to C^2 issues and reinforce the need to continually improve the mechanisms for coordinated planning (joint or otherwise), status reporting, and ATO transmission.

Could Flexibility Be Lost?

The proposed organizational arrangements of a composite wing run the risk of lessening the very attribute it seeks to maximize: flexibility. That is, if the structure and assets of the composite wing are considered inviolable, it will become difficult to integrate the unit into joint theater-level operations.

A theater commander may draw upon air assets from all the services and probably from allies as well. For a theater air campaign, the commander will call on these assets to perform a variety of missions, attack multiple targets, phase the air effort over an extended period of time, and provide any specialized capabilities they can. Their efforts will undergo many changes and variations and demand great flexibility from the air component.

Air Force doctrine holds that air power works best under the concept of centralized control and decentralized execution. Air forces are consolidated under a

Currently, the Air Force maintains its wings in combat-ready status. If composite wings enter a preparation cycle or "work-up," as do carrier air wings, the Air Force—like the Navy—may consider rotating combat-ready status among its wings. Shown are aircraft of a composite wing at Incirlik Air Base, Turkey, during Operation Desert Storm.

central commander for unity of effort as well as economy of effort. This consolidation gives limited air assets enhanced combat power while one employs as much or as little air power as is necessary.

Therefore, the operational challenge for employing theater air power is determining the proper apportionment and allotment. When, where, and how much to use are questions of operational art, which in turn affects decisions on campaigns and force management. Since the amount of air power is limited and finite, the commander strives to concentrate firepower at the right times and places to meet overall objectives.

Thus, in a theater situation the composite wing may best serve theater goals if its assets are divisible and can be "chopped" to other operations. A hypothetical example is helpful here. If a Navy air strike is planned but the only air-refueling tankers available are in the composite wing, does the Navy mission proceed? Are the composite wing's tankers assigned to the mission? If so, does the composite wing stand down because it is now less than fully capable? What if the mission requires more than one of the composite wing's capabilities? This example could be repeated with any of the highly specialized capabilities of the composite wing (e.g., Wild Weasel air defense suppression, electronic warfare, airlift, or airborne warning and control system [AWACS] early warning).

One achieves maximum flexibility when the air component commander can tailor forces as necessary to achieve unity—as well as economy—of force. Thus, the composite wing will be best prepared for combat if it is flexible enough to operate in a number of schemes and can be integrated with varying capabilities and force sizes.

Not a New Idea

The idea of composite, or integrated, Air Force units is not new. In July 1955 the Air Force authorized Tactical Air Command to activate Nineteenth Air Force as an operational headquarters. Based in the United States, this unit and its offshoots—composite air strike forces (CASF)—were to be "integrated self-supporting organization[s] that could immediately deploy to a crisis area and operate until such time as normal operational forces could be moved into the area to augment or replace [them]."[11] A CASF included all elements of a modern air force—counterair fighters, ground-attack aircraft, reconnaissance planes, bombers, tankers, and transports—and could be tailored for the situation.

The Air Force employed the CASF concept on several occasions during the late 1950s when US policy was shifting from massive retaliation toward flexible response. The service believed that fast-acting tactical air forces could provide an increasingly effective deterrent against "brushfire" conflicts of limited or local wars. In 1958 a unit called Composite Air Strike Force Bravo deployed to the Middle East and was on the scene in Lebanon within 12 hours of that nation's request for US military assistance in the unstable aftermath of a military coup in Iraq. During the Quemoy and Matsu crisis later that year, CASF X-Ray Tango deployed to Formosa to deter Chinese Communist aggression and help defend the Chinese Nationalist homeland.[12]

The advantages accrued by the US in crisis resolution made possible by fast-acting, flexible air forces were recognized at all levels of government. Yet, Nineteenth Air Force and its CASFs met sustained internal resistance and were formally inactivated in July 1973.[13]

The reasons for the demise of this composite-force venture are understandable. Nineteenth Air Force existed only as a headquarters for planning and administrative functions and possessed no forces of its own. It had to rely on other numbered air forces and their combat assets to provide the units necessary for any action. Assembling and training forces dedicated to the CASFs was even more of a problem in peacetime, when the priorities, sched-

The Navy has not developed a better alternative to keeping two levels of aircraft maintenance—organizational and intermediate—aboard a carrier. Air Force plans for the composite wing call for a reduction in intermediate-level maintenance in the interest of mobility. This may not be feasible, however, during sustained theater operations.

ules, and agendas of different organizations competed with each other.

The planned structure of the composite wing will include combat forces and will avoid repetition of the problems faced by the CASFs. However, the historical experience of the CASFs brings to light the dilemma of the sometimes contending organizational structures in place for peace and war. Will the "operational" organizational structure, designed to maximize combat effectiveness and quicken response time in a contingency, produce unnecessary obstacles for the peacetime chain of command when the unit must organize, train, and equip its forces for its warfighting mission? Conversely, will peacetime organizational arrangements be sufficient to prepare composite forces for their envisioned combat employment?

Peacetime and wartime organizational arrangements are necessarily interdependent. A change in one may be beneficial or detrimental to the other. In the case of Nineteenth Air Force, the obvious benefits of such a unit for contingency response could not make up for what it lacked in the ability to organize, train, and equip forces in peacetime.

Similar organizational issues exist for the composite wing. What will the peacetime chain of command look like to organize, train, and equip the units? Will it report through an existing MAJCOM—namely Military Airlift Command, Strategic Air Command, or Tactical Air Command? If so, will that command assume budgetary responsibilities for aircraft not now a part of that command? Will each

composite wing rely on the various MAJCOMs for training and standardization of aircrews and support personnel? There are many other questions as well.

Additional Thoughts and Ideas

As similar organizational structures, the carrier air wing and Nineteenth Air Force (i.e., CASFs) met many of the same challenges that confront the Air Force's proposed composite wing. Although their methods and answers may not solve all issues relevant to the composite concept, the case studies stimulate alternative ideas that can be the basis for additional professional debate.

The more promising ideas include the following:

1. Supplement the composite wings by having more units that are based close to each other work and train together. This will preserve the economies of scale for basing similar aircraft and allow greater tailoring of forces for exercises or contingencies. Present Air Force basing in the southeastern US is a good example of units close together, each with a variety of aircraft, that could work and train in a more composite fashion without redistributing forces.

2. Be aware that both the carrier air wing and CASFs neatly fit into a larger effort by joint and combined forces and could "plan, control, and operate with land, naval, or amphibious forces."[14] The new composite wing will operate in a theater that can include ground, sea, or air forces, possibly comprised of joint or combined resources. It cannot become too independent of other units operating in the same environment. Instead, the wing must be ready and able to communicate and operate with all other forces. This situation suggests that the C^2 system must still be able to transmit and communicate an ATO to all engaged forces in a theater.

3. Preserve the three-level maintenance system for composite operations and for Air Force operations in general. The ability to sustain high-intensity operations is critical to effectiveness in modern combat. The intermediate level of maintenance (i.e., more complex repairs done by organic capability, particularly while deployed) is essential for sustainment and should be only grudgingly surrendered for the sake of greater mobility. The Navy's adherence to the three-level system, even with the space limitations aboard ship, suggests that the system is valuable and worth further investigation.

4. Expect a composite wing to have a cyclic readiness posture rather than the constant combat readiness of regular units. The various stages of training—from individual proficiency to group readiness to integrated operations—will allow the wing to have only peak periods of readiness.

5. Expect (worst case) that a composite wing will have to conduct operations from more than one location if it is deployed for theater operations. Limitations imposed on an operating location by size, facilities, or security will require the dispersal of forces. Thus, the C^2 system must be capable of communicating all necessary information from various locations.

6. Let the composite wing be flexible enough to allow the tailoring of its forces to smaller packages and to integrate itself into larger joint or combined operations. This flexibility may also entail the wing's supporting the operations of other forces by providing certain of its specialized capabilities, such as electronic warfare.

7. Finally, be aware that neither technology nor the reorganization of forces into new units will be sufficient to ensure success of the composite concept. Success will hinge on the development of a permanent, yet progressive, attitude that orients aerospace forces more closely to integrated operations. This new attitude must be present not only in the composite wing itself, but must permeate those other units and organizations that are in constant contact with it.

Some runway or tarmac systems of forward bases may not be able to accommodate the larger aircraft in a composite wing, such as these KC-135 tankers. If so, the commander may have to disperse the wing's aircraft and conduct integrated operations from several bases. This possibility makes command and control all the more important.

Onward and Upward

The idea of the composite wing is most alluring when one considers certain scenarios, notably those requiring faster response and longer reach. The US would enjoy an improved ability to employ highly mobile, flexible, and well-trained forces that can hit very hard, be used in diverse scenarios, and intervene across the spectrum of conflict. Air Force units deployed to the Persian Gulf in the vast Desert Shield and Desert Storm operations had that particular look, in aggregate, of the force structure required for the scenarios just described.

The Air Force, now working to institutionalize that look by creating a new wing-level structure, may concentrate its efforts on composite forces—units and combinations of units made up of different kinds of aircraft capable of applying air power over both long and short distances. These units would also have the much-desired opportunity to live and train together during peacetime and thus be amply prepared for contingency operations.

The chief of staff gave his assurance in a recent article that the Air Force "will not run wild with composite wings."[15] Rather, the service will retain some wings in the well-known monolithic form, particularly those units based in the US and having overseas reinforcement responsibilities. This decision is based on the economies of scale accompanying that organizational scheme.

However, as the composite wing is developed and nurtured, and as it matures from concept to force structure, issues and challenges will emerge that must be resolved before the new gorilla is ready for active duty. The case study provided by the Navy's carrier air wings can be helpful. Furthermore, the Air Force can draw from its own historical experience with CASFs in the 1950s and the recent operations in the Middle East. More importantly, the Air Force has within itself the corporate experience and expertise to build the most lethal, flexible, and responsive force possible as it chooses prudent methods to ensure the continued security of the United States. □

Notes

1. On 1 March 1991, General McPeak addressed the collective body of the US Naval War College, Newport, R.I., and then attended an informal luncheon with the students and faculty members from the Air Force. His comments about the

composite wing and possible basing options were part of a session consisting of prepared remarks along with a question-and-answer session.

2. Casey Anderson, "Air Force on Course for Major Restructuring," *Air Force Times*, 18 February 1991, 3.

3. Secretary of the Air Force Donald B. Rice, *The Air Force and U.S. National Security: Global Reach—Global Power* (Washington, D.C.: Department of the Air Force, June 1990). This white paper advances several key ideas intended to shape air power doctrine of the future. Among them are a power projection strategy for the Air Force and a belief that future scenarios will involve sharp, short-duration operations.

4. Gen Merrill A. McPeak, "For the Composite Wing," *Airpower Journal* 4, no. 3 (Fall 1990): 9.

5. James W. Canan, "How to Command and Control a War," *Air Force Magazine* 74, no. 4 (April 1991): 15.

6. The chief of staff's affectionate term for the composite force package. McPeak, 4.

7. Ibid., 6–7.

8. Canan, 17.

9. The logistics concept being developed for the composite wing features a two-level maintenance program. One level is organizational—that is, on-aircraft maintenance done on base by the wing. The second level is off-aircraft maintenance done at the depot. This concept is a significant departure from the existing three-tiered maintenance system. Presently, simple problems are handled on the flight line; more complex repairs are done at base shops; and the most difficult work is done at depots, usually located far from the base.

10. Casey Anderson, "The Power of One: SAC Says Unity Was Key in Gulf," *Air Force Times*, 6 May 1991, 26.

11. Robert Frank Futrell, *Ideas, Concepts, Doctrine: Basic Thinking in the United States Air Force*, vol. 1, *1907–1960* (Maxwell AFB, Ala.: Air University Press, December 1989), 450.

12. Ibid., 611–12.

13. Dr Jim George, Tactical Air Command Office of History, Langley AFB, Va., telephone interview with author, 24 April 1991.

14. *19th Air Force* (Langley AFB, Va.: TAC Office of History, April 1991), 1.

15. James W. Canan, "McPeak's Plan," *Air Force Magazine* 74, no. 2 (February 1991): 21.

A NEW PARADIGM
FOR ORGANIZATIONAL STRUCTURE

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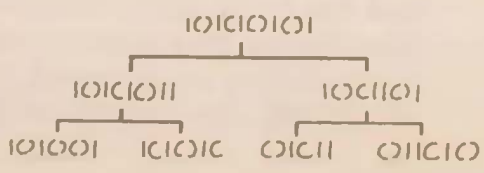
IT IS increasingly obvious that the Air Force lives in a constantly changing organizational climate: force reductions put end strength in constant flux, planners struggle with budgetary uncertainty, and missions are realigned among units. As we redesign our forces to fit real-world constraints and continue meeting mission requirements, it is important that we seriously consider how we envision our organizations and determine whether our traditional organizational structure is meeting our needs. If that structure is inadequate, we must find a new way to understand the organizational systems we manage or work within. With this in mind, this article explores a powerful new concept of organizational design, relates it to the Air Force, and discusses whether this breakthrough in organizational structure can help improve the way the Air Force does business.

Changing World and Static Structure

Managerial science—or art, if you prefer—has progressed significantly over the past century, thanks to the work of many innovative and creative individuals whose work casts doubt on the ability of the traditional, pyramidal organizational structure to fulfill our needs. In addition, the demographics of the work force have changed: modern people are more educated and more aware of their rights than were previous generations, and their desire for personal and professional fulfillment may not allow them to be pigeon-



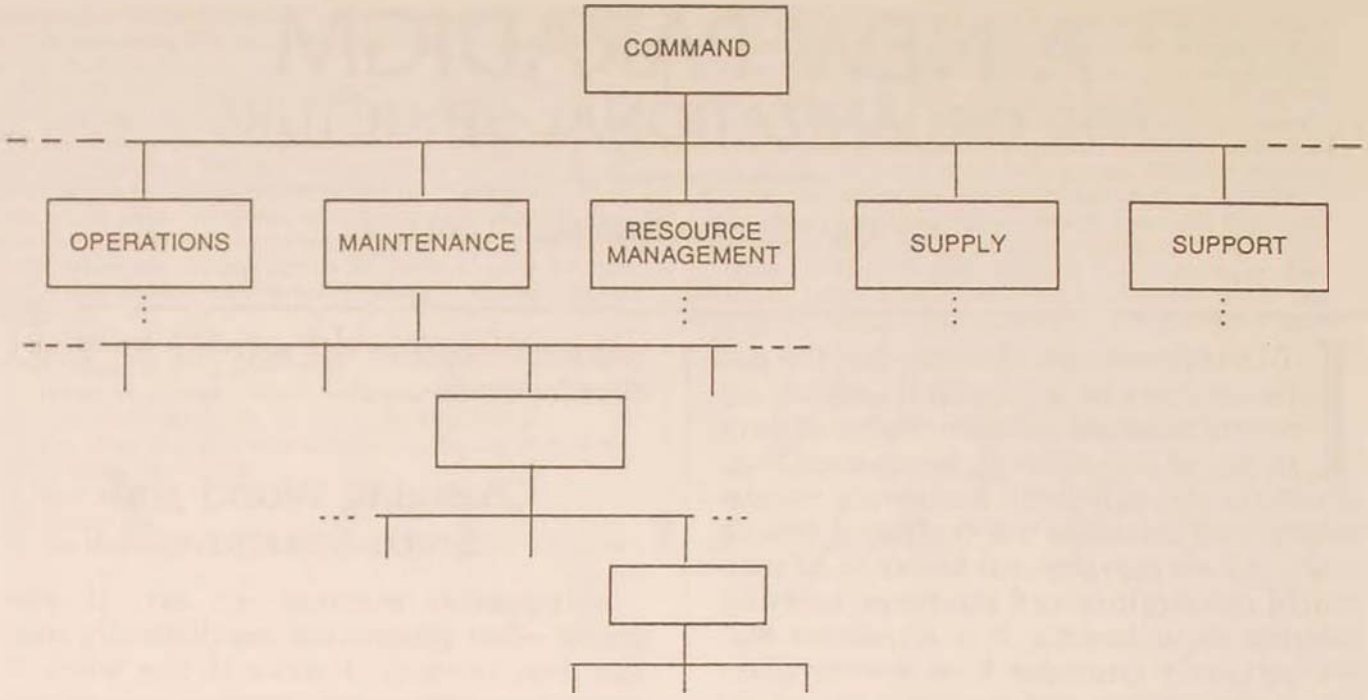


Figure 1. Traditional Organization Chart

holed in their jobs.[1] Unfortunately, organizational development and structure has not progressed at the same pace; instead, it has kept today's work force, managers, and organizations confined to an early industrial level of organizational sophistication.

An idea that is gradually gaining acceptance among leaders is that if a well-educated and self-aware work force (like the one we are privileged to have in the Air Force) is to excel, it needs something more than directions and instructions. If airmen, officers, and civilians are to continue accomplishing the Air Force mission in an outstanding manner, knowing what to do and even how to do it is not enough. These people also need to know why they do what they do (i.e., how their jobs affect the mission). Only when individuals accept the importance of the mission itself and the importance of their duties in accomplishing that mission will they be able to do all that is expected of them.[2] More importantly, only when people understand their relation to other components of the organization can they begin to work toward overall goals instead of their own agendas. In order for Air Force personnel to take the service ahead confidently into the next century, it is vital that they know how they fit into the mission profile.

The Air Force—along with the rest of the Department of Defense (DOD), most of the federal government, and the majority of corporate America—has for years relied on the traditional organizational structure: a pyramid of authority with workers along the bottom, executive management at the top, and usually a vast array of middle managers crowding the bulk of the structure. What does a chart of such an organization tell us (fig. 1)? It certainly tells us who is at the top and bottom of the organization (largely important to those at the top and a painful reminder to those at the bottom). Looked at carefully and pragmatically, it shows us whom we will catch hell from if things don't go right. It is very handy at letting each of us know where we

stand in relation to everyone else, especially in terms of the authority and responsibility we have.

In addition, this kind of organizational chart provides a graphic display of that most ubiquitous phenomenon of military service: the chain of command. Looking at the chart and the chain in terms of coherence of action and organizational efficiency, we see it as a graphic display of the most hated aspect of government service—bureaucracy and its accompanying red tape. Every military member and civil servant has complained about excessive red tape, wondering if it served any higher purpose than securing the jobs of bureaucrats. Can something similar be said about the way the organizational chart finds places for their jobs?

The organizational pyramid is well suited to what became the predominant Air Force style of management, namely management by results (MBR). MBR is the logical extension of the management by objective (MBO) style that the military latched onto during and after the (Secretary of Defense Robert S.) McNamara era. In MBO and MBR, goals and objectives are set and passed down through the pyramid, and tight systems of control are established to monitor the goal achievement. Rewards are parceled out when goals are met, and people in charge when things go badly look for new jobs.[3] Today we recognize that management (i.e., putting things in their proper places) must be secondary to leadership in the military setting and that MBO, MBR, and many other management fads have not given us what we need to improve our operations.

These complex systems of control focus attention on short-term attainment of goals rather than long-term effects on the aims of the organization (mission accomplishment). This often results in conflict between elements of the organization, especially when their assigned goals may be mutually exclusive (e.g., an engineering squadron must improve responsiveness to work orders by X percent while reducing overtime by Y percent). Supervisors within the organization strive to meet the goals they have been given, regardless of the effect on the rest of the unit or on the overall mission. Particularly significant is the fact that many of these goals are forgotten when mission accomplishment is paramount (e.g., in times of crisis, everyone focuses on the mission to the exclusion of everything else). In normal operations, however, focusing on the systems of control instead of the mission leads to the belief that as long as goals and standards are being set and met, the organization is operating correctly, regardless of what is happening outside.[4]

The organizational chart is incapable of giving us a key piece of information that is basic to overcoming the divisive nature of MBR, providing for individual fulfillment, and improving organizational effectiveness. It does not, will not, and indeed cannot show us how the pieces of our organization fit together to accomplish the mission. Consider the organizational chart in figure 1, which is atypical, incomplete, and simplistic—but is nonetheless useful. Is it strikingly obvious from the chart how the organizational elements fit together or how they feed into one another to reach the overall aim of the organization? Perhaps such relationships should be intuitively obvious from the identity of the elements, but our intuition may not be completely trustworthy. In order to give all members of the organization a clearer picture of how their jobs contribute to the mission, one needs a new organizational structure.

The basis for this new structure is not new; like many innovations, it is an original application of an old idea. That idea dates back over 40 years and is responsible for a managerial revolution that brought a beaten and demoralized country to the forefront of the modern world.

An Old Idea Rediscovered

In 1950 the Air Force was about three years old, struggling to build its own identity and assert its position within DOD.

America as a whole had no such problems because our position in the world was unequalled. Not only had our military might triumphed in two theaters of operations, but our economic power was the envy of everyone. By 1950 we had turned our attention away from building military hardware to building a plethora of consumer goods which the rest of the world rushed to buy.

The year in question is chosen with care. It is particularly significant because in the summer of 1950 an American quality expert was invited to occupied Japan by the Union of Japanese Scientists and Engineers to lecture about quality and statistical techniques. What Dr W. Edwards Deming taught the Japanese enabled them to rebuild their shattered country and rise to the top of the world economy. Dr Deming taught the Japanese that continuous improvement of product and service quality was the key to capturing and keeping the marketplace.[5]

Dr Deming also carefully taught the Japanese that optimization of their organizational systems would be necessary if quality were to continually improve. To this end, he drew on a chalkboard a diagram similar to figure 2, in which materials, tools, and equipment come in from various suppliers and are processed through a series of steps to make the final product, which is then distributed to consumers. Companies must conduct research into new ways to meet consumer needs and obtain feedback from consumers in order to continuously improve the product or service. No longer is it acceptable to set up a system and simply manage its operation; rather, leadership is required. Leaders must understand who their customers are and how the system elements work together to satisfy their customers' needs. The responsibility for optimizing the system to achieve organizational aims is theirs alone.

What does this economic example have to do with the military, and why spend so much time on it? As budget battles loomed ever larger on the fiscal horizon in the 1980s, DOD picked up the philosophy of continuous quality improvement that the Japanese had learned from this American. Although the Navy spearheaded the drive for improved quality, the entire DOD officially adopted the philosophy in 1988.

