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Cover Photos: This issue's cover celebrates some of the great leaders in aerospace power history. Their names are listed on the inside back cover.

A Word from the Chief
Transformational Leaders

GEN MICHAEL E. RYAN, CHIEF OF STAFF

IN MARCH 2000, the Air Force established the Developing Aerospace Leaders (DAL) initiative with a vision for our senior leaders to reach beyond their traditional career-development pyramids and tap into the broader expertise of our collective aerospace forces. We viewed the DAL initiative as a chance, for the first time in 20 years, to thoroughly review development practices and procedures, as well as research options and opportunities, and create a more deliberate development process for all airmen.

Because the Air Force is likely to change more dramatically over the next 15 to 20 years than it has since its inception in 1947, our service now demands transformational leaders. They are the visionaries able to bridge the gap between the Air Force of today and the Aerospace Force of tomorrow. Our success in this transition rests in the hands of these leaders.

Therefore, we are designing a process to deliberately develop leaders able to clearly shape the vision, mission, values, and ideas of our transition force across the full spectrum of aerospace operations, while ensuring the fullest exploitation of aerospace in support of our national security interests. This requires highly competent airmen to arrive in positions of leadership with a much broader skill set than we've deliberately developed in the past.

Early in the DAL initiative, we requested that the RAND Corporation review our current senior-leader requirements and development practices. RAND's initial report confirmed what we suspected. Although our traditional, "functionally managed" career system was responsible for producing the world's best Air Force, we had become an Air Force comprised of highly specialized competencies with too few airmen possessing cross-functional training or experience. This contrasted with our experience over the last 10 years, in which modern aerospace operations increasingly required effective, cross-functional coordination and smooth, horizontal integration within a larger mission context. We realized we had not defined the institution's larger leadership requirement, which would drive the development of all our officers under an overarching vision. Today, we have a great opportunity to provide our force with a more flexible, broad-based development path that directly addresses the institution's future requirements—a path that will create airmen better prepared to serve and lead our integrated aerospace force well into the twenty- first century.

Our aerospace operations require leaders with an increased scope of knowledge and experience beyond that of their initial specialty. They must have a fuller understanding of the development, support, employment, and sustainment of aerospace power—and must be able to articulate to the American public and its representatives the extraordinary capabilities of modern aerospace power. Preparing officers to command effective, mission-oriented units must be a deliberate process developing both competence and credibility in the mission area assigned and an appropriate passion for the responsibility of command.

It's those passionate leaders who inspire airmen to continue to move forward through the transition—leaders operating within a framework uniting our institutional vision, values, and culture. As we chart the course for our transformational leaders, the challenge is for you to think about your leadership opportunities and the trust placed in our Air Force by our nation. This collection of articles, which highlights a variety of thoughts on leadership, is an excellent introduction to a difficult topic. As you

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continue your dialogue, consider the competencies required of tomorrow's leaders. Help us articulate the complexity, responsibility, and accountability of command and its direct linkage to our success as a military

profession. Our work will be complete when all airmen possess an institutional focus, an understanding of our unique capabilities and their value to the nation, and a firm grasp of the future of aerospace power. ☐

Ricochets and Replies

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

ANTHRAX INFORMATION APPRECIATED

The material presented in "The Anthrax Terror: DOD's Number-One Biological Threat" by Col (Dr.) Jim Davis and Dr. Anna Johnson-Winegar (Winter 2000) is very helpful in the civilian side of the weapons of mass destruction/nuclear, biological, and chemical issue. We will be distributing it to our staff. Please pass my thanks on to the authors and your staff.

Michael Barrick, Assistant State Fire Marshal
*West Virginia Department of Military Affairs
and Public Safety
Charleston, West Virginia*

CASUALTY AVERSION DOCTRINE?

There are hosts of ways and means to address the issue of casualty aversion although casualty aversion and war seem contradictory. In Desert Storm, American casualties were low because weapons were placed in the hands of highly motivated sea, land, and air forces and

used to destroy the enemy. The reduction of casualties will be achieved by committed fighting personnel, their training, and force application, which will cause the maximum destruction of enemy forces while minimizing our human and material costs.

Joe F. Robinson
Glendale, Arizona

ANTHRAX AND TARGETING

The articles on anthrax ("The Anthrax Terror: DOD's Number-One Biological Threat") and targeting ("Beyond Utility Targeting: Toward Axiological Air Operations") in your Winter 2000 issue were among the best I've read in your fine publication. Keep up the good work!