Called "total quality management" (though more aptly named "total quality leadership"[6]), the quality philosophy gradually became accepted in some Air Force circles, primarily in the areas of weapons development, logistics, and maintenance. Because developing, procuring, and maintaining advanced weapons like those we recently used so effectively in Kuwait and Iraq will undoubtedly grow more expensive as time goes by (especially given our

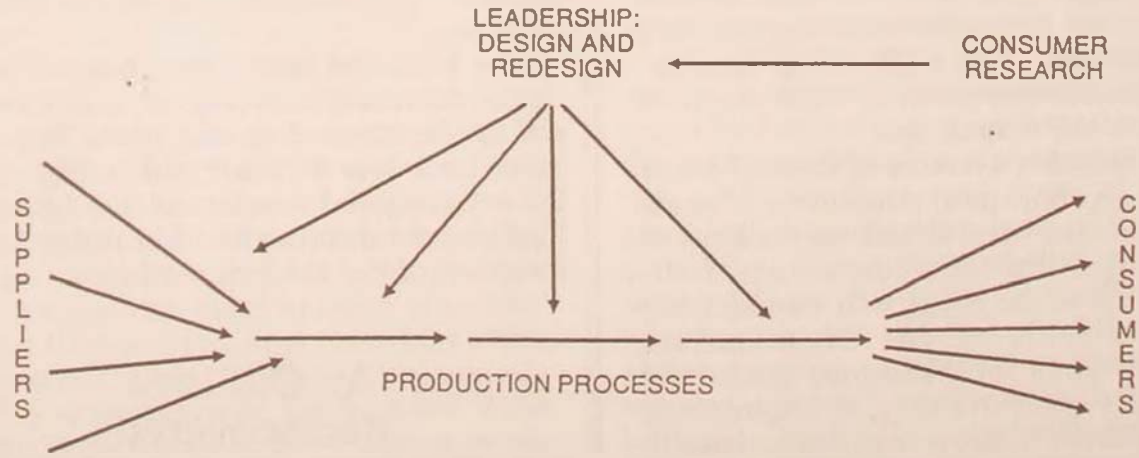


Figure 2. System Flowchart (Adapted from W. Edwards Deming, *Out of the Crisis* [Cambridge, Mass.: Massachusetts Institute of Technology, Center for Advanced Engineering Study, 1986], 4)

reliance on technological superiority), it was prudent to "adopt the new philosophy"[7] and begin to continually improve our operations. It became clear that only with a commitment to improving the quality of our operations and organizations could we hope to maintain our competitive edge.

But how does the quality philosophy bring us a new paradigm for organizational design?

The Organization as a System

Each Air Force organization is a system (i.e., a collection of interrelated and interdependent elements that work together to achieve the aim of the whole). After understanding the inner workings and clearly establishing the mission, one may optimize or fine-tune the system to fulfill the mission with the least waste and the highest effectiveness. Reduction of waste and improvement of quality lead directly to improved productivity. Optimizing the entire system (as opposed to optimizing only a small portion of the system) requires a thorough understanding of how the elements fit together, how changes in one element affect other organizational units, and what value each organizational part adds to the final product or service. In addition to knowing how the system works, however, achieving the best results requires a leadership commitment to optimizing the *whole* system and not allowing the subordinate parts to execute their own programs blindly.

Although recognizing this fact is conceptually easy, it causes us to wonder how well our Air Force systems are optimized. How well do we understand how the elements fit together to accomplish the mission? Do we realize that emphasis on one area may improve that area but at the same time reduce productivity in other parts of the organization and thus have a negative effect on the whole? Do we understand that in order to optimize the entire system, some subordinate parts may actually be allowed—no, encouraged—to operate inefficiently (in economic terms, at a net loss to themselves)?

The total quality management (TQM) philosophy of Dr W. Edwards Deming teaches leaders to continually review their operation to find new ways of improving products or services. A major step in the Air Force's implementation of TQM was the establishment of the Air Force Quality Center at Maxwell AFB, Alabama. Here, the center's staff attends a seminar.

Every military member can think of instances in which suboptimization (i.e., people looking out for themselves) has resulted in problems accomplishing the mission. A few examples will suffice: aircraft grounded for lack of spare parts; construction projects delayed because the user demanded changes at the last minute; materials returned to supply because they were "equivalent" but would not do the job; purchases sent out for competitive bid when only one manufacturer in the world could deliver the product; officer performance reports and enlisted performance reports redone because an "x" went outside the box or because the endorser rewrote what the additional rater had already re-

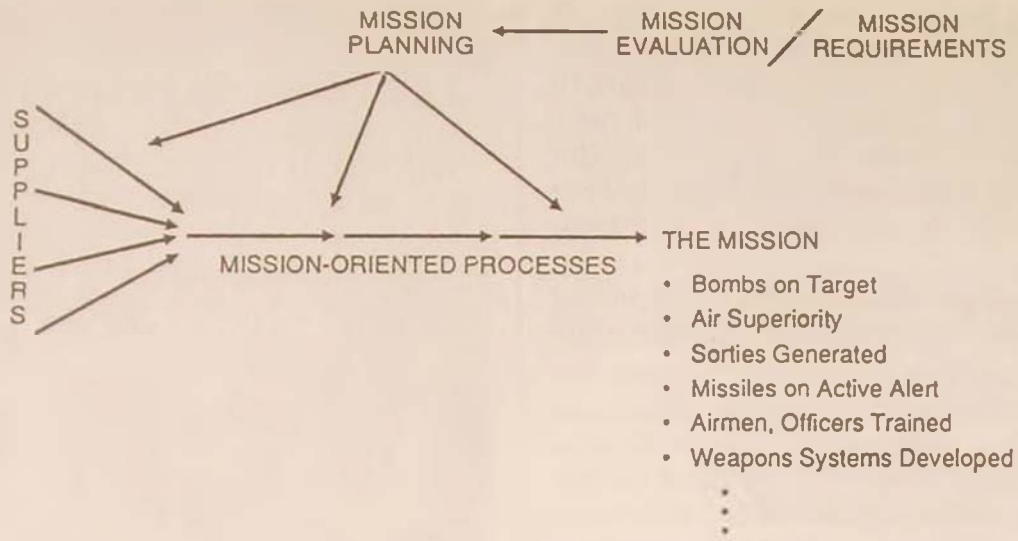


Figure 3. System Flowchart Applied to Mission Accomplishment

written; patients given the wrong medication (or no medication); hazardous waste returned to the source because the accumulation-point manager was not trained on the latest version of the required paperwork. We are naive to assume that we live in a perfect world, work for a perfect Air Force, and don't need to worry about quality or optimized systems.

It seems almost sinful to some managers to suggest that accomplishment of the mission may require spending a little more money now to buy the proper materials, tools, and equipment. Instead, we save as much money as possible up front and spend more later to correct subsequent problems.[8] Some people balk at the idea that increased emphasis on and resources devoted to training may ultimately save time, money, and lives by decreasing the risk of accidents and mistakes. As difficult as it may be for these individuals to accept, such is the essence of optimizing the entire system: some components may have to operate below their potential in order to maximize total combat effectiveness and thus accomplish the mission.

Optimizing a system and recognizing the organization as a system come together in the new paradigm for organizational design. Developed by Dr Nida Backaitis—a protégé of Dr Deming—of the University of Southern California, the new paradigm uses the system flowchart (fig. 2) to describe the organizational structure.[9]

Consider the elegance of the new paradigm. Using the system flowchart as an organizational chart, all members of the organization can see clearly where they fit into the system and how they must work together with other members and other units to accomplish the mission. Neither the traditional pyramid chart nor the more convoluted matrix organizational structure can portray these working relationships. The only relationship pictured on the pyramid is the one between superior and subordinate. Consequently, the organization is designed and built for pleasing one's superiors, even if doing so jeopardizes the mission. By comparison, the flowchart places everyone within the context of mission accomplishment and examines every activity in relation to the value it adds to the mission.

An Air Force System

Figures 3-5 put the new paradigm in Air Force terms. Figure 3 replaces the "consumers" of the industrial model with the "mission," the ultimate organizational purpose of the unit. The mission may be strategic or tactical, involving everything

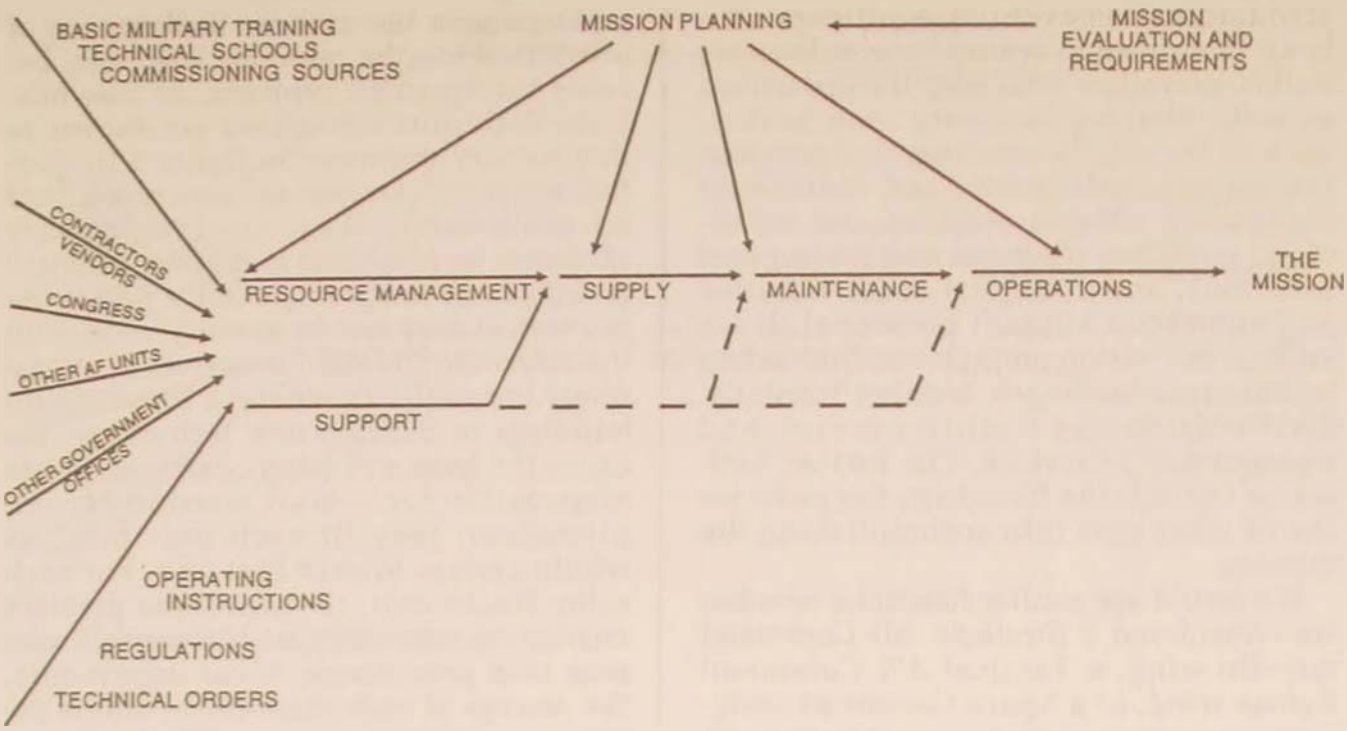


Figure 4. Expanded System Flowchart with Air Force-Related Applications

from nuclear alerts in support of deterrence to close air support in Operation Desert Storm. In every case, leaders must combine operational and support assets to produce operations that accomplish the mission objective. (Note that when the mission involves delivering products or services to other Air Force units, the industrial and Air Force models become almost indistinguishable.)

The "consumer research" and "design and redesign" of figure 2 have been replaced with "mission evaluation and requirements" and "mission planning," respectively, in figure 3. These elements provide both continuous evaluation of the success of the organization and predictions of future requirements, and then feed changes back into the system to improve its operations. Such functions keep the system focused on the mission and are the commander's sole domain. Only the commander who has clear vision and understanding of the mission objective can optimize the system toward mission accomplishment.

Figure 4 expands this Air Force model, using the organizational elements depicted in the pyramidal chart we first considered. One may of course debate the exact place of each element in the flowchart; ultimately, building the system in proper working order is a command responsibility. Regardless of the actual placement of elements, the chart clearly displays the idea of each separate organizational entity's knowing its relative position in the unit and its effect on the outcome of the mission.

The commander is charged with accomplishing the mission of the unit—for example, the airlifting of cargo and troops by a Military Airlift Command wing. Working backward on the flowchart from the mission (the right number of troops and equipment in the right place at the right time), we first find the aircraft and aircrews who actually perform the mission. Right behind them we find the crew chiefs and maintenance personnel who keep the aircraft airworthy. If we look carefully, we will probably find instructors and

standardization/evaluation officers who keep the aircrews trained, as well as air traffic controllers who keep the operations smooth. Working backward even further, we find the supply squadron that provides the proper tools, parts, and individual equipment; mission planners and schedulers; aerospace medicine and life-support functions; and technical-order libraries and contractor support personnel. If we enlarge our vision enough, we find safety technicians, on-the-job training monitors, civil engineering facilities crews, and transportation services. The further back we go through the flowchart, the more we see of what goes into accomplishing the mission.

We would see similar functions whether we considered a Strategic Air Command missile wing, a Tactical Air Command fighter wing, or a Space Command early-warning center. In each case, one may define the mission and depict on the flowchart those units that directly contribute to the mission. The problem is finding the configuration that matches *how* the mission is accomplished.

If figure 4 presents too broad an application of this new paradigm, figure 5 illustrates a conceptually easy example. Here, part of a transportation squadron is divided into vehicle maintenance and vehicle operations, both of which are placed on the system flowchart. The squadron has many possible inputs and many customers, a few of which are shown. Vehicle operations supplies vehicles to organizations on the base and provides operators in some cases (e.g., base taxi). Supporting operations is vehicle maintenance, but while operations is the main customer of maintenance, the reverse is also true to some degree (shown with the dashed line). Note that the planning function feeds back not only into the two main processes, but also into the pool of suppliers, where information about the required vehicles is provided to the General Services Administration (GSA) and feedback on trainees is given to appropriate technical schools.

The transportation squadron commander has the sole responsibility to build and optimize the unit for the purpose of accomplishing the mission. Therefore, because the squadron supports the base mission, flight-line operations are shown as the primary customer in figure 5 (important support functions are also recognized as customers). Why must a primary customer be identified and given priority? Although the subordinate unit's role is important, it may not be synonymous with the mission. The Air Force does not exist solely to run trucks around a base or build buildings or develop new technology. Because the base and wing commanders are responsible for overall mission accomplishment, they fit each unit into the whole system toward that end. For each subordinate unit, therefore, the primary customers who support the overall mission take precedence. More importantly, the success of each subordinate unit is determined strictly in terms of overall mission success.

The commander of the transportation squadron may be tempted to measure success in other terms because the unit is a few steps removed from the overall mission. Selection of another measure (e.g., speed of repair, speed of turnaround) may result in impressive-looking charts and proud briefings, but the overall effect on the mission may be less than optimum. Consider the effect if the transportation squadron so emphasizes speed of repair that mechanics no longer take the time to diagnose problems fully, or jury-rig replacement parts or materials, or work so furiously that they become fatigued and begin to make mistakes. Vehicles that are repaired quickly only to break down quickly may not contribute to mission accomplishment. The unit commander must show leadership, establish the unit's mission so it aligns with the overall mission, and then measure the unit's success in the same terms.

As mentioned above, the commander is responsible for building and optimizing the system for mission accomplishment. Before the system is designed, the leader must study the mission requirements and plan the system to facilitate mission suc-

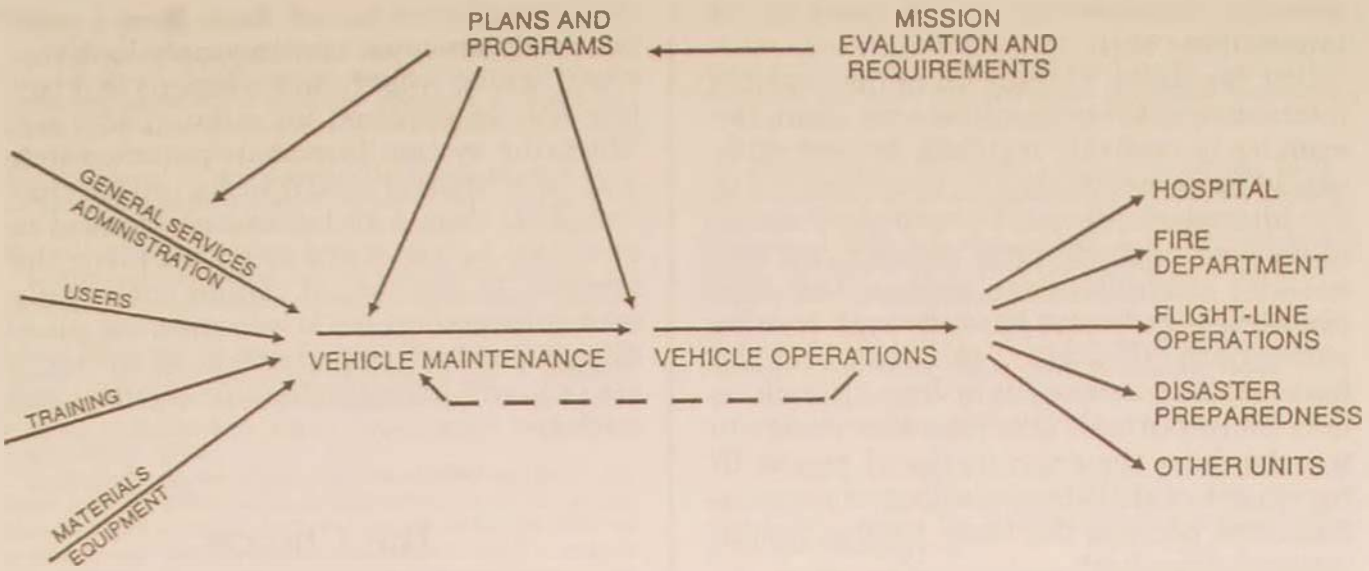


Figure 5. Transportation Squadron Example

cess. Once the system is in place and working, the leader's task consists of evaluation and further prediction (fig. 4). Is the unit accomplishing the mission satisfactorily? If so, how can it improve? If not, what must it change: timing, targeting, numbers of operational aircraft/missiles, number of qualified personnel? How will the mission requirements change in the future, and what will we need to meet them? Answers to these questions lead into mission planning, where the leader works to improve the unit's capabilities by optimizing the whole system. Such improvement may require difficult choices, such as deciding between spending more money for maintenance and spare parts or for fuel and flight time. In the present austere environment, these choices are especially difficult, but the touchstone that judges them is the mission itself.

Optimization is not a fire-and-forget weapon; it is a continuous struggle on the part of the leader to meet the mission requirements most effectively. Especially today, when mission requirements or unit capabilities are undergoing drastic change, the commander must have an understanding of what goes into fulfilling the mission, or readiness will be sacrificed. The system flowchart, by clearly depicting relationships within and between operational units, can be a valuable tool in maintaining unit effectiveness.[10]

Problems and Potential

Early on, this article maligned the traditional organizational design and pointed out several deficiencies. In the interest of addressing the topic fully, it should also mention potential problems with the new structural paradigm.

The first and most obvious problem with the new paradigm is its complexity. A single unit may produce an organizational chart that is relatively clear and uncluttered, but at the wing or base level the interrelationships become much more complicated. Second, this method of structuring the organization requires a thorough knowledge of the customers of each organizational element. For the maintenance squadron that serves the fighter wing, the customer-supplier relationship is relatively clear, but civil engineering and the hospital serve all of the other units on base. Such a situation recalls the first problem: graphically plotting all of the

possible combinations would make for an impossible chart.

Is it necessary to show all of the possible interactions? If the result is confusion, the exercise is probably fruitless. Indeed, little would be gained by trying to display all of the interrelationships. To reap the benefits of the new organizational concept, we may not—for example—have to show that supply serves the entire base through issuing equipment. However, showing that the fuels section serves flight-line operations may be important. Commanders must determine how the organizational pieces fit together to fulfill the mission; those relationships become the basis for the organizational flowchart.

A third problem is that the new paradigm seemingly leaves little room for ancillary functions (e.g., chapel; public affairs; morale, welfare, and recreation). Where do they fit into the mission? Showing those relationships that affect mission accomplishment focuses the attention of executive leadership on how to improve it, and shows us how our efforts affect the rest of the unit. These functions contribute in subtle and intangible ways, and their contributions to the mission may not be clear. If they did not contribute to the mission at all, we might question how important they are. Because they contribute in ways that are not clear, we instead question where they fit in.

Despite these problems with the new paradigm, it seems to be a promising tool for improving the way the Air Force plans and conducts operations and support. It provides a clearer picture of how units should work together to fulfill mission requirements and gives airmen, officers, and civilians a better understanding of how they contribute to mission success.

One final advantage of the new paradigm is very subtle. Recall that the first adaptation of the system flowchart to the military (fig. 3) involved changing "consumer research" to "mission evaluation and requirements." Limiting this evaluation process to current operational results and capabilities would have been a mistake. Leaders must continuously look forward, asking what future weapons and tactics will be required for mission success. Thus, the system flowchart puts research and development (R&D) in its proper context. R&D should and does look forward to new and better ways to accomplish the mission. In addition, it should continually feed information back into mission planning to ensure that technological advances are properly incorporated into strategy and tactics.[11]

The Choice

The key question, however, may be whether the difficulties posed by the new paradigm are outweighed by its advantages. As Air Force leaders understand the necessity of improving operations within their organizations, they may look for new ways to explore the relationships between and within their units and to determine how well or poorly they work together. If we recognize our people's need to understand their contribution to the organization, we may look for new ways to clarify working relationships and improve unity toward the mission. The new paradigm allows us to do this—not necessarily easily but certainly effectively.

Just as "nothing is useful for every purpose, and perhaps everything is useful for some purpose,"[12] the old and new paradigms for organizational structure are useful tools. The important difference between them is what they are useful for. The old paradigm is useful for visualizing the chain of command, the lines of authority, and the system of reporting within the unit. The new paradigm is useful for visualizing how the organization works together to accomplish the mission. In the final analysis, our choice will depend on whether we need to focus our attention on who works for whom, or on how we accomplish the mission and how we can continue to improve. □

Notes

1. Although the present work force is more educated than its predecessors, this distinction may be compromised by the increasing mediocrity of American education. A 1983 report made the somber prediction that the present generation would be the first in the history of our country to grow up less educated than their parents. The National Commission on Excellence in Education, *A Nation at Risk: The Imperative for Educational Reform* (Washington, D.C.: Government Printing Office, April 1983), 5–16.

2. If people know what they are expected to do, they put forth their best efforts to accomplish the mission. Without knowing why their jobs are necessary or how they affect the jobs of others around them, however, they may wreak havoc on the organization and compromise its success. W. Edwards Deming, *Out of the Crisis* (Cambridge, Mass.: Massachusetts Institute of Technology, Center for Advanced Engineering Study, 1986), 18–19.

3. Interestingly, the original version of MBO was much different from the MBO that is usually implemented. Goals and objectives are certainly useful planning tools, but MBO as practiced uses them as benchmarks against which managers and workers are judged. This practice encourages the achievement of objectives by either cutting corners or fudging figures, because the objectives become instruments of fear that are used to control subordinates.

4. See Brian L. Joiner and Peter R. Scholtes, "Total Quality Leadership vs. Management by Results" (Madison, Wis.: Joiner Associates, Inc., 1985).

5. Japan in 1950 would remain under occupation rule for two more years. The Japanese quickly implemented Dr Deming's ideas and later brought more American quality experts like Dr Joseph M. Juran and Dr Armand V. Feigenbaum to teach their management about quality. Japan has also produced several quality experts, notable among them Dr Kaoru Ishikawa and Dr Genichi Taguchi, but the roots of the Japanese quality revolution are in the lectures Dr Deming first delivered. The entire nation of Japan recognizes this fact by naming their highest quality award the Deming Prize.

6. See Joiner and Scholtes.

7. The second of Dr Deming's 14 points. Deming, 26–28. See also Howard S. Gitlow and Shelly J. Gitlow, *The Deming Guide to Quality, Productivity, and Competitive Position* (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1987); Nancy R. Mann, *The Keys to Excellence: The Story of the Deming Philosophy*, 3d ed. (Los Angeles: Prestwick Books, 1989); and William W. Scherkenbach, *The Deming Route to Quality and Productivity: Road Maps and Roadblocks* (Washington, D.C.: CeePress Books, George Washington University, 1988).

8. The fact that much of this practice is dictated by legislative mandate makes it understandable but does not make it right.

9. Related by Dr Deming at the Quality, Productivity, and Competitive Position Seminar, 5–8 February 1991, Greenville, South Carolina. The new paradigm is also described in Joiner and Scholtes, 4–5.

10. Having gone through this exercise, readers may wish to construct a system flowchart of their own organizations to visualize the inner relationships and the path to mission success.

11. We seem to have adequately assimilated the capabilities of advanced technology into our tactics in recent campaigns, but—historically—changes in tactics have moved much more slowly than advances in weaponry. See Robert L. O'Connell, *Of Arms and Men: A History of War, Weapons, and Aggression* (New York: Oxford University Press, 1989).

12. Clarence Irving Lewis, *Mind and the World Order* (New York: Dover Publications, Inc., 1956), 15.

Winter 1991

IRA C. EAKER AWARD WINNER

Lt Col Price T. Bingham, USAF

for his article

Air Power in Desert Storm and the Need for Doctrinal Change

Congratulations to Lt Col Price T. Bingham on his selection as the Ira C. Eaker Award winner for the best eligible article from the Winter 1991 issue of the *Airpower Journal*. Colonel Bingham receives a $500 cash award for his contribution to the Air Force's professional dialogue. The award honors Gen Ira C. Eaker and is made possible through the support of the Arthur G. B. Metcalf Foundation of Winchester, Massachusetts.

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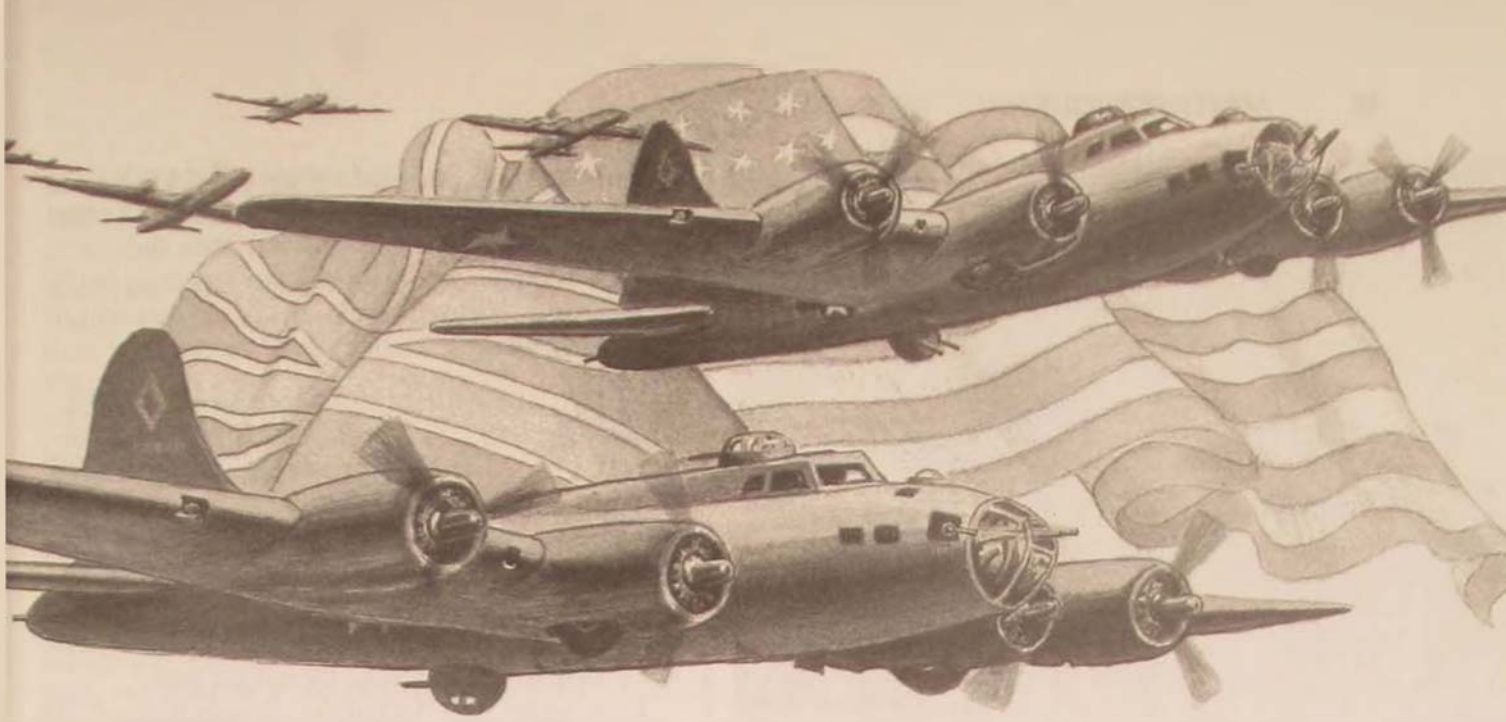


POINTBLANK

A STUDY IN STRATEGIC AND NATIONAL SECURITY DECISION MAKING

COL ED CROWDER, USAF

POINTBLANK was the code name for the British-American combined bomber offensive of World War II, a campaign mandated by the Allies' "Casablanca directive" of 1943 and carried out from May 1944 to April 1945. Having attained almost mythical status in today's Air Force, this operation was one of the key campaigns that "proved" the decisiveness of air power in war and led to the establishment of the Air Force as a separate service in 1947. Given this legacy of notoriety and importance, one could reasonably expect an analysis of Pointblank to produce insights into strategic and national security decision making of general applicability to policymakers and strategists alike. Toward that end, this article examines the political background that affected the administration of Franklin D. Roosevelt from 1932 to 1941; weighs the importance of the American-British staff conversations of March 1941 and the related Rainbow 5 plan; dissects the so-called AWPD-1 plan, the strategic foundation and predecessor of Pointblank; reviews the Pointblank campaign results; and draws lessons for today's national security decision makers and military strategists.

Political Background

In the United States during the 1920s and 1930s, aviation enthusiasts—in-

President Franklin D. Roosevelt believed that air power would be less expensive, cause fewer casualties, and be more likely to succeed than a traditional war by land or sea. Gen Henry H. Arnold saw FDR's 1938 decision to increase aircraft production as a "Magna Carta" for the Army Air Corps. Here, President Roosevelt confers with General Arnold in Sicily during World War II.

cluding Charles A. Lindbergh and Gen William ("Billy") Mitchell—popularized the airplane as an improved instrument of both transportation and war. Although Giulio Douhet and others emphasized the offensive nature of air power, Mitchell stressed the utility of long-range bombardment aircraft for *defense*, an idea that was more in tune with American public opinion of the time.[1] Due largely to Mitchell's efforts, Americans came to view Army aviation as

> a way to uphold New Era virtues of economy, efficiency, and technological innovation. The argument for air power appealed to widespread sentiment for the reduction of federal expenditures.... It also responded to postwar disillusionment with involvement in European wars by portraying a self-reliant America that would defend its shores without venturing abroad.
>
> Above all, arguments for air power fed on a widespread image of naval armaments as the foremost expression of militarism....
>
> The fighting within the military services sharpened the image of airmen as challengers of militarism and waste.[2]

With this public sentiment as a backdrop, during his 1932 presidential campaign Franklin D. Roosevelt courted and flattered Mitchell and supported the idea of a major role for air power in US national defense. As late as 1937, the Roosevelt administration was still popularizing military aviation as a primarily defensive arm for stopping invasions by air or sea.[3]

However, the Munich agreement of 30 September 1938, in which France and Britain made concessions to Germany to avoid war, initiated a change in the administration's private—if not public—view of air power. William Bullitt, US ambassador to France, summarized his analysis of the Munich appeasement in a cable to Roosevelt: "If you have enough airplanes you don't have to go to Berchtesgaden."[4] Thus, Bullitt and other members of the Roosevelt administration felt that the threat of Nazi air attack was one reason for Britain's and France's appeasement of Hitler.[5] Lindbergh, who was in Germany in October 1938, reported to Roosevelt through Joseph Kennedy, US ambassador to England, that "'Germany now has the means of destroying London, Paris, and Praha [Prague] if she wishes to do so'."[6]

Based on public opinion, the Nazi threat, and Bullitt's admonition, Roosevelt concluded that a large air force with an offensive capability would serve as a deterrent to further German aggression.[7] Furthermore, in September 1938 Roosevelt predicted that aerial warfare "would cost less money, would mean comparatively fewer casualties, and would be more likely to succeed than a traditional war by land or sea."[8] Soon afterward, at a meeting with key members of his administration in November 1938, the president announced that he wanted to expand the air force to 10,000 aircraft and production capacity to 10,000 planes a year. Not only was this de-

cision "a bolt from the blue,"[9] it was "far beyond the airmen's own plans for expansion that autumn."[10] Gen Henry H. Arnold, chief of the Army Air Corps, left the meeting delighted, "feeling that the Air Corps had finally 'achieved its Magna Carta'."[11] Finally, Roosevelt also envisioned an added benefit: high levels of airplane manufacturing would "'mean prosperity in this country and we can't elect a Democratic Party unless we get prosperity.... Let's be perfectly frank'."[12]

But the Munich agreement did not change the sentiments of the public and Congress. Isolationists did not trust Roosevelt, no matter how strongly he professed his intention to avoid war. Roosevelt biographer Frank Freidel points out that in Congress, the isolationists introduced a constitutional amendment that would have required a national referendum to declare war, a threat which Roosevelt took seriously. Republicans urged Roosevelt "to take a firm stand for peace ... 'to steer clear and keep quiet'." Even after the German invasions of Poland and France in 1939 and 1940, respectively, public and congressional opinion opposed direct US participation in the war.[13]

In the three years following Munich, Roosevelt simultaneously tried to prepare for and prevent war. Further, he continued to emphasize air power as the best instrument for achieving these objectives:

> For Roosevelt ... air power seemed an ideal instrument, decisive yet humane, for deterring, limiting, or at the worst, waging war. Meanwhile, it also served American and hemispheric defense, objectives so uncontroversial that the expansion of American air power could proceed with minimal opposition.... Therefore, Roosevelt's new aerial policy squared with the dominant prejudices and priorities of Americans: alarm over fascist aggression, aversion to military expeditions abroad, desire to preserve American isolation, and faith in aviation as a benign technology.[14]

ABC-1 and Rainbow 5

In 1940, consistent with his policy of preparing for war while trying to prevent it, President Roosevelt approved a proposal for a secret conference between American and British military staffs. Held from January to March 1941, the conference produced a final report known as ABC-1, which had the following key provisions:

1. The main effort should be in the European theater. The strategic defensive should be maintained in the Pacific.
2. *There will be a sustained air offensive against both Germany and other regions under enemy control that contribute to German military power.*
3. The Allies will build up forces for an invasion of the Continent and a subsequent offensive.[15]

Ironically, the Army Air Corps was not the driving force behind ABC-1's second point on the sustained air offensive because no Army Air Corps representative was invited to take part in writing ABC-1. Instead, the inclusion of this point was the work of Air Vice-Marshal John C. Slessor of the Royal Air Force (RAF), a strong advocate of strategic bombing.[16]

Following the issuance of ABC-1, the Joint Army-Navy Board (a joint planning organization) directed that the joint plan called Rainbow 5 be modified to include the provisions of ABC-1. Subsequently, the joint board as well as Secretary of War Henry L. Stimson and Secretary of the Navy Frank Knox approved both ABC-1 and the modified Rainbow 5 and submitted them to Roosevelt for his approval. Although Roosevelt took no action on these plans, Stimson directed the Army to follow their provisions since they had not been explicitly disapproved.[17]

AWPD-1

On 9 July 1941, Roosevelt wrote to Stimson and Knox, requesting that they develop production requirements needed to win a possible war with the Axis. The joint board, anxious to respond rapidly to his request, decided that each service

would develop its own requirements, but within the guidance of ABC-1 and Rainbow 5.[18]

The Army General Staff War Plans Division (WPD) was tasked to develop requirements for the Army, including the Army Air Corps. However, in an audacious move that had great impact on the strategy of the war, Lt Col Harold L. George, chief of the newly created Air War Plans Division (AWPD) of the Air Staff, argued for and won the right for AWPD to develop requirements for the Army Air Corps.[19]

The requirements plan subsequently developed by AWPD, called AWPD-1, established the strategy that was later used in Pointblank. To analyze this strategy, one may use a simple model that breaks down strategy into three components: military objectives based on national policy, military strategic concepts (i.e., how to achieve the objectives), and military resources. The latter can be either the resources *available* or the resources *required* to carry out a military strategic concept, depending on whether the strategy is of the operational or force-development variety, respectively.[20]

The simplest approach for determining resource requirements was the path taken by WPD for determining those of the Army: develop force requirements comparable in size and capability to the forces then fielded by the Axis, discounted by the quantity and capability of fielded British forces. AWPD took a different approach: develop a strategy and then calculate requirements from that.[21] Thus, AWPD-1 was a requirements plan based on a force-development strategy—that is, a strategy for how the war should be fought if the required resources were actually produced and available in the time frame envisioned.

National Policy Guidance

Roosevelt's letter to Secretary Stimson and Secretary Knox contained only one piece of national policy guidance: defeat potential enemies. Although vague, this directive was important because it called for military victory—not containment, deterrence, or passive defense. In addition, the joint board had directed that requirements be developed in accordance with the policies in ABC-1 and Rainbow 5, which explicitly included a provision for a sustained air offensive against Germany.[22]

Military Objectives

In view of the policy guidance in ABC-1 and Rainbow 5, AWPD debated the objectives of the air strategy, finally settling on three alternatives:

1. Defeat Germany, then Japan, through air power alone.
2. Attempt to defeat Germany, then Japan, through air power alone; failing that, prepare the way for a land invasion of the Continent (then Japan).
3. Prepare the way for an invasion of the Continent; then defeat Germany through airland operations against the enemy army (with similar operations to follow in the Pacific).[23]

Army doctrine dictated the selection of the third option as the military objective for AWPD-1. On the other hand, Army Air Corps doctrine as taught at the Air Corps Tactical School (ACTS) and the collective heart of the members of AWPD—all former instructors at ACTS—dictated the first option as the objective.[24] But the collective brain of AWPD selected the second option as the objective for the very practical reason that the AWPD members knew they could not "sell" the first option to the Army, which would have to approve AWPD-1.[25] After all, half an air power loaf was better than none.

Strategic Concepts

AWPD-1 specified four *air tasks* to be accomplished in the postulated war:

> 1. Conduct a sustained ... Air Offensive against Germany ... to destroy [its] will and capability to continue the war and to make an invasion either unnecessary or feasible without excessive cost....
>
> 2. Provide air operations in defense of the Western Hemisphere....

3. Provide air operations in Pacific defense....

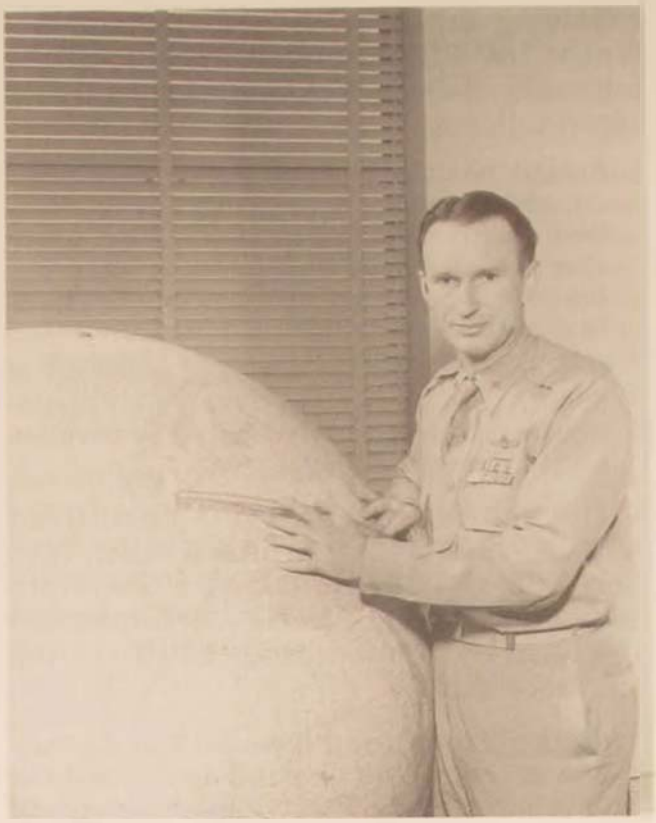
4. Provide ... support of the surface forces in the invasion of the Continent and for major land campaigns thereafter. Large tactical air forces would be required for this task, when the Army was ready for invasion.[26]

The first air task reflected the premier strategic concept that underlay AWPD-1: strategic bombardment designed to undermine the will and capability of Germany to continue the war. The fourth air task addressed another strategic concept, an invasion followed by airland operations; however, AWPD-1 did not draw on this concept for its generation of requirements. Indeed, AWPD assumed that an invasion might not be required, due to the strategic bombing campaign. If it were in fact necessary, the Allies could plan for and obtain large tactical air forces as D day drew near.[27]

In the 1930s the ACTS faculty, which included the four members of AWPD, enthusiastically adopted and advocated the doctrine of strategic bombardment, which was based on the following postulates:

1. *Vital Targets Postulate.* Modern nations need industries to produce weapons for their forces and to provide products and services to their populations. Industries contain vital targets that, if destroyed, will paralyze those industries, which in turn will undermine both the enemy's *capability* and *will* to fight.
2. *Bomber Accuracy Postulate.* Aircraft can deliver bombs with adequate accuracy to destroy the vital targets.
3. *Bomber Invincibility Postulate.* Unescorted bombers can penetrate air defenses on their way to the vital targets and not suffer unacceptable losses.[28]

In its search for vital targets, AWPD identified three critical German industries: (1) electric power, (2) transportation, and (3) oil. To hedge against the possibility that bombers were not invincible, AWPD members added to this list the "overriding intermediate" goal of neutralizing the Luftwaffe. AWPD then identified 154 vital targets in these four areas and decided that they should be destroyed in six months. (An otherwise detailed account of the development of AWPD-1 provides no hint of a rationale for this particular amount of time—it was apparently arbitrary.[29])



Then-Brig Gen Haywood S. Hansell, Jr., directed efforts to develop AWPD-42, a predecessor of the Pointblank operations plan. AWPD-42 called for a combined bomber offensive whereby the Army Air Forces would bomb during the day, and the Royal Air Force would conduct night attacks.