Lt Col Larry Feltes, USAFR, Retired
West Chicago, Illinois

THE AEROSPACE-INTEGRATION DEBATE CONTINUES

I have a few comments on Lt Col Peter Hays and Dr. Karl Mueller's article "Going Boldly—Where? Aerospace Integration, the Space Commission, and the Air Force's Vision for Space" (Spring 2001). The authors' discussion of the space-weaponization debate captures the various positions rather clearly, but they then proceed to describe one of the

sanctuary positions as "realist." During the last few months, the nature of the debate has evolved, and I believe they missed the change. An article in *Space Daily Online*, 8 January 2000 (see http://www.spacedaily.com/news/china-01c.html), revealed Chinese involvement in the development of antisatellite systems and technologies. The Germans, Israelis, and French are all working on microsatellite technologies, each of which would be capable of utilization along the Chinese model. People with the "realist" viewpoint that the authors describe, including a large part of the Air Force's own policy establishment, should rethink their position.

As to the issue of space commerce, although the authors are correct in asserting that commodities transiting space differ from those transiting the ocean (i.e., electronic rather than materiel goods), the nature of the world economy has also changed. The Navy evolved to protect transmission of the core economic quantities of the industrial age—raw materials for processing and finished goods for trade. In the current information age, space is a major (in some cases the only) trade route for the new core world-economic quantity—data. Due to the implicit value of data in the present world, the attempt to compare satellite operation to telegraphy vice shipping is really not apropos. For example, in contrast to the authors' statements, piracy (theft of goods in transit) is still potentially alive and well, as state and nonstate actors try to expropriate sensitive information transmitted between parties through space.

The authors are correct in asserting that microsatellite technologies change the equation as to the potential nature of data transit *in low earth orbit*. The reality, however, is that the lion's share of data transmitted through space will continue in the long term to be sent through systems at geosynchronous earth orbit, where, due both to geometry and limited spaces available, the assets will remain large—and vulnerable.

Finally, the authors misuse the air-space analogy in their discussion of the treatment of airliners. Although it is correct to say that airliners are not escorted, they also don't routinely fly through war zones. People are not cargo, and the protections afforded airline traffic are (necessarily) quite different. Attacks on people (and responses to such attacks) have always been different from those on shipping. Political/legal action is expected in any attack upon persons; therefore, most aggressors are reticent to attack airliners if a political statement is not their actual aim.

Maj Barry C. Tilton, USAF
Peterson AFB, Colorado

IN PRAISE OF THE FORMER CHIEF OF STAFF

Dr. Richard Kohn's interview with General Fogleman ("The Early Retirement of Gen Ronald R. Fogleman, Chief of Staff, United States Air Force," Spring 2001) was excellent. The general's words need to be heard. Perhaps as a follow-up, the author could interview former secretary of defense William Perry and General Fogleman for their comments on the legacy of former Air Force chief of staff Gen Merrill McPeak and its impact on the Air Force, as well as General Fogleman's effectiveness in the tank and on the hill. General Fogleman and Miss Jane, we are grateful for your service.