Resources

Having identified vital targets, AWPD officers determined the number of bombers required to destroy the 154 targets in six months. Other calculations were performed for nonbomber aircraft, taking into consideration the required number of bombers and the nonbombing air tasks that had to be performed. However, there was one type of aircraft for which they did not calculate requirements—the escort fighter. After all, their doctrine told them that they did not need this aircraft.[30] Nevertheless,

following a discussion of German air defenses, AWPD planners did include the following statement in AWPD-1 regarding escort fighters:

> Consideration of all these factors leads to the conclusion, that by employing large numbers of aircraft with high speed, good defensive firepower, and high altitude, *it is feasible to make deep penetrations into Germany in daylight* [emphasis in original].
>
> It is believed that the degree of reliability of conducting sustained offensive air operations would be greatly enhanced by development of an escort fighter.[31]

The four men of AWPD completed AWPD-1 in nine days. To their relief, both Gen George C. Marshall and Secretary Stimson approved AWPD-1 in September 1941. Why? According to historian Michael Sherry,

> the general staff still believed that destruction of the enemy's ground armies was the only sure path to victory. But doubts about the survival of Britain and Russia ran large in the War Department, making a land invasion of the Continent seem remote at best: hence even conservative officers acknowledged the imperative of first weakening Germany by bombing. Strategy, then, along with Roosevelt's wishes about how to fight the war, made the War Department amenable to a vision of air war that would have seemed ... fanciful a few years earlier.[32]

The Victory Program and the Leak

Roosevelt incorporated the AWPD-1 requirements, along with those of the Army land forces and the Navy, into his so-called Victory Program. Public opinion at the time seemed to favor an increase in defense production because it was good for the economy. But on 4 December 1941, the entire Victory Program plan (classified Secret), including the AWPD-1 objectives and target lists, was leaked to the Chicago *Tribune* and the Washington *Times-Herald* by Sen Burton Wheeler, who had obtained it from a source within the Air Corps. Wheeler and both newspapers were staunchly isolationist and believed that public exposure to the plan would prove Roosevelt's intention to lead the nation to war.[33] However, public outcry over the plan was silenced three days later by the Japanese attack on Pearl Harbor. For the most part, Congress funded the Victory Program, thus providing the resources for the eventual Pointblank campaign.[34]

German agents in the US quickly cabled the plan to Berlin, where the German General Staff immediately recognized its importance. On 12 December, Hitler issued his "Führer Directive 39" in reaction to the Victory Program. This directive called for massing air defenses around key German industrial targets, increasing attacks in the Atlantic to prevent US forces from reaching Europe, and assuming the strategic defensive on the Eastern Front. Fortunately for the future Allied war effort, after visiting the Eastern Front and witnessing setbacks there, Hitler angrily and irrationally rescinded Directive 39 on 16 December, thereby minimizing the damage done by Wheeler's security leak.[35]

Pointblank

An updated requirements plan called AWPD-42 was completed under the direction of Brig Gen Haywood S. Hansell in September 1942. This plan envisioned a combined bomber offensive involving daylight attacks by the Army Air Forces and night attacks by the RAF.[36] Like AWPD-1, AWPD-42 did not call for escort fighters; unlike AWPD-1, it did not even mention the need to develop these aircraft. Instead, the plan presented this optimistic assessment:

> With our present types of well armed and armored [unescorted] bombers, and through skillful employment of great masses, it is possible to penetrate the known and projected defenses of Europe and the Far East without reaching a loss-rate which would prevent our waging a sustained offensive.[37]

Even though AWPD-1 and AWPD-42 had been approved as production requirements plans only, the US Eighth Air Force accepted them as authoritative strategic

plans until January 1943, when Roosevelt and Churchill met with their Combined Chiefs of Staff at Casablanca, Morocco, to discuss Allied strategy.[38] This group produced a document known as the "Casablanca directive," drafted by Air Vice-Marshal Slessor and approved by the principals at the conference. Like ABC-1, the Casablanca directive called for a sustained air offensive and stated that its purpose was

> to bring about the progressive destruction and dislocation of the German military, industrial and economic system and the undermining of the morale of the German people to a point where the capacity for armed resistance is fatally weakened.[39]

Strategy

In response to the Casablanca directive, a team began developing the Pointblank operations plan, which—unlike AWPD-1 and AWPD-42—had to be based on existing capabilities. The general Pointblank strategy differed from that of AWPD-1 in only one respect: like AWPD-42, it called for the RAF to continue bombing enemy cities at night. Daylight precision bombing, in accordance with AWPD-1 principles and ACTS doctrine, was to be the mission of the Army Air Forces.[40]

The final Pointblank operations plan retained as an "overriding intermediate" objective the neutralization of German fighter strength but changed other target types and priorities of AWPD-1 and AWPD-42 in accordance with the latest operations analysis. Following its presentation by Gen Ira C. Eaker, commander of Eighth Air Force, the plan was approved by the Joint Chiefs of Staff in Washington on 20 April 1943.[41] Sometime between this date and final approval of the Pointblank plan by the Combined Chiefs of Staff at the Trident Conference in Washington on 18 May 1943, the combined chiefs made a one-sentence addition to the Casablanca directive, which—to American and British airmen—changed its entire thrust:

> To accomplish the progressive destruction and dislocation of the German military, industrial, and economic system, and the undermining of the morale of the German people to a point where their capacity for armed resistance is fatally weakened. *This is construed as meaning so weakened as to permit initiation of final combined operations on the Continent* [emphasis added].[42]

According to General Hansell, for the combined chiefs, "the real objective of the bombing offensive was making possible an invasion of the Continent," whereas the airmen thought that "'Fatal weakening' meant impending collapse of the entire German state, not simply a breach in the coast defenses of France."[43]

Campaign Results

The Pointblank campaign began in May 1943, but inclement weather, heavier-than-anticipated attrition of unescorted bombers, diversions of bombers from Pointblank to other operations, and changes in targets by the Combined Chiefs of Staff all hampered the initial effort. In particular, heavy losses from fighter attacks soon proved that bombers were defi-

Heavy losses at the hands of enemy fighters shook airmen's belief in bomber invincibility, a doctrine-based misconception that was corrected by the introduction of escort fighters.

nitely not invincible, so that a high priority was given to fielding escort fighters.[44] Consequently, full-scale bombing operations did not get under way until February 1944, and operations uninterrupted by diversions to other missions did not commence until September 1944, well after the Overlord invasion in June.[45]

Nevertheless, Pointblank was successful in achieving the neutralization of the Luftwaffe prior to the initiation of Overlord. Much of this success was due to the addition of long-range escort fighters to the bomber formations and the resultant attrition of German fighters and their pilots, something not envisioned in AWPD-1 or AWPD-42.[46] The diary of German fighter pilot Heinz Knoke reflects the effect on the Luftwaffe:

> Once again Division Control reports those blasted concentrations in sector Dora-Dora....
>
> This report has now come to have a different significance for us: it is a reminder that, for the moment, we are still alive....
>
> Every time I close the canopy before taking off, I feel that I am closing the lid of my own coffin....
>
> Every day seems an eternity. There is nothing now; only our operations which are hell, and then more waiting—that nerve-racking waiting for the blow which inevitably must fall, sooner or later.[47]

Though controversial, both the US Strategic Bombing Survey and Albert Speer, Hitler's armaments minister, thought that Pointblank's post-Overlord operations were "decisive," especially in their effects on oil and transportation. According to Speer,

> I shall never forget the date May 12 [1944]. On that day the technological war was decided.... With the attack ... of the American Eighth Air Force upon several fuel plants ... a new era in the air war began.... It meant the end of German armaments production.[48]

The US Strategic Bombing Survey had this to say about transportation:

> The attack on transportation was the decisive blow that completely disorganized the German economy. It reduced war production in all categories and made it difficult to move what was produced to the front.[49]

Yet, one must note that the term *decisive* is misleading if it is taken to mean that strategic air power was all that was necessary to win the war. In actuality, air power was *not* employed alone in World War II, so there is *no* empirical evidence on what its solitary impact might have been. All we know is that it had considerable impact in combination with the Soviet land campaign on the Eastern Front and the Allied Overlord invasion in the west. The following passage from the Strategic Bombing Survey shows that *decisive* in context meant something like *made a major contribution*:

> Allied air power was decisive in the war in Western Europe. Hindsight inevitably suggests that it might have been employed differently or better in some respects. Nevertheless, it was decisive. In the air, its victory was complete. At sea, its *contribution*, combined with naval power, brought an end to the enemy's greatest naval threat—the U-boat; on land, it *helped* turn the tide overwhelmingly in favor of Allied ground forces. Its power and superiority *made possible* the success of the invasion [emphasis added].[50]

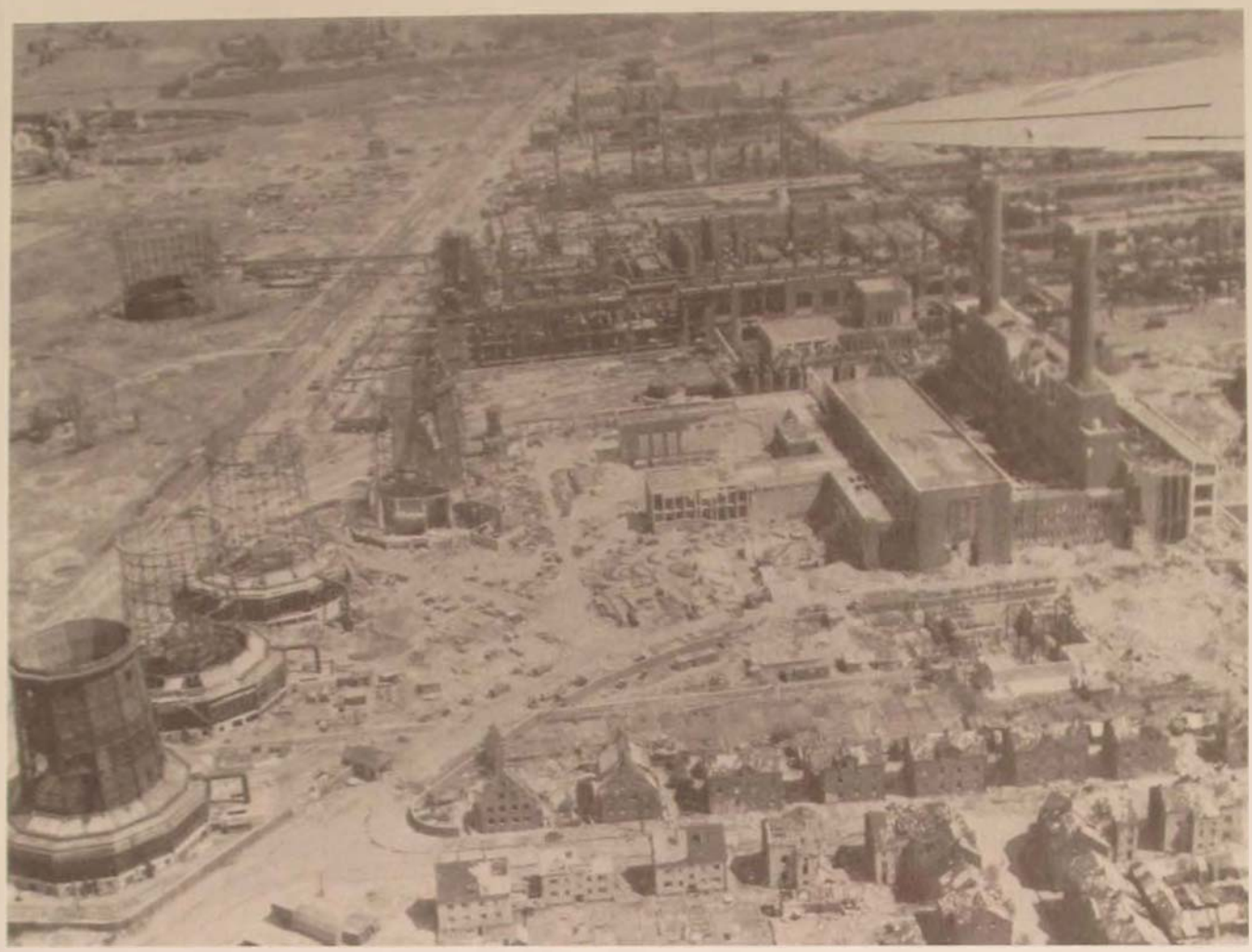
Superior air power was, then, a necessary—but not sufficient—condition of Allied victory in Europe in World War II. Air power alone could not guarantee victory, but neither could the Allies have won without it.

Lessons

Three major lessons can be drawn from this analysis of Pointblank and its foundations in strategy and policy. None of these lessons are about policies and strategies per se. Instead, they are primarily lessons about the *processes* of policy and strategy formulation.

Multiple Roles of the President

The first and most important lesson for national security decision makers and mili-



The Pointblank bombing campaign had a devastating effect on German oil production and transportation. This destruction is evident in a reconnaissance photograph of the oil plant at Bottrop, Germany.

tary strategists alike is the impact of the threefold nature of the presidency. Because the president is the head of his political party, head of the executive branch of government, and commander in chief of the armed forces, the Clausewitzian notion that national defense and politics are inextricably intertwined is an inescapable truth in our government. As with early air power theory and its related national policies and strategic concepts, many politicians—including the president—embrace or oppose policies and strategies for all the wrong reasons, from a military or national security point of view. Conversely, many strategists do not consider political factors when devising strategy, forgetting that the president is more than commander in chief. For example, domestic politics and economics, the desires of an ally, and relatively uninformed public opinion all played major roles in the formulation of national security policy and strategy for Pointblank.

This lesson is certainly not new, but it is often wished away by military strategists and inadequately recognized by civilians who are influential or have a hand in making national security policy. Mutual recognition and accommodation must be a feature of both the policy-making and strategy formulation processes; otherwise, substantial disconnects may result, to the detriment of national security.

Panacea Strategies

From 1932 until at least 1941, the Roosevelt administration was searching for a military strategy that would (1) be popular with the public, (2) be relatively inexpensive, (3) have a low public profile, (4) result in low casualties, and (5) produce quick victory with minimum effort—in other words, a "panacea" strategy. Although most of the upper levels of the War Department held a more realistic view of strategy, AWPD planners and their superiors in the Air Staff had not only conducted a similar search for a panacea strategy, but thought they had found it.

The fact that the Pointblank campaign turned out well—at least according to the Strategic Bombing Survey and Albert Speer—has led some subsequent policymakers and strategists to continue the search for panacea strategies and to continue to think that air power alone might provide one. This way of thinking was certainly true of the Rolling Thunder campaign in Vietnam and appeared to be evident in some quarters with regard to Operation Desert Storm. It seems clear, however, that the real lesson of World War II was that neither air power nor land power alone but the combination of both was responsible for the defeat of Germany.

In the final analysis, panacea strategies are invalid because they address only "war on paper." In real warfare, fog and friction ensure that there are no effective panacea strategies, and the principle of mass dictates that, where possible, we apply both air power and land power against the enemy's center of gravity.

Strategies of Doctrine

Another important lesson of Pointblank is that strategies do not spring into being as detached, rational solutions to objectively perceived military problems. Rather, they are formulated to respond to subjectively perceived problems and tend to be constructed of existing military doctrines. Therefore, strategies are not necessarily rational in the sense of having been optimized for the situation at hand, a phenomenon addressed by Graham Allison in his organizational-process model.

Allison maintains that in order for organizations such as government departments to make decisions on and carry out complex policies, strategies, or plans, they must use a previously established standard procedure or an authoritative statement of the way things are done in the organization (i.e., a doctrine).[51] Especially under the pressures of time, an organization tasked to develop a policy, strategy, or plan will use available doctrines as building blocks, even if these doctrines are not completely in consonance with the actual strategic situation. The resultant doctrinal strategy may therefore contain small or large flaws that will have to be addressed during execution of the strategy if it is to succeed.

In AWPD-1 and AWPD-42, the lack of escort fighters was a doctrine-based flaw that the Air Corps, fortunately, was able to rectify during the execution of Pointblank. Both common sense and the wartime experience of the Luftwaffe and RAF should have pointed to a need for escort fighters. However, the doctrine of the Air Corps Tactical School said that bombers could always get through unescorted, and the authors of AWPD-1 and AWPD-42 were steeped in that doctrine. The point here is that because decision making is based in an organizational process, correct strategies depend on correct doctrines. Strategists should be in the forefront of those people who try to ensure that doctrines are based on experience, are realistic, and are up-to-date. Otherwise, their efforts are bound to be flawed and prone to failure.

Conclusion

The lessons of Pointblank are about the *processes* of national security policymaking and the formulation of military strategy. Unfortunately, many texts and educational programs, as well as most "shoptalk," seem to focus on the product of these processes: the policies and strat-

egies themselves. There is no doubt that studying historical national security products is a valuable endeavor for policymakers and strategists. But the foregoing analysis of Pointblank demonstrates a like need to study the processes involved, for the simple reason that a policymaker or strategist who uses a faulty process or misunderstands the nature of the process will have difficulty turning out a product that is not equally faulty. □

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28. Hansell, *Strategic Air War*, 7, 10.
29. Hansell, *Air Plan*, 80, 84–85.
30. Ibid., 15–18, 86–88.
31. *AWPD-1* (1941), United States Air Force Historical Research Center document no. 145.82-1, Maxwell AFB, Ala., tab 1, "Intelligence," 12.
32. Sherry, 100.
33. Gaston, 97–98.
34. Freidel, 392.
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36. Hansell, *Air Plan*, 100, 102.
37. *AWPD-42* (1942), Special Collections, Air University Library, Maxwell AFB, Ala., part 4, "Report," 5.
38. Hansell, *Air Plan*, 144.
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Ricochets
continued from page 3

Col Richard H. Estes's article on Giulio Douhet, Italian theorist of massive countervalue bombing ("Giulio Douhet: More on Target Than He Knew," Winter 1990). The letter attempts to establish the validity of Douhet's thinking by quoting the *Strategic Bombing Survey*'s opinion that strategic bombing by B-29s was the major factor in winning the war against Japan.

However, the *Strategic Bombing Survey*'s opinion is open to dispute. The massive incendiary bombings of Japanese cities did not actually seriously damage Japanese industrial production. The factories in the bombed areas and the civilian workers killed had both been idled by the lack of raw materials caused by the destruction of the Japanese merchant marine by American submarines and tactical air power. Of course, urban civilians were frightened of air attacks and wished they would cease. But weren't Japanese civilians also afraid of dying in resisting an American invasion? Didn't they wish that Japan wouldn't be invaded? Didn't the destruction of the Japanese surface fleet and the defeat of Japanese ground forces across the Pacific have an effect upon Japanese morale?

It is obvious that by late 1945 Japan would have surrendered under threat of invasion without incendiary bombing by B-29s and without the two atomic bombs. Of course, the Air Force had an institutional interest in justifying the countervalue bombing of Japan. The B-29 bomber cost $3 billion to develop, $1 billion more than the A-bomb. Can we expect that the authors of the *Strategic Bombing Survey* would have admitted that those B-29s and the horrible civilian casualties they inflicted were redundant to victory over Japan?

Joseph Forbes
Pittsburgh, Pennsylvania

Thank you for printing my letter on rescue lessons from Operation Desert Storm in the Fall 1991 issue. However, one sentence was edited in a way that altered the entire meaning. My letter said, "With only a handful of viable rescue missions, it would seem CSAR could permanently be assigned as one of SOF's missions and save the money that would be spent on revitalizing the rescue world." It was printed as " ... and the money saved could be spent on revitalizing the rescue world." Perhaps I could have written " ... and save the money that would otherwise be spent on revitalizing the rescue world." It's a small point, but one I feel requires mentioning.

Capt Paul R. Harmon, USAF
Hurlburt Field, Florida

net assessment

War from the Top: German and British Military Decisionmaking during World War II by Alan F. Wilt. Bloomington, Indiana 47405: Indiana University Press, 1990, 390 pages, $35.00.

Among the huge number of books on the Second World War that are currently available, this one represents a significant new study of the war. Dr Alan F. Wilt has succeeded in accomplishing what few historians have: he has compared and contrasted Britain's and Germany's conduct of the war. These two European powers provide a good subject for this type of examination since both were combatants for the duration of the war. Furthermore, little comparative research in this area exists, which makes the book all the more valuable.

Wilt begins with the leadership and management styles of Hitler and Churchill and then examines how these two leaders arrived at most of the critical decisions of the war. The next level of decision making which the author discusses involves the British chiefs of staff and German High Command and General Staff: here, he emphasizes the strategies that each side planned and conducted. Among the 11 campaigns Wilt uses to compare and contrast the planning and execution of strategies are Poland, France, the Battle of Britain, Barbarossa, El Alamein, Kursk, the Battle of the Atlantic, and Ardennes. Wilt also points out that since Britain was foremost a sea power, Churchill quickly realized in 1940 that the only opposition Britain could offer German aggression would be a replay of its great Napoleonic

coalitions. During these, Britain subsidized others to fight on the Continent and used its own superior sea power to protect its island empire. In contrast, Germany strived to become the dominant European land power.

Churchill controlled the grand strategy of Britain but left the details to his military chiefs. Hitler, however, became war minister after becoming chancellor and in 1941—disgusted with the army's performance on the Eastern Front—assumed the position of army chief of staff. Both men were risk takers, influenced by their participation in the First World War, and both were obsessed with offensive operations.

The comparison between how both countries' war machines marshalled their resources for the conflict is another fascinating part of this book. The ability of Albert Speer to produce war materiel at the height of day and night raids by the Allies on German cities and production centers is one of the more remarkable points that Wilt makes.

Germany had a more centralized command system, but only on paper. In reality, the armed forces chain of command was fragmented. Wilt also points out that the *Waffen* SS (Hitler's private army) and the Ministry of Armaments and War Production both had major roles in the war. By stark contrast, the British chief of staff system had everything the German command system lacked: accountability, realism, flexibility, systematic coordination, and unity. Churchill made no changes among his chiefs of staff after he found the right people, but Hitler's changes in the German High Command became more frequent as the war progressed

From the start, Britain conducted its war on a global basis while Germany fought a European war. But once the attack on the Soviet Union began, Germany was forced to change its strategy. Wilt examines advantages such as intelligence (code name Ultra) and materiel superiority (Allied tank production), especially with regard to how they affected the war on both sides. Of greatest interest to Air Force officers are the battles which deal with air-ground support and strategic bombing versus air defense.

Wilt concludes that (1) Britain's strategy was more realistic than that of Germany and (2) this strategy proved that war by committee could and did work. Wilt emphasizes that despite German superiority in the operational and tactical spheres, the British possessed stronger leadership, superior high command structures, and genuine strategy. He asserts that these differences explain the ultimate Allied triumph in the Second World War.

War from the Top is a clearly written, excellent book that will appeal to the historian and Air Force officer alike. Dr Wilt has made a valuable contribution to the field of World War II research.

1st Lt Gilles Van Nederveen
Bolling AFB, Washington, D.C.

Politics and War: European Conflict from Philip II to Hitler by David Kaiser. Cambridge, Massachusetts 02138: Harvard University Press, 1990, 435 pages, $29.95.

David Kaiser's *Politics and War* is a bold and wide-ranging examination of the sources and consequences of war in modern European history. Dividing the last half millennium of European conflict into four distinct periods (1559–1659, 1661–1713, 1792–1815, and 1914–1945), Kaiser argues that in each era there existed certain prevailing systemic and ideological factors that produced common patterns of political behavior. These patterns of behavior, in turn, virtually determined the nature of contemporary domestic politics, international relations, and warfare.

According to Kaiser, warfare during the years 1559–1659 originated in the efforts of ambitious monarchs to increase their sway over realms still dominated by powerful and fiercely independent aristocrats. Such efforts were doomed to failure because the monarchs of early modern Europe simply lacked the money and the military means to coerce recalcitrant noblemen. Kaiser's larger point is that the chaotic nature of the years between 1559 and 1659 was a "natural consequence" of contemporary structural factors—chief among them the undependable character of mercenary armies and of the military entrepreneurs who led them. These factors made almost continuous conflict all but inevitable.

During the Age of Louis XIV (1661–1713), kings came into their own. Monarchs now enjoyed greater revenues, exercised near-monopoly control over the increasingly potent instruments of violence available to the state (i.e., standing armies), and generally pursued a skillful and moderate course in matters of war and diplomacy. In Kaiser's opinion, these structural changes and a markedly different political context explain the differences between the limited wars of the late seventeenth and early

eighteenth centuries and the protracted and ruinous wars of the previous era.

By the end of the eighteenth century, new political and intellectual currents had given rise to significantly different ideas about the nature and uses of war. Reason came to replace religion as a convenient sanction for national aggrandizement. This new rationalization for violence shortly was wedded by a rising new class of men to a new ideology of state power. The result was a new era of general war in Europe (Napoléon and all that).

As the nineteenth century wore on, two other factors emerged that further abetted the growth of state power and powerfully shaped the political behavior of state leaders: the impulse toward imperialism and the idea of nationalism. As construed by several generations of European intellectuals, publicists, and politicians, these two notions became increasingly fanciful and even bizarre. (Thus, nationalism came to mean that each European nationality should have an opportunity to form its own nation-state, an idea the Nazis carried to a horrifying extreme in trying to force a racially homogeneous state out of heterogeneous *Mitteleuropa*.) Tragically, the difficulty in reconciling these notions with reality did not diminish their influence on patterns of political behavior. The ultimate result was two world wars.

This is an ambitious, stimulating, and difficult book. Bringing to bear an impressive command of his subject, first-rate writing, and a very acute intellect, Kaiser has given us a sweeping and provocative analysis of European conflict in the modern era. But for all the undoubted merits of his study, Kaiser's interpretive approach struck this reviewer as unbalanced and incomplete.

The problem turns on what one chooses to believe about historical causation. Does the genesis of historical events lie in human beings or in the circumstances in which they happen to find themselves? The best answer probably is that it lies in both—that the two are entangled and that it is the historian's job to make some sense of their complex interrelationship. This is the point at which Kaiser's rather abstract analysis leaves one feeling that he has viewed a multidimensional picture through only one side of a stereoscope. In Kaiser's history, certain key structural factors determine the nature of contemporary political behavior, which rigidly determines everything else. Almost wholly molded by circumstance, men play their preordained parts, and events occur with a kind of dreary inevitability. Surely, real history works in ways more flexible and oblique than that. Men undoubtedly are influenced by the circumstances in which they find themselves, but one may suppose—indeed, one *should* suppose—that the wills and choices of individuals count for something and that in some cases they count for a good deal.

Politics and War is an important study that serious students of European history will find worth conjuring with. Just remember that the levers and pulleys of history sometimes work in ways that are trickier than David Kaiser would have us believe.

Lt Col James Titus, USAF
USAF Academy, Colorado

The Central Intelligence Agency: An Instrument of Government, to 1950 by Arthur B. Darling (edited by Bruce D. Berkowitz and Allan E. Goodman). University Park, Pennsylvania 16802: Pennsylvania State University Press, 1990, 420 pages, $60.00 hardcover/$17.50 softcover.

Serious practitioners and students of intelligence should add *The Central Intelligence Agency* to their professional libraries. The late Arthur B. Darling, the agency's first historian, researched and wrote the original narrative from 1952 to 1953. Restricted for decades to a limited few with need-to-know access, it is the first CIA document to be declassified and transferred to the National Archives for release to the public under the agency's historical-review program.

Darling was a professional historian who taught for years at his alma maters, Phillips Andover Academy and Yale University. Recommended by Sherman Kent, a former student who was serving in the Truman administration as chairman of the Board of National Estimates, Darling took leave from Andover to serve three years as CIA historian. He is probably better remembered for his excellence—and toughness—as a teacher than for his writing. Among his other Andover students were Dr J. Kenneth McDonald—the current CIA historian—and President George Bush. During the 1988 presidential campaign, Bush cited Darling as his favorite teacher: "He was tough, demanding, yet exceedingly fair. He knew American history and made it come alive."

Through excellent introductions, chapter synopses, and editing, Bruce Berkowitz and

Allan Goodman have taken Darling's long-dormant CIA manuscript and brought it to life in this 1990 publication. Their efforts, along with Darling's scholarship and extensive use of source materials—including the files of the National Security Council, the wartime files of the Office of Special Services, and interviews and correspondence with many of the principal players—result in a worthwhile final product.

The book is a historical account of how the CIA was created in the years immediately following World War II. By offering the most detailed and best-documented account to date of the agency's early years, it reveals the political and bureaucratic struggles that accompanied the creation of the modern US intelligence community.

For Darling, the study carries dual themes: the development of the theory of central intelligence and the growth of the instrument of government. These themes are so interrelated that they are not to be treated separately. The issues concerning the former theme are those of individual versus collective responsibility and the rivalry between the director of central intelligence (DCI) and the chiefs of the military services who were his board of advisors. Sometimes the distinction was a fine one: Gen Hoyt Vandenberg was the second DCI (June 1946 to May 1947) before becoming the newly created USAF's second chief of staff (April 1948 to June 1953).

Two questions arise from a consideration of the latter theme—the growing instrument of government. Should the national institution continue as a cooperative interdepartmental activity? Or should it become an independent agency, drawing its authority and direction from the legislative rather than the executive branch of government?

Darling argues that, in the modern era, effective intelligence is as much the product of effective organizations as of brave and ingenious individuals. Thus, he feels that centralizing the collection and dissemination of information while coordinating the production of estimates improves the effectiveness of intelligence. The book's subtitle reflects this view. By arguing that intelligence should be an instrument of government, Darling makes two points: by using the term *instrument*, he means that intelligence should be a tool, separate from the policy-making process; by using the term *government*, he implies that intelligence should not be produced by a single agency (e.g., CIA or any other), but by the government as a whole.

Despite the fact that the book was written during the height of the cold war—now drastically changed if not over—it is still useful. First, it establishes an accurate and vital public account of the origins of the CIA. Second, and possibly more meaningful, the book covers the main controversies over the establishment, responsibilities, and turf of the agency. Many of the same arguments persist and underlie debates regarding the operations and organization of the vast US intelligence bureaucracy.

The Central Intelligence Agency is the first volume in a planned series of Pennsylvania State University Press publications based upon the materials released through the CIA historical-review program. Although it is not easy to read at times, Darling's work nonetheless fills a major gap in our understanding of the national intelligence community. One hopes that subsequent volumes are just as useful, scholarly, and well presented.

Lt Col Frank P. Donnini, USAF
Langley AFB, Virginia

Ridgway Duels for Korea by Roy E. Appleman. College Station, Texas 77843: Texas A&M University Press, 1990, 580 pages, $39.50.

This book is not about Gen Matthew B. Ridgway, who plays only a bit part in this story. Rather, it is a ground-combat history of a seven-month period early in the Korean War that recounts tactical encounters—regiment by regiment—in mind-numbing detail. Roy Appleman, a former official historian for the US Army, has produced three other books of this genre that deal with the Korean War; because this study concludes in July 1951, it is likely that he will produce several more.

In earlier works, Appleman described the outbreak of the Korean War in June 1950 and the hasty retreat of South Korean and American forces; their determined stand at the Pusan perimeter; the brilliant counterstroke by Gen Douglas MacArthur at Inchon and the subsequent retreat of the North Koreans; the pursuit of the defeated enemy to the banks of the Yalu River; the Chinese intervention; and the allied retreat southward once again. It is now November 1950, and although the pace of the Chinese advance has slowed, there is still talk of evacuation from the Korean Peninsula. It is a grim picture, but a new commander now arrives to restore the fortunes of the United Nations forces.

General Ridgway found an Eighth Army with low discipline and even lower morale. His immediate goal was to bolster fighting spirit by announcing that evacuation was not an option: they would stand, fight, and push the enemy back into North Korea. For the next six months, they slowly and methodically did precisely that. By July 1951 the front was established roughly along the 38th parallel, and there it would largely remain for the last two years of the war.

The emphasis throughout the book is on tactics, with little discussion of strategy. We are given no insight into Ridgway's mind, other than his vaguely stated goal of driving the enemy back. Indeed, Appleman states on several occasions that Ridgway's "strategy" was simply to kill as many Chinese soldiers as possible. We are apparently expected to view this as inspired. Never explained is the wisdom of waging a war of attrition against an enemy many times our size. In fact, one can see Ridgway's aim to "bleed China white" as the direct ancestor of the disastrous nonstrategy of Vietnam—the body count. If any vision were displayed in 1951, it belonged to Gen James A. Van Fleet, who assumed command of the Eighth Army in April when Ridgway moved up to replace General MacArthur as supreme commander. Van Fleet chose to implement Ridgway's strategy of attrition by increasing fivefold the amount of artillery fire used by the ground forces. Substituting firepower for manpower at least has some logic.

Appleman is unfamiliar with air operations. He states, for example, that in 1951 Gen Hoyt S. Vandenberg was "Commanding General" of the "Army Air Forces" and "directed B-27 operations from Washington." Actually, Vandenberg was the chief of staff of the Air Force; he did not direct combat operations from Washington; and there were no B-27s. Although Appleman is not deliberately antagonistic towards air power, he sees it from the narrow view of the infantryman and therefore discusses only close air support. Wider issues—such as the necessity of air superiority for success in the ground battle, the significance of strategic air operations, or the need for air interdiction—are ignored.

The author set out to write a "combat history" of one brief period in the Korean War, but he has done far less. He provides little analysis or insight. For example, Appleman notes that in January 1951 Ridgway discussed with the American ambassador the possibility of employing atomic weapons in Korea. This is obviously an enormously important issue, but it is dismissed in barely one paragraph. The main problem is that Appleman's research is based almost exclusively on Army unit reports and histories. Archives that would provide a broader understanding of the ground war or its context, such as Joint Chiefs of Staff files, were not consulted. The flood of secondary sources published in the past several years has similarly been ignored. None of the sources cited are less than a decade old, and most were written nearly 30 years ago. The result is a gross distortion—a tale of tactical ground encounters devoid of any operational- or strategic-level context. One should ask whether this type of drum-and-trumpet history serves any worthwhile purpose. Only the most devoted dilettante or buff will find anything of value in this book.

Lt Col Phillip S. Meilinger
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Lightning over Bougainville: The Yamamoto Mission Reconsidered edited by R. Cargill Hall. Washington, D.C. 20560: Smithsonian Institution Press, 1991, 220 pages.

Lightning over Bougainville is not a conventional mystery. In most cases, a true mystery or detective story concludes with a neat solution. This book offers no solution—perhaps because no solution is possible.

On 18 April 1943, Adm Isoroku Yamamoto, commander in chief of the Japanese Combined Fleet, was shot down over Bougainville, in the Solomon Islands, by a flight of American P-38 Lightnings. The still-unanswered question is, Which pilot shot him down? Or was it two pilots? Hall's book collects most of the known information about the Yamamoto mission (known as the Y mission). It begins with a narrative of the events leading up to the mission and follows that with transcripts of panel discussions about the mission which were held at the Admiral Nimitz Museum in April 1988. Also included is the transcript of an interview with the lone Japanese survivor of the attack, as well as 45 pages of appendices that reproduce primary source documents related to the Y mission. One would think that this wealth of material should be enough to put the matter to rest. But it does not. Only God knows for certain what occurred on that day—and He isn't telling.

Aside from the central issue of whether Capt Thomas G. Lanphier, Jr., or 1st Lt Rex T. Barber shot down Admiral Yamamoto, Hall also raises

a philosophical question: What are the moral implications of targeting a specific individual for destruction during wartime? In other words, what is the moral demarcation line between combat and assassination?

Yamamoto masterminded the attack on Pearl Harbor, and—according to Lanphier—this made him "an easy man to hate ... one it would be an honor to destroy." It is in this context that Hall poses the moral question (which, of course, was not evident to most Americans living in 1943), "Was the hunt for Yamamoto one of military necessity, or one fueled by racial hatred and revenge for Pearl Harbor?" The moral dilemma becomes even more difficult when Hall points out that records uncovered after the war show that Yamamoto urged his country to use caution and restraint before it embarked on a path toward war. The book does not answer the question for us. It is something that can only be considered subjectively.

How relevant is this moral dilemma to 1992? Fifty years after Pearl Harbor, the United States found itself faced with exactly the same problem: Would it have been morally correct to have targeted Saddam Hussein during the Persian Gulf conflict? If not for Hall's book, I would have paid scant attention to the matter. For forcing us to think reflectively about moral standards during combat, we readers should thank Mr Hall. Besieged daily by a flood of news events, we tend to forget about universal truths.

Only slightly less intriguing than the philosophical issues is the substance of chapter 3, a discussion about the planning and execution of the mission, written by Col John W. Mitchell, the flight leader. It is a forceful reminder of the complexity of mission planning and its importance to success.

Lightning over Bougainville is a gold mine of unanswered questions. Why weren't all of the American pilots debriefed after such a significant mission? Why were none of the surviving Japanese airmen debriefed after the war? We still don't know.

Today, when mysteries are neatly resolved at the end of a two-hour movie, we feel uneasy about a book that leaves so many unanswered questions. We are also unsettled by the tough moral issues it raises. After reading *Lighting over Bougainville*, most of us know more than we did about the Yamamoto mission, but we still wish that there had been gunsight cameras on our airplanes over Bougainville that day.

Ron Callahan
Placerville, California

Shooting Blanks: War Making That Doesn't Work by James F. Dunnigan and Albert A. Nofi. New York 10016: William Morrow and Company, Inc., 1991, 513 pages, $25.00.

War is a dynamic process in which conditions change suddenly—sometimes radically. Even the most probing minds have failed to understand warfare's amorphous nature, together with its underlying forces and their interrelationships. The preeminent nineteenth-century military theorist Carl von Clausewitz made the insightful observation that war is an extension of politics by other means. This, however, is too narrow a definition for the true nature of war. In effect, once the political decision is made to wage war, societal factors are what actually contribute to the accomplishment of political aims. The nature of war is a manifestation of societal influences; the conduct of war is defined by the clash of cultures. War is the most comprehensive of human endeavors and is embodied in the fabric of a society—in its particular strengths and weaknesses, irrespective of political motivation. In order to avoid "shooting blanks," one must acknowledge that the preparation for and conduct of war are intimately integrated with society. These fundamental influences—the social, economic, political, and technological dimensions of society—dictate the characteristics of any country's armed forces. Therefore, these same societal attributes affect whether a country's armed forces "shoot real bullets or blanks" in war. This book relates "what happens when you call out the troops and the results are not what you expected." James F. Dunnigan and Albert A. Nofi place the conduct of war within its societal context and then—through the cultural lenses of various national characteristics—analyze the failures in the conduct of contemporary war.

The authors state that their book is designed as "a guide to the phenomenon of shooting blanks" and attempts to develop a clearer understanding of the problems associated with evaluating military power, including its strengths and limitations. The obvious causes of shooting blanks are (1) misunderstanding one's own military capabilities, (2) miscalculating an opponent's capabilities, and (3) creating an inappropriate military force as a consequence of (1) and (2). Among the national phenomena that create a false illusion of military power—which in turn leads to shooting blanks—are "intelligence confusion, amateurism, media muddle, procurement puzzle, and

wrong-war syndrome." By examining these phenomena, *Shooting Blanks* reveals the societal influences that affect a country's armed forces, as reflected in fighting style and organizational customs. These influences can have a detrimental effect on a military force's combat power.

Divided into 12 chapters, *Shooting Blanks* thus analyzes the qualitative basis of military power. This methodology contrasts with that of T. N. Dupuy, who used complex mathematical equations in his *Numbers, Predictions & War* to assess the available statistics on past wars and thereby quantify the chances of success in future wars. *Shooting Blanks* looks into the limitations of military organizations—their technological base, national intelligence apparatus, and information and communication networks, any of which might influence a particular failure in war. The last chapter, "Living with the Problem," is most intriguing because the authors offer some solutions. For example, to avoid "amateurism," one must promote an in-depth analysis of national traits, draw on the experience of combat veterans, and use history "to keep the experience of war fresh." To eliminate the "wrong-war syndrome," one must use invaluable historical perspectives to trace national martial characteristics and ensure that our political and military leaders get their priorities straight before employing military force.

This book is easy to read and is thought-provoking. However, it does not live up to its declaration that "you now know what shooting blanks is, what causes it, and what can be done to lessen its effects." It is a good introduction to the relationship between societal factors and military force, but much of the book's analysis is superficial and unsubstantiated (unfortunately, the authors include no footnotes, and the bibliography is sparse). What needs to be understood is that every war is circumstantial—unique to the time, geography, opponents' societies, and a myriad of other factors that make any war's outcome tentative. Influenced by society, armed forces are effectively hampered by what they have become rather than what they might be. I recommend *Shooting Blanks* only as a primer on the intricacies of military affairs.

Maj Michael R. Terry
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Benjamin O. Davis, Jr., American: An Autobiography by Benjamin O. Davis, Jr. Washington, D.C. 20560: Smithsonian Institution Press, 1991, 426 pages, $19.95.

Brig Gen Robinson Risner, a former Vietnam prisoner of war, once told a group of Air Force Academy cadets that "a man who refuses to quit cannot be beaten." This simple statement also comes to mind when one reads about another great Air Force general—Benjamin O. Davis, Jr. Born in a time of legal segregation, ostracized by classmates and fellow officers because of his race, and continually told he was capable—for a "black" officer—Davis refused to give up. A man possessed with that kind of determination indeed could not be beaten, and General Davis proved this simple philosophy through his impeccable leadership. This book is his story of an incredible journey.

Davis begins this venture by thanking his father—the only black active duty Army officer in America at the time—for instilling in him a sense of perseverance. Davis continually used that quality to overcome racial obstacles after entering West Point in 1932. "Silenced" during his four years, he nevertheless excelled and graduated 35th in a class of 276, high enough to join the coveted Corps of Engineers. But Davis had his heart set on being a pilot. However, the Army barred him from the Air Corps because of his race, and he found himself an infantry officer.

Davis joined the 24th Infantry Regiment at Fort Benning, Georgia, in 1936. He and his wife, Agatha, were alienated by the white officers, including the regimental commander: "Not a single white officer extended us a welcome to the 24th. It was West Point all over again" (page 57). Yet Davis excelled at this assignment and was eventually allowed to join the Air Corps. One of the original Tuskegee airmen, Davis was ordered to Tuskegee Army Airfield, Alabama, in 1941.

In 1942 Davis became the commander of the 99th Pursuit Squadron, formed from this group of black airmen which—along with the 332d Fighter Group—won fame and distinction for operations in North Africa, Italy, and bomber-escort missions over Germany. He proved to be an effective commander and was asked to return to the United States to replace the white commander of the racially strife-torn black 477th Medium Bombardment Group at Selfridge Field, Michigan. Demanding professionalism, discipline, and respect for all people regardless of race, Davis dramatically boosted the morale and cut the accident rate to zero. However, the war ended before the 477th could ar-

rive in the Pacific. Within three years, segregation would also end—in principle—in the newly created US Air Force.

The wartime performance of the black fighter units that Davis commanded in Europe and his success with the 477th helped prove that blacks were capable of serving alongside whites. But Davis still faced racial challenges. In 1949 he entered the Air War College at Maxwell AFB, Alabama. The Air Force had ended segregation, but Alabama had not. "Maxwell," writes Davis, "was guilty of some of the worst foot-dragging" (page 161). Realizing that societal attitudes of white Air Force people would not change easily, Davis again overcame prejudice through his professionalism.

His final student appraisals at the Air War College reflected this change. For the first time, Davis received no evaluations that "said ... I was capable for a Negro officer and well suited for duty with black troop units" (page 171). He was truly overwhelmed because "several of his classmates at Air War College had been at West Point when [he] was a cadet. At Maxwell they were as pleasant as any of the other students—apparently the shepherd had spoken, and the sheep had fallen into line" (page 175). Although still not able to sleep or eat in some accommodations in civilian America, Davis was becoming an equal in the military.

After Maxwell, he served at the Pentagon, where "there were no car pools in those days, and if there was work to be done, one stayed until it was done" (page 182). Davis next served in a variety of command positions in Korea, Taiwan, Germany, the Philippines, and Japan. Promoted to lieutenant general, he was named chief of staff, United Nations Command; chief of staff, United States Forces in Korea; and commander, Thirteenth Air Force. He was deputy commander in chief, US Strike Command, MacDill AFB, Florida, when he retired in 1970.

Davis continued his public service after his retirement by working on safety and security issues in the Department of Transportation. He was the force behind establishing better airport security in the rash of skyjackings in the 1970s, requiring shoulder belts in autos, and establishing the 55 mile-per-hour speed limit. As a member of Jimmy Carter's Presidential Commission on Military Compensation, Davis fought the battle to retain the 20-year retirement compensation package. He retired from this role in 1975 but has remained active in public service.

Davis weaves his unique story with that of a changing nation, both in power and in social issues. In many cases, he tempers contemptible acts committed against him and his wife by writing that although they were despicable, it was the norm for that time. His description of 1949 Montgomery is also sheathed in his description of the Gathering of Eagles in 1986, when his welcome to the town was "warm and completely consistent with the South's well-justified reputation for hospitality" (page 172). Davis has few axes to grind, but when he does complain, it is well deserved. This book is not only an autobiography of a great man, it is also one with a message.

"Overseas," writes Davis, "we had experienced freedom, equality, and friendship—qualities of life that had been missing for us in the United States" (page 311). Though he and his wife have unquestionably done more than their share to alleviate this situation, Davis feels that more could be done by eliminating the prevailing sense of "hyphenated Americanism." "We are all simply Americans," he writes. "The unnecessary labeling of people by race, religion, or ethnicity does nothing to bring the many diverse groups of Americans together.... I do not find it complimentary to me or to the nation to be called 'the first black West Point graduate in this century'" (page 423).

Fortunately, the first full biography on this American is an autobiography. It is well written and well researched. No other person could write of the barriers and triumphs with the honesty and grace which Davis has provided. His work is destined to become one of the leading biographies on Air Force generals—and Americans—in this century.

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Da Nang Diary by Col Tom Yarborough. New York 10010: Saint Martin's Press, 1990, 280 pages, $19.95.

This book tells the story of the author's year in Vietnam as a "covey" (the unit call sign) forward air controller (FAC) from April 1970 to April 1971. It's an exciting and worthwhile tale, told by a born storyteller. And it's something more than an adventure story, both for the general reader and for the military professional.

Da Nang Diary captures the reader from the outset with a prologue that frames the book's chronology and message. As an "old head" on a second tour (in 1973), the author notices a gaggle of newly arrived FACs. He thinks back to his days as a new guy with thousands of

questions—both trivial and important—all of which he wanted answered at once. The narrator recalls how the gulf that separated new arrivals and veterans stifled those questions and how that made him feel. With that in mind, he grabs a fresh beverage, joins the new arrivals, and invites the new guys' questions.

The narrative that follows—the chronicle of Yarborough's first combat tour—provides the answers to those big and little questions. It begins with his arrival in Vietnam, the humiliation of in-processing, and the experience of combat qualification. Almost immediately he begins a stint as a standard covey FAC, flying the Ho Chi Minh trail, learning the landscape, discerning elusive targets, and controlling attacks. After a brief period flying with an "X ray" (Laotian backseater), Yarborough switches to Prairie Fire missions—escorting helicopters which infiltrate and exfiltrate long-range reconnaissance patrols.

The action is constant and intense, yet slowly evolves as the war changes and the author gains experience and awareness. He suddenly realizes that

> I had changed radically in my six months of flying combat missions. The mechanics of being a FAC, so complex and mystifying to me in the beginning, had become second nature, almost a reflex....
>
> Most of all, in a really hot situation, my instincts had developed to the point where they could instinctively handle the present while my mind's eye projected ahead, anticipating.... I saw myself for the first time as being truly combat ready. (page 174)

Yarborough maintains the action throughout but keeps adding insights and reaches increasing extremes of human experience as the book progresses. The narrative is very personal and honest, the imagery stunningly visual, kinetic, and expertly crafted to maintain suspense.

For the professional military reader, *Da Nang Diary* offers a window into a particular experience of a particular war, a window remarkably free of distortions. It doesn't seem possible to understand war—especially air warfare—without an understanding of the particulars and details; the imperatives and survival mechanisms; and the sights, sounds, and textures that individual experiences of war convey. Each of these perceptions is interwoven in the narrative—some explicitly, others with a subtlety that is easy to miss in the pace of "the year of 53 weeks."

For the general reader, *Da Nang Diary* relates both an extreme and very personal experience of air combat, as well as the universal experience of maturing and adapting to a world that no one can be prepared for. If you're looking for a good read, this is a sure bet. If you accept the author's offering of experiences to widen your understanding of war and people, you'll gain still more.

Lt Col Charles M. Westenhoff, USAF
Washington, D.C.

Uncomfortable Wars: Toward a New Paradigm of Low Intensity Conflict edited by Max G. Manwaring. Boulder, Colorado 80301: Westview Press, 1991, 139 pages, $24.95.

Uncomfortable Wars is a collection of articles about low-intensity conflict. Dr Max G. Manwaring, an associate with Booz-Allen & Hamilton, Inc., in Panama, has ably consolidated a series of articles that address the development of a coherent national and military strategy for countries experiencing political instability and revolution.

"Uncomfortable war," as Dr William Olson states in the foreword, is "that type of conflict which, because of our recent history and the lack of consensus on the threat, challenges our traditional rationale for using national power in support of national interests." In other words, uncomfortable wars are not clean. They do not lend themselves to a major operational maneuver like the "left hook" in the Gulf war. The problem is that uncomfortable wars are "difficult to come to grips with conceptually," are "politically sensitive," and are "filled with ambiguities that cloud [their] nature."

The traditional view holds that there are three major actors in uncomfortable wars: the government and its armed forces, the enemy, and the people. In this new paradigm, there are two more actors: the external supporters of the threatened government and the external supporters of the insurgents. The political dimension, both internal and external, is now the biggest player in the equation. The authors provide a paradigm, or framework, to build a coherent strategy. The use of Clausewitz's concept of the center of gravity is particularly welcome because it allows the reader to understand where the strategic and operational focus should be. The authors' use of operational art as it pertains to uncomfortable wars provides the means by which military men may understand the nature of a very complicated conflict.

In what is probably the best article in the book, "Toward an Understanding of Insurgency Wars: The Paradigm," Dr Manwaring succinctly describes how "the center of gravity is the people of a country." If the Clausewitzian center of gravity is the "source of all power and movement," then "people," he writes, "are the fundamental source of physical, psychological, and moral strength."

In the next article, "Strategic Vision and Insurgency in El Salvador and Peru," Dr Manwaring and Lt Col John T. Fishel, an Army staff officer at US Southern Command, state that strategic vision must come before everything else. They write, "It is incumbent on senior decision makers and their staff to identify correctly the primary center of gravity, rank the others, and link policy, strategy, force structure and equipment, and campaign plans to solving the central strategic problem." This one statement probably represents the most important lesson that military and diplomatic planners can learn from the book. To illustrate their point, the authors use case studies from El Salvador and Peru.

In "The Umbrella of Legitimacy," Col Courtney E. Prisk, a former Army staffer with the Joint Chiefs of Staff and a senior associate with Booz-Allen & Hamilton, writes about the most difficult task for an incumbent government—its ability to maintain its moral right to govern. If the insurgents' goal is to attack that moral right, they will do so by proving that the legitimate government cannot provide essential civil and military services. The burden is on the legitimate government to maintain its legitimacy, with or without external help. Colonel Prisk's article helps clarify this complicated concept.

The final article in the book, "The Need for Strategic Perspective: Insights from El Salvador," ties all the themes together. Dr Manwaring and Colonel Prisk posit three basic tenets for success in uncomfortable wars. First, decision makers must understand the environment they work in. Second, one must understand that legitimacy—"the moral right to govern—is the central target of the insurgent." Third, from strategic vision and perspective, all else must follow.

The challenge, of course—even after reading this work—is that it is one thing to identify a paradigm, but another to put it into practice. Because of its limited scope, this book does not address that issue.

Uncomfortable Wars would not be appropriate for military readers who are concerned with the tactical level of war. However, it should be required reading for all officers on operational staffs, for all strategic planners, and for all diplomats and policy shapers who have no experience with South America or with Clausewitzian concepts as they apply to uncomfortable wars.

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Heidelberg, Germany

Case Studies in the Development of Close Air Support edited by Benjamin Franklin Cooling. Washington, D.C. 20402: Office of Air Force History, 1990, 606 pages.

Probably no other area of aerial operations engenders as much argument as close air support (CAS). Attacking enemy troops was one of the earliest missions performed by air forces, yet the application of air power in this role has been debated by succeeding generations of air and ground commanders. The historical background to this debate is selectively chronicled in Benjamin Franklin Cooling's noteworthy volume from the Office of Air Force History.

The book contains 10 case studies written by an impressive group of contributors. In the first study, Lee Kennett covers the development of CAS by European air forces and the United States Army Air Corps through 1939. The following six studies weigh the book heavily towards World War II by dealing with the war in Europe and the war in the Pacific. Specifically, Williamson Murray writes about the Luftwaffe ground support efforts from 1939 to 1941. Kenneth Whiting follows with an examination of Soviet air-ground operations from 1941 to 1945. David Syrett then analyzes the British and American experience in North Africa from 1942 to 1943. Alan Wilt looks at Allied CAS operations in Italy from 1943 to 1945. Will Jacobs follows with an analysis of Allied air efforts in support of the breakout in France in 1944. Last, Joe Taylor covers the American experience in the Southwest Pacific. Three studies are devoted to the period after World War II. Allan Millett covers the Korean War, John Sbrega examines CAS in Southeast Asia, and—in the final case study—Brereton Greenhous covers the Israeli experience. Disappointingly, no chapter deals with CAS solely in the context of a low-intensity conflict, such as the British in Malaya or the French in North Africa. In the book's final chapter, I. B. Holley, Jr., puts the topic in perspective by making suggestions to current military leaders on how to avoid reinventing the CAS wheel in future conflicts.

Though written by different authors, the case studies cover basic topics such as doctrine, organization of forces, background and description of relevant campaigns and individual operations, command and control (C^2) arrangements, technology and weaponry, and descriptions of key people involved in decisions that shaped the use of CAS. Uniformly well written, the studies are illustrated with maps and photographs where appropriate and include short bibliographic essays. Because the same basic information is provided for each study, it is possible to compare and contrast the various experiences.

Though one can draw many parallels and conclusions from these studies, two seem obvious. First, air forces value other missions more highly than CAS. Despite the proven necessity for CAS on the battlefield and regardless of the time period or country, there is reluctance (sometimes great reluctance) to embrace this mission. This was true in World War I, it was true of the Luftwaffe on the eve of World War II, it affected American CAS efforts in Southeast Asia, and it caused the Israeli air force to put CAS in third place on its list of priority missions. Only when a military is faced with the absolute necessity for ground support are air forces allocated; priorities established; and command, control, and communications (C^3) sorted out.

The second conclusion is that C^3 is the critical element in establishing effective CAS. The success of the Luftwaffe early in World War II and of the Israeli air force in its conflicts was not due to overwhelmingly superior quantity or quality. Agreeing to an effective system of C^2 and developing a working communications capability are far more important than any other factor in providing effective air support to ground troops. Technology can provide the aircraft, weapons, and countermeasures necessary to operate above the battlefield, but these assets are of little use unless we integrate them into the conduct of the battle.

The concluding chapter by I. B. Holley, Jr., is an excellent summation of the many points to be drawn from these case studies. As the American military digests the lessons from the Gulf war and faces the prospect of shrinking resources, Air Force and Army officers who are tasked with the integration of CAS into the land battle would be well served by reading this book.

Maj Budd A. Jones, USAF
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Guadalcanal: The Definitive Account of the Landmark Battle by Richard B. Frank. New York 10022: Random House, 1990, 800 pages, $34.95.

August 1942 was the start of the battle for Guadalcanal, the first US air, land, and sea offensive against the Axis powers during World War II. As such, the battle will always have a special place in American military history. The fighting was closely contested and represented the only time when the US and Japan would meet as near equals on the battlefield. Thus, Guadalcanal was a real test of leaders (junior as well as senior officers), tactics, and strategy. Later battles with Japan would also test men and strategy, but these clashes would be greatly influenced by the US superiority in logistics.

Guadalcanal has had no shortage of excellent chroniclers. Richard Frank rightly acknowledges his debt to his predecessors: Samuel Eliot Morison's *History of United States Naval Operations in World War II* (volumes 4 and 5), Samuel Griffith's *The Battle for Guadalcanal*, and Thomas G. Miller's *The Cactus Air Force*. Given the quality of these previous histories, one may ask why we need another book about the battle, particularly one that bills itself as the "definitive account." Frank's work is more than just a recapitulation of known facts. He ties together the many aspects of the battle and emphasizes the vital role that intelligence and logistics played in US and Japanese strategy. Additionally, he uses Japanese sources that were not available to earlier authors.

The strong points of *Guadalcanal* are its extensive use of new sources and its organization. Each major aspect of the battle is preceded by a short overview of both US and Japanese strategy and the perspective of each side's senior military leadership. This technique puts a "human face" on the strategy, sets the stage, and explains what the principals did and why they did it. Further, Frank gives his readers close-up views of the infantry line units, destroyers, and fighter planes in an effort to involve them in the heat of battle.

Secondary strong points are the author's commentary on all levels of leadership on both sides. From colonel to admiral, many of the leaders who fought at Guadalcanal are evaluated here. The book points out the difference a leader can make in the outcome of a battle in which forces are nearly equal. Frank's vignettes on Japanese leaders and their influence on the battle are particularly valuable.

Of interest to today's military professional are the lessons to be learned from the battle, all of which still apply today. Such lessons include the need to practice joint and combined operations, as well as the importance of intelligence and logistics to the conduct of a campaign.

The book's preface initiates a truly impressive reading experience for the military professional or historian. Very few books live up to their advance billing or the praise on their jacket covers. This one does, however, and it may very well be the definitive one-volume account of the land, sea, and air battle for Guadalcanal. After finishing the last page of text, I was left hoping that Richard Frank would take up his pen again soon. *Guadalcanal* will be a valuable asset to the library of any serious military professional.

Lt Col Michael G. McConnell, USAF
Castle AFB, California

Red Lightning, Black Thunder by Jimmie H. Butler. New York 10014: Penguin Books, 1991, 436 pages, $19.95.

Red Lightning, Black Thunder, the second novel by retired Air Force colonel Jimmie H. Butler, has an extreme premise: if the Soviets are the first to put weapons in space, they could control access to space. Based on the notion that a minimally capable strategic defense could effectively suppress a nation's day-to-day space launches, the premise is extreme because it asserts that the Soviets would dare wage a limited war for control of space if the US were to try to deploy space arms *second*. It is also extreme because it assumes that there is a future race to arm space, that the Soviets remain a threat, and that Soviet space forces could destroy US space-force enhancement and achieve a dangerously enduring dominance in space. These notions have not been discussed openly in Washington (if at all), probably because they would displace too many political agendas and current modes of thought. However, according to a study by Rockwell International (assuming the Soviet space program does not disintegrate), Colonel Butler's premise is extremely *accurate*.

In fact, as early as 1987 Rockwell Strategic Defense Initiative researchers reported that if the Soviets were to "creep out" covertly or "break out" overtly from the accords forbidding the deployment of weapons to space, there might be little the United States could do after the fact (short of starting a surface war with dangerous escalatory potential). Consequently, Colonel Butler's premise is an exciting one for a novel. In fact, it might even shock America (as did the destruction of the first battleship from the air) into taking preventive measures.

Unfortunately, Colonel Butler wrote his novel in the so-called technothriller style popularized by novelist Tom Clancy. Rather than examining depressing social matters, this style requires a central character—a hero-expert—to easily pull together a multitude of weapon systems and use them to solve serious problems. In this case, the hero is a lieutenant colonel imbued with enough authority to rival that of Oliver North. Although Butler's descriptions of current systems are lucid and clear to even the non-Air Force reader, this approach constitutes only a shallow treatment of the central problem. Worse, since the technothriller style achieves its effect from describing existing weapons and their peculiarities, it may leave the reader with the impression that—given enough cleverness—current systems are adequate to deal with the future threat of a Soviet space blockade.

One might ask how Colonel Butler ever managed to envision a future in which existing US systems could win a space war. The answer lies in several fantastic assumptions. Butler asks the reader to accept that a technological breakthrough allows lasers to be shot 25,000 miles with accuracy (current estimates average 3,000–4,000); that the Soviets thus attempt a space blockade with only *one* armed, geostationary satellite; that the Soviet weapon system periodically employs undefended targeting satellites; that the US could somehow transform a returning moon-rock-gathering mission (as if we needed more moon rocks) into a military one; and that the Americans just happen to decide to deploy weapons to space while the Soviet system is still vulnerably sparse.

All this said, if the reader is willing to accept the author's assumptions, his novel is very entertaining. C-141 crew members may find it especially so. Somehow, Colonel Butler has managed to integrate many aspects of the C-141's mission into the plot, enabling the hero to fight practically the entire war (and win it) from a cargo aircraft. In retrospect, one might easily state that this novel is a C-141 crew member's fondest dream. Perhaps we should judge it in that context (in which it excels

admirably) rather than as an authentic space novel.

Maj Thomas C. Blow II, USAF
Scott AFB, Illinois

Fortunate Son: The Autobiography of Lewis B. Puller, Jr. by Lewis B. Puller, Jr. New York 10003: Grove Weidenfeld, 1991, 389 pages, $21.95.

Fortunate Son is a major contribution to the growing "literature of testimony" surrounding the Vietnam War. It describes in searing detail the physical and emotional price that Lewis Puller, Jr., paid for serving in an unpopular war and for trying to live up to the impossible legacy established by a doting father.

To many Americans, Lt Gen Lewis ("Chesty") Puller remains a symbol of fighting courage. He served in the United States Marine Corps for 37 years (1918–55), fought in five wars, and received more awards and decorations—including five Navy Crosses—than any other person in Marine Corps history. He was also an uncomplicated cold warrior who quietly encouraged his son to follow in his footsteps, which Lewis B. Puller, Jr., eventually did. The latter did so because he was a dutiful son who idolized his father. To his son, Chesty Puller was a doting mentor and an Olympian god. He was fearless and incapable of mistakes or unfairness, and it was these idealized qualities that the author tried to emulate.

The son's motives, however, remained primitive—he was "desperate" for his father's approval, and he wanted other men to admire him as they did his father. As a result, the author subsequently clothed himself in his father's values. He unquestioningly adopted the elder Puller's hostility towards "monolithic communism" and came to associate patriotism with retarding its growth. The escalation of the Vietnam War thus gave Lewis Puller, Jr., an opportunity to serve in a holy crusade and gain the approbation of his father. As a result, the author joined the Marine Corps in the autumn of 1967. He decided to become a combat platoon leader because, in his words, "I could not have faced my father ... if I had chosen an easier option" (page 47). With Lieutenant Puller's assignment to the 1st Marine Division—a unit previously commanded by Chesty Puller—family destiny seemed secure. There was, however, a problem. Lewis Puller, Jr., basically lacked the aptitude and the will to augment his father's legend, yet it was familial devotion and a deep-seated need for acceptance—disguised as political conviction—that drove him to serve in Southeast Asia. As the author was about to discover, the Vietnam War was a poor vehicle for self-validation.

Lieutenant Puller arrived in South Vietnam in the summer of 1968 and immediately assumed command of "a surly bunch of teenage misfits" in northern I Corps. The author grew to dislike Vietnamese peasants—whose studied indifference towards their liberators bordered on overt hostility—and the futility of search-and-destroy missions, which were actually "placate and pacify" operations. His disgust only worsened when he was reassigned to the perimeter defense of Da Nang. In the coastal wastelands of the South China Sea, Lieutenant Puller confronted an unseen enemy who tormented his men with booby traps and small-scale hit-and-run ambushes. It was a dirty little war that the author grew to despise. Because he felt personally responsible for the deaths and injuries suffered by his men, Lieutenant Puller came to loathe the albatross of command. As the author notes, "I wondered how many eternities I could survive before the pressures of command finally broke me" (page 140). His purgatorial predicament ended on 8 October 1968. While on a search-and-destroy mission near Viem Dong, Lieutenant Puller confronted a squad of North Vietnamese army soldiers. When his rifle malfunctioned, the author tried to escape and stepped on a booby-trapped howitzer round. As his mangled body lay on the ground, how did Chesty Puller's son react? On the one hand, he felt elated at the prospect of relinquishing his command and going home. On the other hand, he felt profound guilt over abandoning his men and failing to prove himself worthy of his father's name. The validation of Lieutenant Puller's sacrifice would now have to occur on the home front, but it would come belatedly and at great emotional cost.

The author's injuries were horrendous and temporarily turned him into a "snarling animal." He lost both legs and massive portions of his buttocks, and required numerous operations to restore partial use of his hands. His ruined hands, however, prevented him from learning to walk with artificial limbs. Lewis Puller, Jr., would remain in a wheelchair forever. From a legal standpoint, he was 100 percent disabled several times over, and after nearly two years of hospitalization—which *Fortunate Son* describes in unflinching detail—the author felt discarded and used. He also felt that his sacri-

fice had been in vain. The reason was simple. While large numbers of Americans increasingly demonized Vietnam veterans as bloodthirsty killers and misfits, Lewis Puller, Jr., still thirsted for recognition and acceptance. Unfortunately, most Americans now demanded that he remain invisible. They also demanded that he act "normal," while also suggesting that he was the unlucky detritus of an ignoble cause. As a result, the author raged against others and loathed himself.

Lewis Puller, Jr., did take steps to rebuild his life. He earned a law degree from the College of William and Mary and subsequently worked in the general counsel's office of the Veterans Administration; he was a member of the 1974–75 Presidential Clemency Board, which cleared 95 percent of the 5,000 deserters and draft evaders who sought pardons; and in 1978 he unsuccessfully ran for Congress against a combat-evading "patriot." Yet, in each case the author's motives remained self-centered. He tried, but failed, to convince himself that he was in control of his destiny and that he had survived his wounds for a reason. But beneath the surface, Lewis Puller, Jr., remained adrift and resentful. He still compared himself unfavorably with his now-dead father. As the author notes, "I ... wished I had been more like him, and I wondered if I would always find myself inadequate when I compared myself with him" (page 274).

Sadly, Lewis Puller, Jr., ultimately found a bogus peace in alcohol. With unsparing honesty, the latter part of *Fortunate Son* describes the besotted author's spiritual collapse and fragile rebirth. His recovery stemmed from the unconditional acceptance he found in Alcoholics Anonymous, the belated appreciation of Vietnam veterans, and the equanimous realization that he would never be able to fill his father's shoes. After a terrifying spiritual odyssey, Lewis Puller, Jr., finally concludes that he had fought the good fight and that he had done so with dignity. In short, he makes his own separate peace.

As suggested earlier, *Fortunate Son* is a remarkable portrait of one veteran's quest for meaning and acceptance. Its only flaw, if such a word is appropriate under the circumstances, is that its brutal honesty is selective. Throughout the book, Lewis Puller, Jr., rails against abstractions such as the American people, the United States Marine Corps ("the Marine Corps builds stumps"), the Selective Service System, and the Veterans Administration. Chesty Puller, however, remains sacrosanct. The loving son refuses to acknowledge any anger against his father, so he safely focuses on categories or institutions. As a result, the author's psychological motives and responses, as synopsized in this review, are often obscured and must be pieced together. This is the only blemish in an otherwise splendid book.

Maj Peter Faber, USAF
New Haven, Connecticut

Dauntless Helldivers: A Dive-Bomber Pilot's Epic Story of the Carrier Battles by Harold L. Buell. New York 10022: Orion Books, 1991, 348 pages, $22.00.

Dauntless Helldivers is an account of what it took to become a superb dive-bomber pilot, as was Harold L. Buell. The author is the only surviving veteran to have participated in four of the five carrier battles that took place in the Pacific during World War II. In addition to his expertise as a pilot, Buell had courage and—by his own admission—a little bit of luck.

Buell jumped at the chance to become a Navy pilot, leaving college after two years. The arduous training that he and his fellow aviators endured eventually led to his earning the coveted "wings of gold," the badge of a naval aviator. The book clearly conveys his love of flight training at Opa-Locka Field near Miami, Florida, as well as the extracurricular social activities enjoyed by the cadets there.

Upon graduation from flight training on 1 November 1941, he attained one of the most sought-after assignments in aviation—duty as a carrier pilot. By the end of April 1942, he was on the USS *Yorktown* waiting for action. This came soon enough at Coral Sea and Midway, where he flew fleet coverage. Acknowledging that the US fleet took the best the Japanese could give at Coral Sea, he nevertheless criticizes Navy leadership for using 23 hapless SBD Dauntless aircraft as defensive fighters in an antitorpedo plane patrol instead of employing them against the Japanese carriers. Like many others, Buell feels that the substantial Japanese losses at Midway—four carriers and 322 aircraft, together with their valuable senior pilots—turned the tide of the war in the Pacific. But we gained the advantage at great cost. After losing many of his close friends during those fateful 30 days, Buell was never the same.

The author next fought with the "Cactus Air Force" at Henderson Field on Guadalcanal for three months during the battle for that island. He notes that the 11 pilots of Flight 300 from

the USS *Enterprise* were the first carrier flyers to operate from a land base against the Japanese in World War II. He bombed enemy warships and transports that were attempting to reinforce the island. Buell captures the ferocity of the battle and emphasizes the importance of stopping the Japanese resupply attempts. He considers it miraculous that so much was accomplished with so little and is amazed that ground crews could keep planes flying despite the proximity of the enemy lines and the danger from snipers.

Although he expected a training assignment after a well-deserved leave, Buell was asked to return to combat because men of his age and experience were like "nuggets of gold." He participated in many attacks on Japanese warships, support vessels, and ground targets at Truk, the "Jimas," the Marianas, and the Philippines, and became known as one of the best dive-bomber pilots in the Navy. Buell relates how the might of the US Navy had changed since his Cactus Air Force days, maintaining that the Truk raids proved that his larger unit—Task Force 58—could go anywhere and establish air superiority. Perhaps the author's greatest achievement was his lead attack and direct hit on the Japanese carrier *Zuikaku* in the first battle of the Philippine Sea.

This exciting personal account is packed not only with stories about life as a carrier dive-bomber pilot but also with interesting anecdotes about life on the home front. Buell quotes personal accounts from other sources, but his own experiences carry the book. Although he waited a long time to tell his story, perhaps the best tales are the last ones told.

Dr George M. Watson, Jr.
Washington, D.C.

Where Eagles Land: Planning and Development of U.S. Army Airfields, 1910–1914, by Jerold E. Brown. Westport, Connecticut 06881: Greenwood Press, Inc., 1990. 141 pages. $39.95.

Secure bases, including airfields, are essential for military operations. How bases are planned and developed is not a particularly glamorous story, and very little has been written on it. Jerold E. Brown, a professor at the Army's Command and General Staff College, redresses this deficiency with a well-researched and workmanlike narrative tracing air base development up to the attack on Pearl Harbor. His intent is to explain why base sites were selected and to provide guidance for future planners.

Since the Wright brothers first sold an airplane to the Army in 1909, there have been three general criteria for locating airfields: geographic, military, and political. Air bases require physical characteristics such as good weather, extensive space, level terrain, as well as proximity to industry, surface transportation facilities, and a labor supply. Bases must also be located to serve military purposes: air defense requires bases near the borders, but training bases are more in need of suitable flying weather. Political considerations are also important, and Brown argues that the dominance of geographic and military considerations in airfield location has increasingly given way to political concerns. During the Depression, military installations became an important factor in local economies, often meaning either prosperity or poverty. The case of Selma Field, Alabama, is instructive: the arrival of the Air Corps increased the city's annual payroll from $1.75 million to $4 million. But simultaneously, the services suffered severe budget cuts necessitating base closures, an explosive issue. Then as now, most politicians wanted to trim the military budget but always by closing a facility in someone else's district. Brown's lesson for military planners is obvious: don't expect the logic of geographic or military necessity to always prevail.

The author's argument is compelling, but a more detailed analysis of the economic impact of bases on nearby communities—crucial to his thesis regarding the dominance of politics in site selection—would have been useful. The case of Selma noted above, though perhaps typical, is the only one cited. In addition, Brown's complaints that the Air Corps was continually starved for construction funds in the interwar years are suspect. For example, the junior officer quarters at Maxwell and Randolph fields—complete with servants' quarters—can only be described as palatial. Although built in the 1930s, even today these homes are so sumptuous that only generals and colonels are assigned them. Life was certainly not austere for a lieutenant and his family stationed at Maxwell Field during the Depression. In addition, the author has been poorly served by his editor. The prose is awkward in spots and in need of tightening. Moreover, there are an inordinate number of misspellings and typesetting errors that seriously detract and distract.

Overall, this is a useful and interesting study

that illuminates a forgotten subject. More importantly, Brown's thesis regarding the significance of political and economic factors on the location of military bases is timely. Military planners can learn from this book as they chart the future of their service.

Lt Col Phillip S. Meilinger, USAF
Maxwell AFB, Alabama

Eyes of the Hammer by Bob Mayer. Novato, California 94949: Presidio Press, 1991, 330 pages, $19.95.

The drug lords and other assorted bad "hombres" in Colombia are getting hammered again by "gringos" promoting truth, justice, and the American way. In a military technothriller worthy of its genre, Bob Mayer joins the ranks of Tom Clancy in *Clear and Present Danger*, Stephen Coonts in *Under Siege*, and Dale Brown in *Hammerheads* in hitting the drug kingpins where it hurts. *Eyes of the Hammer*, Mayer's first novel, is an auspicious beginning.

A former Green Beret, Mayer writes about the little-known world of US Army Special Forces (SF). A select group of hardened warriors is inserted into Colombia as the state-of-the-art "eyes" of a secret US military operation to strike (i.e., "hammer") the main cocaine processing laboratories and thus put the heat on the drug cartel. The covert operations "A" teams carry the call signs "nail one, nail two," and so on.

Like most good technothriller writers, Mayer has a central protagonist to build his story around. Whereas Clancy has Jack Ryan and Coonts has Jake Grafton, Mayer has common man/hero Dave Riley. Streetwise and tough, Warrant Officer Riley is a team leader on the clandestine missions. An example of the Army's "be all you can be" type of professional, Riley respects his superiors but is more interested in taking care of his own troops at all times. He demands as much from himself as from them, especially during SF operations.

Riley must work with a cast of supporting characters—strong, weak, and in-between. From the military comes his boss for this mission, Colonel Pike, a legend among Green Berets, who is fed up with the Pentagon bureaucracy. Others include Captain Vaughn, assigned as an "eyes of the hammer" team chief and Master Sergeant Powers, Riley's able assistant. The covert operation into Colombia involves military personnel from the chairman of the Joint Chiefs of Staff, through members in the services' special operations units (i.e., the Air Force's 1st Special Operations Wing at Hurlburt Field, Florida), down to the most junior enlisted Army SF team members.

A complex operation like "hammer" cannot be carried out by the US military alone. The Central Intelligence Agency (CIA) plays a role, embroiling the director, selected senior advisors, and field operatives. Agent Kate Westland is the major CIA liaison officer, who conveniently happens to be capable and attractive—features that Riley cannot ignore. Thrown in are people—both useful and worthless—from the Drug Enforcement Agency, the State Department, and, of course, the White House inner circles of power.

Corrupt politicians, nasty accomplices, and brutal criminal elements abound on the drug-producing and distributing side. Chief among them are leaders of the drug cartel families in Colombia, with the ruthless "ring man" being the most dangerous of all. In an original pitting of good versus evil, the explosive climax will definitely hold the reader's attention at the end.

The book does have some weaknesses. The first half seems drawn out as Mayer develops his characters, explains how SF troops do their business, and creates a believable crisis that requires special operations. Some scenarios seem too contrived. For instance, the conflict between "A" teams led by Riley and Vaughn follows the usual stereotype of the know-it-all young officer who tries to override the expertise of the combat-ready subordinate. Besides, the use of Vaughn in general is questionable since he and his team are in and out of the story so quickly. Moreover, the long-standing controversy over male and female roles in combat is overdone, as evidenced by the problems between a helicopter copilot (a male captain) and his pilot (a female warrant officer with more flying hours), who is in command of the aircraft.

Notwithstanding these minor points, Mayer has written a very good first novel and has established himself as one of today's better military technothriller writers. A background in special operations gives him credibility and understanding from "having been there and done that." Mayer is working on two other novels on Green Beret exploits. One can expect them to be even more absorbing and powerful than this successful debut.

Lt Col Frank P. Donnini, USAF
Langley AFB, Virginia

Fading Victory: The Diary of Admiral Matome Ugaki, 1941–1945 translated by Masataka Chihaya and edited by Donald M. Goldstein and Katherine V. Dillon. Pittsburgh 15213: University of Pittsburgh Press, 1991, 728 pages, $29.95.

This remarkable diary provides new insight into how one Japanese admiral viewed the Pacific war. In fact, it is the only candid, personal account of the war by a major Japanese military leader. A career naval officer, Adm Matome Ugaki was appointed chief of staff of the Combined Fleet on 10 August 1940. It was this force which struck Pearl Harbor. Ugaki served in this capacity under Adm Isoroku Yamamoto until both were shot down over Bougainville Island on 18 April 1943. Yamamoto was killed, but Ugaki survived and was assigned to the Naval General Staff. He served there until he went to sea again on 25 February 1944 in command of the First Battleship Division, which included the battleships *Yamato* and *Musashi*. He describes in vivid detail the destruction and sinking of the *Musashi* in the battle of Leyte Gulf. Ugaki was later entrusted with the command of the Fifth Air Fleet on Kyushu and organized the famous Special Attack Corps (*Tokkotai*), which conducted suicide attacks against the ever-advancing American forces.

Not only is the diary full of strategy, tactics, planning, combat, military thinking, and domestic politics, it also contains critical comments and historical, valuable information on Japan's conduct of the war. Interesting appraisals of all of Japan's enemies (United States, United Kingdom, Netherlands, China, and Soviet Union) and allies (Italy and Germany) are contained in the diary. One can also clearly follow Ugaki's change in thinking as Japanese defeats mount. At the opening of the war, we find an admiral who believed in Japan's destiny and the rightness of its cause. Although arrogant at the opening of the war, he soon tastes bitter defeat at Midway and becomes even more disturbed when Admiral Yamamoto is killed. The reader clearly senses that despite Ugaki's rationalization of defeats, he slowly begins to realize the undeniable fact that the US is growing stronger while Japan is growing weaker. Although he is grimly determined to fight to the last man, he cannot explain what is happening to Japan and is powerless to prevent the final defeat. Upon hearing the news of the emperor's surrender, Ugaki sets off on a suicide mission with his Special Attack Corps and is killed 15 August 1945.

Gordon W. Prange—author of such books as *At Dawn We Slept*, *Miracle at Midway*, *Target Tokyo*, and *God's Samurai*—secured the English-language rights to Ugaki's diary while assigned to Gen Douglas MacArthur's headquarters in 1945. The diary was invaluable to Prange when he wrote his books about the Pacific war, and he had always hoped to have the diary published in English for American historians to examine. The editors, Donald M. Goldstein and Katherine V. Dillon, are to be commended for the thorough job they have done. The diary is divided into 12 parts, each preceded by a brief commentary which highlights details and offers additional explanations about the entries.

This book is strongly recommended to all World War II historians since it is the only candid account of the war by a high-ranking Japanese officer. Admiral Ugaki's writing takes readers from the naval staff in Tokyo to the bridge of the battleship *Yamato* and then whisks them from the Combined Fleet conferences to the South Pacific jungles to a bunker where Ugaki plans the last-ditch kamikaze attacks. *Fading Victory* is indeed a very personal account of the Pacific war from 1941 to 1945.

1st Lt Gilles Van Nederveen, USAF
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Touch the Sky by Harold Livingston. New York 10016: Morrow, 1991, 432 pages, $19.95.

Looking for a good novel to read between those technothrillers and real-life experiences? *Touch the Sky* would be an excellent choice. Harold Livingston has written a work of historical fiction that traces the development of the aviation industry from World War I to the jet age. His vehicle for that development is the exploits of Simon ("Si") Conway, who is driven to build an aviation empire.

Si is introduced as a pilot with the Lafayette Escadrille in the air war over France. His accomplishments as a fighter pilot earn him distinction as an ace and as a nonconformist. Livingston's characterization of Si brings to mind Bruno Stachel, the German fighter ace from Jack Hunter's novel *The Blue Max*. Like Stachel, Si is out to win, no matter what it takes. To Si, the chivalry exhibited by his enemies and comrades is as archaic as the massed infantry tactics used in the trenches against the machine gun. As a result, Si is an

outcast with an unswerving drive to accomplish goals that he alone knows and has envisioned. This drive will push him throughout his life.

After World War I, Si begins the arduous task of building a fledgling aircraft manufacturing company and an airline. Former enemies become his friends, while current business partners as well as former friends and business partners become his enemies. These reversals are due to Si's drive and ambition, which make winning the only acceptable outcome. As aircraft are designed, constructed, tested, manufactured, and delivered, Livingston's characterization of Si reflects images of Howard Hughes. Just as Hughes fought to prove to the world that the design for the "Spruce Goose" aircraft was viable, Si—wearing Hughes's style of leather jacket and brown fedora—fights to prove that his aircraft are the best and that his vision for himself, his family, and his company is the only path to success.

Si meets numerous challenges that are roadblocks to his progress. He removes or circumvents these obstacles as the story line moves through the 1920s and 1930s (including the war in China), the Spanish Civil War, World War II, and into the jet age.

Throughout the novel, Si's primary foe and friend is Karl Eisler. Unlike Si, Karl is a man from the old school who follows a strict code of honor. Meeting for the first time in the skies over France, they build upon their vision for the aviation industry in the postwar era. However, these opposites must eventually clash.

If there is a weakness to *Touch the Sky*, it would have to be in the development of the supporting characters. Granted, Si and Karl dominate the main story; however, their interaction with family, business associates, and enemies forms the basis of who and what Si and Karl are. More detail in the development of a few of the subordinate characters would aid in the story line's development. This is especially true after the book shifts to the post–World War II era. Despite this weakness, *Touch the Sky* is an excellent choice for leisurely reading.

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Ballistic Missiles in the Third World: Threat and Response by W. Seth Carus. New York 10010: Praeger Publishers, 1990, 78 pages.

Trappings of Power: Ballistic Missiles in the Third World by Janne E. Nolan. Washington, D.C. 20036: Brookings Institution, 1991, 167 pages.

Missile Defense in the 21st Century: Protection against Limited Threats, Including Lessons from the Gulf War by Keith B. Payne. Boulder, Colorado 80301: Westview Press, 1991, 157 pages.

A year ago, most Americans—including many military people—had never heard of a Scud and thought that Patriots were a New England football team. Then along came Operation Desert Storm. Suddenly, it became apparent that Soviets and Americans weren't the only people who had ballistic missiles and that these weapons came in forms other than intercontinental ballistic missiles (ICBM). The threat posed by ballistic missiles became very real, and we discovered that we knew precious little about them. For military people, the need to "get smart" in a hurry was especially urgent. The Scud busters of the US Army's Patriot missile batteries had become international heroes, and solving the problems associated with destroying missiles in flight became important—not just science fiction or a corollary of "Star Wars." Who had these missiles? Could we shoot all of them down? What else existed or was being developed to stop these missiles? How could we stop their spread?

Three books can help us answer these questions and get smart on ballistic missiles. Although published independently, these books form a natural trilogy that takes us from ignorance on the subject, through the basics of the missile world, and into the military and political issues concerning the proliferation and control of ballistic missiles.

W. Seth Carus's *Ballistic Missiles in the Third World* is the place to begin for anyone with either limited or nonexistent knowledge about the subject. Published as part of the Washington Papers series from the Center for Strategic and International Studies, it is an excellent primer on who the players are in the world of ballistic missiles. Although readers with a strong background in ballistic missiles or arms control may complain that its treatment of the subject lacks depth, novices will appreciate the fact that it lays out all the basics without being condescending. The text discusses the various types of tactical ballistic missiles and identifies who produces them and who buys them. Carus views efforts to control the transfer

of missile technology with an eye towards possibilities for international arms control. This stance makes the book useful for military officers or civilians who suddenly find themselves dealing with the subject of missile proliferation and its policy considerations.

For a more detailed look at such policy considerations, the reader should turn to Janne E. Nolan's *Trappings of Power*. As Ms Nolan points out, ballistic missiles have taken on a significance to many third world countries that is far out of proportion to their real military value. *Trappings of Power* provides statistical data on missiles and missile programs for third world countries as a background to related policy matters. Not only does she give a detailed treatment of how superpowers and technologically advanced nations have transferred missile technology to the third world, she also relates how third world nations have worked both independently and collectively to acquire missile technology and produce it themselves. Her analysis of the technological potential of these nations with regard to missile production is thorough and well documented. Most importantly, perhaps, she carefully considers technology control and arms control as methods of managing ballistic missile proliferation. The potential for international technology control as well as the policy conflicts and problems that make this control so difficult is especially well presented. Of the three books reviewed here, *Trappings of Power* has received the most public attention. Given its emphasis on national security policy, it will probably be the most widely read as well. Nolan's study is entirely suitable for academic, government, and high-level military policymakers.

Of most direct benefit to people at the operational military level is Keith B. Payne's *Missile Defense in the 21st Century*. Completed since the end of Operation Desert Storm, it is an up-to-date look at the subject of how to defend against the growing threat of ballistic missiles in the third world. Payne looks at both the operational and political issues involved with antitactical ballistic missile (ATBM) development. He emphasizes the potential for global protection against limited strikes (GPALS), an outgrowth of the Strategic Defense Initiative (SDI). His discussion goes well beyond purely military considerations to include policy-level problems involved in ATBM and GPALS development, testing, and potential deployment. The author also carefully considers how GPALS development would affect both the antiballistic missile (ABM) treaty of 1972 and Soviet reaction to missile defense. This excellent study also answers critics of GPALS development and people who would pursue other alternatives. Although perhaps less well known than *Trappings of Power*, Payne's book is certainly of the same high caliber. Both are must reading for anyone who wants to remain well versed on the subject of tactical ballistic missiles.

Desert Storm showed us that ballistic missiles have indeed matured to the point that we must consider them potential factors in future conflicts throughout the world. Although the Scud (actually rather unsophisticated in terms of current missile technology) was the missile that caught our attention, we need to become aware of the overall issue of tactical ballistic missiles and their military and political effects in the years to come. These three fine books will take the reader a long way in developing that awareness. I highly recommend each one and especially commend them as a set.

Lt Col Michael A. Kirtland, USAF
Maxwell AFB, Alabama

Combat Recon: My Year with the ARVN by Robert D. Parrish. New York 10010: Saint Martin's Press, 1991, 291 pages, $19.95.

Although it claims to open a new chapter in the history of our involvement in Vietnam, *Combat Recon* is only a modest addition to the growing number of personal memoirs about America's longest war.

From May 1967 through April 1968, the author was a 26-old company grade officer assigned to the 5th ARVN Infantry Division in Binh Duong Province, located immediately north of Saigon and within III Corps. Lieutenant Parrish spent the first portion of his tour as a member of a Military Assistance Command Vietnam (MACV) combat advisory team attached to the ARVN Division's 3rd Battalion, 7th Regiment. The 3rd Battalion conducted numerous search and destroy operations in the Bing Duong area, which also included the infamous Iron Triangle. During the latter part of his tour, the author transferred to another MACV team assigned to the 5th Reconnaissance Company and G-2 Recondo Company. The latter group was an intelligence-gathering unit comprised of juvenile delinquents and criminals who were recruited from prison with

the promise of freedom and "a little larceny on the side." The 5th Recon Company, in turn, was primarily made up of Nungs, a fierce tribe of ethnic Chinese who compiled an amazing combat kill ratio of 15-1. As an adviser to these unorthodox units, Parrish repeatedly experienced the full terror and exhilaration of counterinsurgency warfare. During the last four months of his tour, for example, he participated in 69 combat operations and came under fire 35 times. Such a pace exacted a terrible toll. At the conclusion of his tour, 300 of Parrish's advisers lay dead, and it was their sacrifice that inspired him to tell his story.

Combat Recon is thus a homage to the brave fighting spirit of the three ARVN units Parrish advised. However, although the author hopes to refute the longstanding canard that South Vietnamese forces were hopelessly corrupt and militarily inept, he is only partially successful. Parrish's reminiscences are often exciting, but they do not provide a three-dimensional portrait of the South Vietnamese fighting man. The author may affectionately refer to his advisees as "my people," but they either remain faceless and in the background or they are mostly cardboard figures: the 3rd Battalion commander, for example, is short, personable, and "given to broad smiles and a bit of bull__t," while the G-2 intelligence officer is a "sharp officer" and politically astute. And so it goes. *Combat Recon* is little more than a simple tale of battles and firefights as experienced by a highly capable and thoroughly obnoxious American lieutenant. But even the tale is suspect as history, since the author readily admits that his recollections are an impressionistic reconstruction of especially memorable events supplemented with random images and emotions.

Nevertheless, *Combat Recon* does recall, unwittingly or not, many of the pathologies we now associate with the Vietnam War. They appear both in the American and South Vietnamese armies, and thus undercut Parrish's attempt to rehabilitate the image of the ARVN fighting man. In the case of the Americans, the author provides individual examples of malfeasance and human folly. They include a colonel who confuses body counts with military success and directs chaotic firefights from the obscure safety of a high-flying helicopter, a battalion commander who seeks joint operations with South Vietnamese units because they are "career enhancing," and a thick-witted captain who receives the Purple Heart for nonexistent wounds and a Silver Star for an uncoordinated attempt to rescue a downed helicopter crew already saved by others. In the case of the South Vietnamese, unit commanders beat subordinates, take bribes, and ignore the advice of their MACV advisers. Other officers preoccupy themselves with bureaucratic politics rather than military effectiveness. The 5th Division's Colonel Quan, for example, repeatedly orders the 3rd Battalion into action in order to either discredit or kill the unit's capable commander, Major Man. As 10 other battalions remain idle, 50 percent of Man's men literally become the victims of a personal vendetta. Like the 3rd Battalion, other units also lack ammunition, rely on outdated equipment, and receive only two replacements for every three casualties they suffer. As a result, individual ARVN commanders avoid contact with the Vietcong, trade enemy "souvenirs" for US equipment, and "probably" pay local guerrillas not to operate in their areas. Finally, in contrast to the author's avowed attempt to rehabilitate the image of his advisees, *Combat Recon* confirms that the ARVN was often cowardly and inept. During the Tet offensive, for example, Parrish observes a panic-stricken battalion retreat after only a brief firefight in the village of Phu Cuong. Five South Vietnamese tanks then appear. The lead tank, after absorbing only one recoilless rifle or RPG round, reverses itself and collides with a second tank. The crews then abandon their vehicles and flee with the remaining three tanks. And so it goes.

Finally, and as suggested earlier, there is the problem of Robert Parrish. It is not unfair to say that in 1967-68 he was an immature yahoo and that his unpalatable personality mars *Combat Recon*. Parrish, for example, disparages combatants without experience, yet he conveniently glosses over his own evolution from a *fanuge* (f__ing new guy) to a savvy jungle fighter. He repeatedly demonstrates a sneering disdain for the chain of command, which he describes as "legalistic bull__t." He further disdains intelligence officers; stab-in-the-back journalists; party-loving military bureaucrats; and MACV directives, which he repeatedly ignores. But most unfortunately, Parrish develops jungle-tainted, topsy-turvy ethical standards. For example, how does one neutralize the hated Colonel Quan? Why, kill him, of course! As the author observes: "I never dismissed the idea of killing Quan during the entire time I was with the 5th ARVN Division. If I thought I would have gotten away with it, I might have" (page 68). Then there is the case of Sergeant Likens, a

MACV enlisted adviser who drunkenly fires his weapon at a training center near Nha Trang. Not only does Parrish remove the evidence, he also lies about the culpability of his besotted friend. Third, there is the example of Parrish's men stealing American weapons for their ARVN counterparts. Does the author ruefully regret their actions? Does he feel queasy about lying to an Army investigator sent to recover the weapons? No! In Parrish's words, "I had a hard time holding in my laughter until the guy was out of earshot" (page 249). Ugh! The protagonist of *Combat Recon* frequently confuses swaggering bravado with manliness, and situational ethics with military professionalism. As a result, he does not always preserve his integrity in an admittedly difficult war.

Given the above problems, who then should read *Combat Recon*? Only those interested in the mechanics of jungle warfare, and those intrigued by tales of small arms combat.

Maj Pete Faber, USAF
New Haven, Connecticut

The Coming War with Japan by George Friedman and Meredith Lebard. New York 10010: Saint Martin's Press, 1991, 403 pages, $24.95.

With the 50th anniversary of Japan's attack on Pearl Harbor recently observed, books predicting the future breakdown of the US-Japanese alliance are becoming a growth industry on both sides of the Pacific, but especially in Japan, where anything new is fashionable. This book joins the crowd, but with several differences. First, it is a long book, it is not trivial, and it is extensively if very selectively documented. Second, it has a completely deterministic geopolitical methodology in keeping with Professor Friedman's extreme "realist school" views. Third, the book employs essentially one causative factor—Japan's need for physical resources—to explain why World War II in the Pacific occurred and why "the coming war" between the United States and Japan will happen in the next 10 to 20 years. Finally, the book is being heavily promoted to make money.

Coming War's fundamental flaws are immediately evident. By pegging their case almost exclusively on physical resources as deterministic factors and by dismissing politics, ideology, culture, and economic cooperation, Friedman and Lebard ignore the whole host of other factors that propelled an industrializing and racist Japan into aggression in the early twentieth century—fascism, ethnic superiority, the Bushido code, chauvinism, and militarism. Not surprisingly, the authors dismiss the many categories of noneconomic factors that *now restrain* Japan from aggression—democratic values, a large middle class, Japan's cooperation all across the globe on financial matters, a formal alliance with the United States entering its fourth decade, and a much more mature economy than in the 1930s, when both trade and manufacturing as a percentage of gross national product were much higher than they are now.

Indeed, Friedman and Lebard subordinate and dismiss almost every factor *except* physical resources ("Nothing is less permanent in the history of nations than ideology" [page 17].) To try and make their case, the authors tell us that Japan's future economic (and therefore political-military) desperation will be a function of the fact, for example, that it must import *eight tons* of raw materials for every *ton* of TVs, cars, and cameras it exports! Certainly that is a new twist in geopolitical analysis: measuring economic health by the ton! From those kinds of arguments we are to conclude that an extremely insecure Japan will inevitably go to war with the United States in the next 10 to 20 years.

Perhaps Professors Friedman and Lebard dismissed all the other nonresource factors because neither is a Japanese or Asian specialist. Indeed, the authors seem a curious duo. Professor Lebard writes poetry and teaches creative writing. This may explain the book's readable style but also its many dramatic, and unqualified, one-liners. Professor Friedman teaches political theory (favoring the German school) and evidently has an interest in computers, logistics, and, more recently, resource statistics. In sum, like most yarns, *Coming War* makes a fairly good read provided one does not take it too seriously. Clearly the marketers at Saint Martin's shaped much of it; the idea was to make money by alarming people. Thus, for example, the preposterous title. The actual title of this book should have been something like *Japan's Resource Dilemmas, Past and Present, and How to Manage Their Future Impact Prudently without Conflict in a Rapidly Changing Post–Cold-War World*. Try selling a book with that title!

Coming War divides into three sections. The first argues that World War II in the Pacific was inevitable because of Japan's need for physical resources and control of the Pacific Ocean. The

second section states that Japan was rebuilt economically because the United States needed a cold war anchor from which to confront the Soviets in Asia. The third section, when it turns to Japan, argues—predictably—that Tokyo's current need for physical resources will inevitably drive Japan into another war with the United States.

As the authors step out onto thinner and thinner ice, here is a (small) sampling of the one-liners that greet the reader who hangs in to the end of the tale:

- "Both the United States and Japan are victims of forces they can neither control nor resist" (page xiv).
- "History, particularly the history of nations, repeats itself many times" (page 1).
- "Japan would be insane not to prepare itself for war" (page 12).
- "Japan and the United States are equally driven by fear" (page 19).
- "Japan's purpose in WWII was to attain self-sufficiency in industrial minerals" (page 77).
- "Trade is basically something physical" (page 161).
- "The Chinese must choose between their last two options: the Japanese or the Americans" (page 214).
- "Should the United States choose to withdraw from Diego Garcia and the Indian Ocean, India would suddenly emerge in *control* [emphasis is mine] of the Hormuz-Malacca Line" (page 215).
- "The American encouragement of Japanese military growth is utterly incompatible with a desire that this not be transformed into a force-projection capability" (page 266).
- "The end of the cold war leaves Japan the dominant regional naval power, and probably the dominant regional land power if the United States should choose to withdraw from the region" (page 267).
- "The American question is the most important and darkest for Japan" (page 287).
- "In 1941, under identical circumstances [to the early 1990s] Japan chose war" (page 402).

You get the drift.

In short, Friedman and Lebard believe that history repeats itself; nations throb to submerged destinies; statesmen do not make independent choices—they conform to deep historical currents; oceans are power vacuums that must be filled; politics is inevitably zero sum and ruthless; trade frictions must lead to war, and so on. What we have in *Coming War*, then, is not an objective or comprehensive analysis but a kind of geopolitical yarn. It is not ultimately a serious book but, from start to finish, a completely deterministic and deliberately alarmist portrayal. Nevertheless, one can take away two useful reminders from this curious book. First, Japan is an island nation that must import, across thousands of miles of sea-lanes, most of its raw materials. Second, it would be a good idea for the United States Navy to continue patrolling those sea-lanes.

Dr Lawrence E. Grinter
Maxwell AFB, Alabama

Splash One: Air Victory over Hanoi by Maj Gen Walter Kross. McLean, Va. 22102: Brassey's Macmillan, 1991, 300 pages, $21.98.

On 7 January 1967, the United States Air Force achieved a stunning aerial victory in the skies over Hanoi—seven North Vietnamese MiGs shot down with no US losses. This success did not come easily. The US Air Force was being demoralized by a fledgling force of semi-obsolete Soviet-designed fighters. When Col Robin Olds took command of the 8th Tactical Fighter Wing, he set out to turn this situation around. The wing, flying F-4Cs out of Ubon Royal Thai Air Base, planned and executed a classic exercise of tactical deception by disguising its aircraft as an F-105 strike force in order to get North Vietnam's air force to commit to air-to-air combat. Maj Gen Walt Kross has written a fast-paced and believable fictionalized account of Operation Bolo. As a fighter pilot who flew 158 missions in Vietnam (100 over the North), General Kross provides authentic episodes from his own participation in the air war as well as from other actual "happenings" (Pardee's famous push, Baht busses, and the Ubon O Club). The details in the book bring back those "been there, done that" memories for us old heads. Those of us who participated in the Vietnam conflict know his characters too. On the American side, there is the Eagle, Col Clint Adams, a hard-charging, unconventional, charismatic leader who is forced to work within the Byzantine rules of engagement that forced the air war into a conflict that gave every advantage to the enemy. Constantly trying to win but still staying within the rules of engagement, he is forced into defending his plan for

aerial victory, not from the North Vietnamese but his own headquarters. There is the Pentagon staff officer who would rather be flying his desk than flying combat in Pack Six and who does his best to undermine his commander. Then there are the pilots who have to go "downtown" every day they fly.

These are the men who are the real professional soldiers. They volunteered to be fighter pilots, ipso facto they volunteered to fight the war. They don't understand why they are prevented from following the sound military doctrine of attacking both airfields or surface-to-air missile sites before they are attacked from them, yet they continue to fly and fight against high odds every day. *Splash One* also introduces us to our North Vietnamese adversaries as real people with real feelings and motivations. The Dragon, Col Nguyen Tomb, is a skillful leader of his small but deadly air force. He continually shepherds his inexperienced pilots, having them attack American weaknesses. He is caught between his own nationalistic pride and the requirement to lean on his Soviet adviser for technical expertise. He likes neither the Americans nor the Russians, feeling that both countries are exploiting his people. The clash between the Eagle and the Dragon is a clash between leadership styles and cultures as much as a clash between individual pilots.

The first novel by an active duty Air Force general gives those of us who were not there for America's best single day in the air war a glimpse of what it was like. This is an authentic military story that will be enjoyed by anyone who is interested in modern aerial combat.

Col Stu Mosbey, USAF
Moody AFB, Georgia

Terrorism and Democracy by Stansfield Turner. Boston 02108: Houghton Mifflin Company, 1991, 240 pages, $22.95.

Admiral Turner served as director of the Central Intelligence Agency (CIA) in the Carter administration and as commander in chief of NATO's Southern Flank. He states that he has undertaken this book at the recommendation of his literary agent (p. xi). Its purpose is to pull together what Turner states is a lack in the literature of terrorism—relating the phenomena, its objectives, and how it is handled in light of the principles of democracy. The book has another value to the reader, albeit unwritten. Turner was an "insider" to the events when the Teheran Embassy was seized in the seventies. He sets out to explain the US government's actions.

Terrorism and Democracy does not cover the full range of terrorist activities. Its central emphasis is strictly on hostage-taking. It focuses on comparing the actions of the Carter administration with those of other administrations—particularly those of the Reagan administration. The author provides the reader, and possibly future administrations, with some guidelines he found when examining the Carter years and the actions of others. He gives some attention to the early years of the Republic and the administrations of Jefferson and others.

Turner begins by examining some long-forgotten events along the Barbary Coast. A very young United States lost merchant mariners and often paid ransom and tribute to protect its fledgling trade. Later with the USS *Pueblo*, President Lyndon Johnson paid a price after prolonged negotiations. Turner makes a case that negotiations and paying the price have been well established as a viable option in dealing with terrorists when other options have been closed.

The author turns his attention from historical precedence to the events in Iran. He provides the reader some inside glimpses of the Carter years and the pain of trying to find some option that would meet the standards set by the president, the Congress, and the American people. He examines the reasons and lines of argument for option after option. He then examines the aftermath of the rescue attempt for the lessons the author believes this option provided.

Special attention is given to the Reagan years and the problems in Lebanon. One might think at first that Turner is attempting to justify the Carter administration's action by denigrating those of Reagan. However, he provides other basic options in light of the sheer number of hostage incidents and the range of terrorist actions that took place after the Israeli invasion and the deployment of the multinational force. These options, while not heralded as principles, do follow the basic theme that underlines Turner's writing—here and in his book about the CIA years.

Basically, the principles or policy options are (1) assassinations are neither an appropriate nor an effective counterterroristic tactic; (2) punitive military attacks are a remedy we should use but use sparingly; (3) covert actions should be undertaken, but this must be done judiciously because the probability of success is low; (4) rescue operations have a role but will continue to be risky for the United States; (5)

improved intelligence, especially human intelligence (HUMINT), is always desirable but difficult to achieve; (6) restraint of the media could be helpful, but modest self-restraint is the most we can expect; (7) economic sanctions should be used against state sponsors of terrorism, even if they take a long time to be effective; (8) defensive security is unlikely to receive sufficient attention or money; (9) deals are an option we cannot rule out; and (10) legal recourse is the option most compatible with American values.

Besides the problems with the Reagan administration's handling of the events examined, the admiral examines some other problems. Chief among these is the problem of congressional oversight. While sounding nice in principle, especially when one wants to berate the executive branch for an action taken, Turner illustrates that it can be a major problem when practiced. Fear of leaks and delays are well known. Turner provides the reader with his insights and experience.

Overall, the book is well written and is far more interesting than his earlier work. It has a greater discussion of events to help the author illustrate his points, is more comparative in a substantive sense, and has a better writing style to grab the reader's attention than the author's previous work. As they used to say in the reviewer's Marine Corps of the 1950s, "Admiral, you got yourself a 4.0—Well Done."

Peter Charles Unsinger
San Jose State University

CNN: War in the Gulf from the Invasion of Kuwait to the Day of Victory and Beyond by Thomas B. Allen, F. Clifton Berry, and Norman Polmar. Atlanta 30348: Turner Publishing, Inc., 1991, 240 pages, $19.95.

Triumph in the Desert: The Challenge, the Fighting, the Legacy by Peter David. New York 10022: Random House, 1991, 209 pages, $25.00.

The aftermath of the Gulf war has led to the publication of a wealth of books, some targeted at a specific audience and others more general in nature. *Triumph in the Desert* and *CNN: War in the Gulf* are two comprehensive, illustrated volumes that are attempts to give the reader a complete history of the war.

Both volumes begin with a review of the events that took place prior to the invasion of Kuwait. *Triumph in the Desert* has a 45,000-word lead essay that makes it easier to understand and to grasp the importance of the 160 color photographs and illustrations that follow. *CNN: War in the Gulf* has an impressive team of authors led by project director Charles D. Hyman that includes three coauthors who each have extensive military reporting backgrounds: Thomas B. Allen, F. Clifton Berry, Jr., and Norman Polmar. *Triumph* was written by Peter David, a respected correspondent for *The Economist*, and edited by Ray Cave and Pat Ryan.

The book has a comprehensive photographic panorama of the conflict and includes photographs from more than one source. Its use of US military photographs and the work of military artists gives the book a different feel than *CNN*, which is essentially a CNN news product. Both books use too many peacetime standard "canned" pictures of allied and Iraqi weapons used in the Gulf when it would have been more effective to use photographs taken in the area of operations. Numerous incorrect identifications of military hardware and badly written photo captions distract from the quality of *CNN: War in the Gulf*.

From a horrific photograph of an Iraqi firing squad and other haunting photographs of human suffering to the triumph of American technology and the soldier on the battlefield, the reader will be able to see all the events. Pictures of the F-117 stealth fighter will thrill, while the Scud bombardment of Israel and the land satellite (LANDSAT) imagery of oil damage in the Gulf and Kuwait will sicken. The losses experienced by some American families is directly captured in the pictures of the grief-stricken family of a Marine captain at Arlington National Cemetery. A brief summary of the Kurdish refugee problem is provided at the end of both books.

Unfortunately, *CNN* comes across as being too much a media event, and the "glorification" of Peter Arnett leaves the reader asking just what exactly is being commemorated, the victory or CNN's ability to cover a war live and in color? Although *Triumph* is better, it still suffers from the haste with which the book was produced. In both cases, items were left out, and it is still too early to have a comprehensive, well-researched book of the Gulf War. *Triumph* does give the reader a pictorial history of the war, while *CNN* illustrates what networks can accomplish in this day and age without necessarily having any claim to completeness or accuracy.

Finally, both books have a surprising lack of

illustrations of the air campaign, which played such a crucial role in winning the war. Members of the other armed forces will undoubtedly find similar faults as they search for good photographs and representations of their service in the conflict.

lLt Gilles Van Nederveen, USAF
Washington, D.C.

Reflections of a Warrior by Franklin Miller with Elwood J.C. Kureth. Novato, California 94949: Presidio Press, 1991, 205 pages, $19.95.

In the spring of 1969, after seeing *The Green Berets* starring John Wayne at Fort Leonard Wood, Missouri, I joined several other engineer trainees in discussing whether the film was a comedy and speculating about the number of times the hero would have been killed on a real battlefield. Franklin Miller's account of his six years of combat in Vietnam makes John Wayne's fictional hero look like some high school basketball prospect attempting to stop Michael Jordan. Fact, as Miller writes it, proves more incredible than fiction.

Miller and his coauthor, Elwood J.C. Kureth, state that they are not setting the record straight or preaching a certain point of view; their objective is to entertain. The work is a remarkable succession of war stories, likely to impress even those of us who served in Vietnam. The reader experiences Miller's growth from a "cherry" (new guy) to his earning a Bronze Star, Silver Star, and finally the Medal of Honor.

At the end of his first year in Vietnam, Miller realized that—unlike most soldiers—he did not want to go home. By his own admission, he couldn't get enough of war. He loved the challenge of leading other guys on dangerous missions. To his way of thinking, only in Vietnam could a private first class have so much responsibility, gain so much respect, and have such freedom to operate. Most important, Miller learned how to remain calm in dangerous situations. The more time he spent in Vietnam, the sharper he honed his combat skills and the less afraid he became. He truly believed that he would not be killed in Vietnam.

Miller mentions many incidents that were not related to combat. His several encounters with deadly snakes are both humorous and intriguing. His account about how his unit nearly starved to death is fascinating, especially for the reader who believes that our troops always have enough to eat. For seven days, bad weather prevented the aerial delivery of supplies. Without even emergency rations, Miller and his men might have grown too weak to defend themselves in a firefight had they not risked ambush to hunt wild game and taken the chance of revealing their location by cooking it.

After several years in airborne infantry reconnaissance, Miller successfully requested assignment to the top headquarters in Vietnam, the Military Assistance Command, Vietnam—Special Operations Group (MACV-SOG). Miller was assigned to SOG-35—the ground studies group—whose combat-oriented mission included everything from setting ambushes to capturing enemy soldiers to using wiretaps. Miller's extensive experience with weapons added to his confidence to the point that people sensed the danger he exuded. This added to his desire to stay in Vietnam since he realized that he couldn't act that way in the States.

Miller takes the reader on mission after mission and offers a superb description of what it felt like:

> There you are, skimming rapidly about the jungle vegetation as you rush toward the moment when you and six other guys will be swallowed up by a hostile jungle with no help around the corner. You're fully aware that within the next several minutes you might be killed or—God forbid—maimed. You know only too well that your survival depends mainly on your abilities to move undetected like a phantom and to shoot your weapon with deadly accuracy. You must also rely on the skills of those around you, not to mention a combination of cleverness, audacity, and luck. (page 149)

Unfortunately, Miller fails to tell enough about himself or to develop subordinate characters. We know little about his past, his boyhood, or his belief that he could not attain the same freedom or status in peaceful pursuits. I should like to know what events or persons in his past drove him to embrace the thrill of combat instead of living a more constructive life. No doubt he is different, for he loves action and feels comfortable courting death. He appears to be able to kill easily, but he is not a crazed killer. He acquired skills that are invaluable in wartime, but we never learn why he wanted them. It is hard to understand what makes him tick. More difficult still is believing that any one man could have endured such traumatic experiences and still return for more. Miller

claims he cheated death on several occasions. This is an understatement, since he was wounded several times.

Reflections of a Warrior is very difficult to put down. It is an action-packed account of some incredible happenings and fighting during the Vietnam War. Miller's account should be a treasured training resource for the armed services. He is a great storyteller and deserves much credit for recording his recollections.

Dr George M. Watson, Jr.
Washington, D.C.

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Air University Review Index

The Air University Press has published a complete index of the *Air University Review* (1947–87). This reference work contains an author index, a title index, and a cross-referenced subject index. Any Air Force or other government organization, college or university library, or similar organization with a need for this index can be placed on distribution. Requests for distribution and other inquiries should be addressed to Capt John Doherty, AUCADRE/RI, Walker Hall, Bldg. 1400, Maxwell AFB AL 36112-5532. Captain Doherty can also be contacted at DSN 493-6629 or (205) 953-6629. Base libraries may contain copies of previously published issues of *Air University Review*.

USAFA Instructor Opportunities

The Military Studies Division at the United States Air Force Academy is seeking highly qualified captains for instructor duty in the summer of 1992 and beyond. This duty involves motivating and teaching cadets in university-level courses that stress air power, the art of war, military theory, doctrine, and force employment. Since its inception in 1980, the curriculum in professional military studies has evolved into one of the most interesting and demanding areas of study at the academy. A master's degree is required of all applicants. Preferred degrees for military studies instructors are in history, military history, political science, and international relations, or in area studies of the Soviet Union, Eastern Europe, or the Middle East. Experience in tactical or strategic operations or in operationally related specialties is highly desirable. The division can sponsor a few highly qualified applicants with the appropriate background for a master's degree through the Air Force Institute of Technology (AFIT), with a follow-on assignment to the Military Studies Division. Applicants should have three to seven years of commissioned service, an outstanding military record, and impeccable military bearing and appearance. Interested individuals should consult chapter 8 of AFR 36-20, *Officer Assignments*, for application procedures or write Capt Jeff Cohen, Headquarters USAFA/CWIS, USAF Academy CO 80840-5421 or call DSN 259-3255/3258.

Recent Releases from Air University Press

Force and Accommodation in World Politics by Dr Stanley E. Spangler, 1991 (book). The author argues that the United States and its main adversary of the last half-century, the Soviet Union, have relied almost exclusively on displays or uses of military force in trying to settle differences in the international arena. Dr Spangler makes the case for conciliation and accommodation as more effective means for arriving at solutions to differences among nations. Dr Spangler is currently on the teaching faculty at the Naval War College; he was formerly a senior research fellow at Air University.

Other recent books, monographs, and papers:

Professional Military Education for Air Force Officers: Comments and Criticisms by Lt Col Richard L. Davis, USAF, and Lt Col Frank P. Donnini, USAF, 1991 (book).

Wartime Air Traffic Control by Maj Pamela A. Hamilton-Powell, USAF, 1991 (monograph).

Air Base Attack: The Promises of Emerging Technology by Maj Charles W. Nystrom, Jr., USAF, 1991 (monograph).

Implementing Propensity to Stay into Scholarship Allocation Decisions by Lt Col Michael A. Schiefer, USAF, 1991 (monograph).

For more information on these or other publications or to order publications, contact the Air University Press, Publication Support Branch, AUCADRE/PTPB, Bldg. 1400, Maxwell AFB AL 36112-5532 or call DSN 493-6452 or (205) 953-6452.

Desert Storm Submissions

Air University and Squadron Officer School are soliciting wartime memoirs from lieutenants and captains who participated in Operation Desert Shield and/or Operation Desert Storm for inclusion in an upcoming book. Submissions should be no more than 10 typed, double-spaced pages or the handwritten equivalent. Any photos that illustrate the story should accompany the manuscript, along with a biographical sketch and photo of the author. Mail your submission to Capt Michael Vriesenga, SOS/EDOA, Maxwell AFB AL 36112-5582 before June 1992. You may call Captain Vriesenga at DSN 493-2294 or (205) 953-2294. Material will be returned if a self-addressed, stamped envelope is enclosed.

New AFM 1-1

Gen Merrill A. McPeak, Air Force chief of staff, recently approved a new edition of AFM 1-1, *Basic Aerospace Doctrine of the United States Air Force*. This revision of the manual is the first since 1984 and represents a significant departure from previous versions of Air Force basic doctrine. A team of military doctrine analysts from Air University's Center for Aerospace Doctrine, Research, and Education was responsible for developing the new two-volume manual that reworks basic doctrine from the ground up. Volume I contains the concept statements that make up Air Force basic doctrine. Volume II includes 25 essays that lay the historical foundation for the development of this doctrine. Each doctrinal statement in volume I references an essay in volume II to support its validity. The publication of this new edition marks the first time the Air Force has documented the rationale for its doctrine.

contributors

Little Rock AFB, Arkansas. A pilot with more than 3,000 flying hours, he flew C-130s during his assignment at Pope AFB, North Carolina, from 1980 to 1985. For the next two years, he was an exchange officer with the Canadian Forces at Canadian Forces Base, Edmonton, Alberta, Canada. From 1987 to 1990, he was assigned to Military Airlift Command's Airlift Operations School, Scott AFB, Illinois, and served as editor of *Airlift* magazine. Major Krisinger is a graduate of Squadron Officer School and Air Command and Staff College. He is a previous contributor to *Airpower Journal*.

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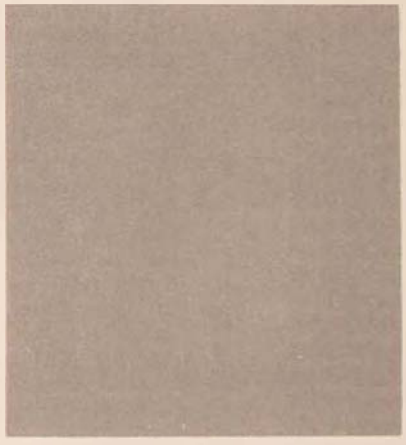
Col George E. ("Ed") Crowder, Jr. (USAFA; MSSM, University of Southern California; MS, Air Force Institute of Technology), is deputy commander, 416th Operations Group, 416th Wing, Griffiss AFB, New York. He has served in a variety of flying and staff assignments in Strategic Air Command and the Pentagon. Colonel Crowder is a graduate of Air War College.



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