Maj Steve Lenzi, USAF, Retired
Honolulu, Hawaii

Leading Airmen

Maj Gen Charles D. Link, USAF, Retired

Editorial Abstract: In this leadoff article for our special leadership edition, General Link samples theoretical as well as pragmatic perspectives of leadership. He identifies mission accomplishment as the imperative for the military leader but also reflects on the "transformational leader," who is able to harmonize the desires of both leaders and subordinates into a common goal of accomplishing the mission.
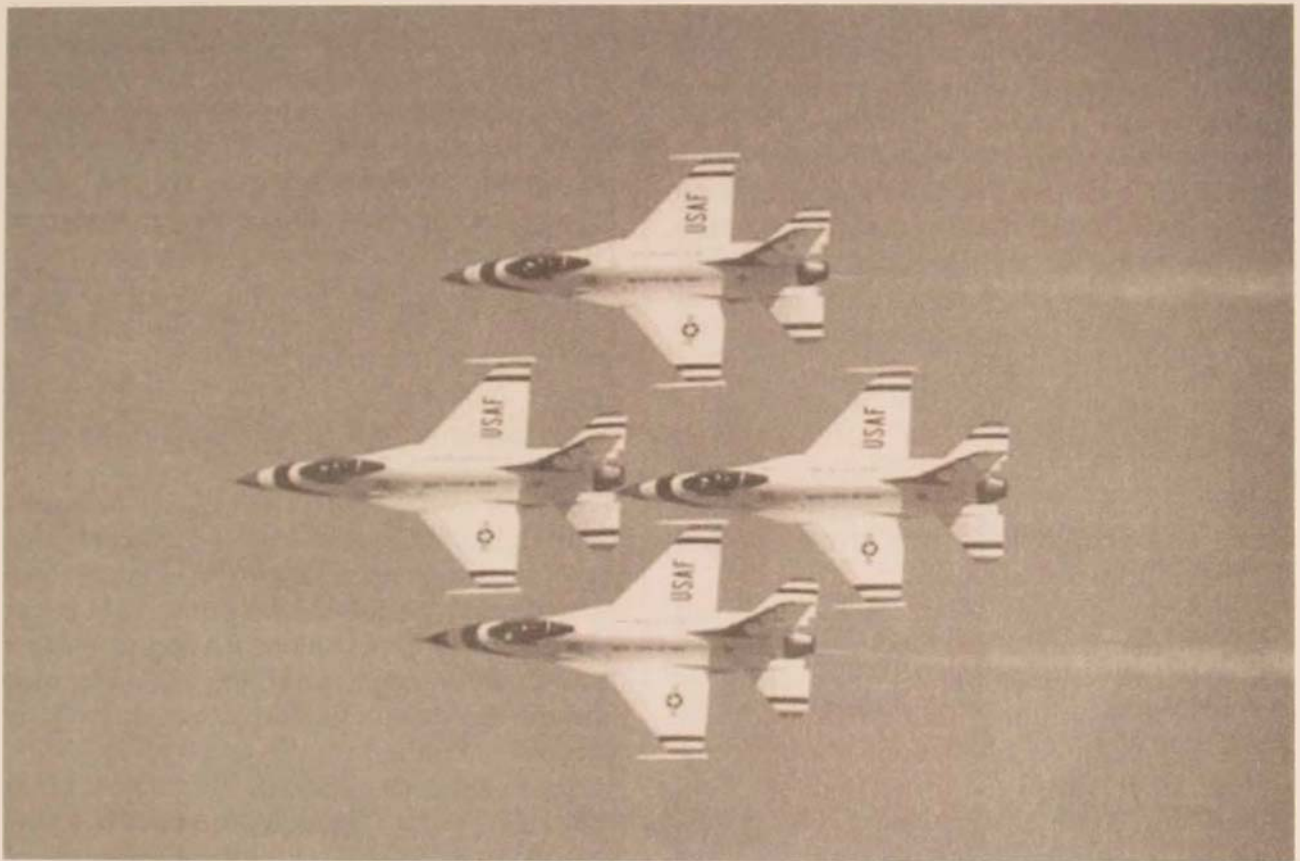
IN SEPTEMBER 1947, our Air Force began its journey as a separate service. Much of what airmen believe about leadership was born in our shared heritage with our Army brethren. After only 10 years of separate development, the differences in leadership approach between soldiers and airmen were already obvious, even to the untrained eye of a 17-year-old aircraft mechanic. In 1957, as a new Air Force one-striper, I enjoyed an opportunity to participate in a field exercise involving both Army and Air Force personnel. The young soldiers were accustomed to being told exactly what to do—then they did it. The young airmen wanted to know why they were there and what was the

point of the exercise. Understanding the nuances of that contrast was beyond me then. Today, I believe I was witnessing the difference between leadership resting primarily on power or authority and leadership acknowledging the value of the follower perspective.

A few years later, as an officer candidate in Class 63D (the last Air Force Officer Candidate School [OCS] class), a portion of our leadership course included viewing and then discussing the movie *Twelve O'Clock High*. The lesson objective rested in the analysis of two very different leadership styles practiced by successive commanders of a World War II bomber group. Col Keith Davenport was relieved of command when higher authorities became convinced that poor mission performance was a result of Davenport's "over-identification" with his subordinates. His replacement, Brig Gen Frank Savage, adopted a crushing discipline that led to improved mission performance and, eventually, to higher morale. I believe the lesson I took away that day was that in the profession of arms, the mission must come first.

Over the next 10 years or so, what I learned about leadership was purely through informal settings, more by circumstance than by design. It wasn't until I attended Air Command and Staff College that I had another formal training opportunity.

Even though this block of training was more in depth than my OCS experience, I honestly can't remember learning anything about "leading airmen." I do remember some fairly sophisticated discussions about "situational leadership" as presented by Paul Hersey and Kenneth Blanchard. Their *Management of Organizational Behavior: Utilizing Human Resources* provides an excellent survey of the development of leadership theory.[1]

In fairness to the "educators," our professional military education would not be complete without such a survey of leadership theory. We learn that the twentieth century has been characterized by a shift in emphasis from the leader to the follower, from a focus on the needs of the organization to the needs of the individual. Unfortunately, such theory-based learning tends to overemphasize the characterizing tensions of the various examples, often at the expense of more practical application. Many of us are familiar with various diagrams illustrating the competing demands of a leader whose interests are balanced between production (the mission) on one hand and subordinates on the other. The leader who achieves the optimal balance of these competing interests is the "team" leader.[2]

In practice, I find this to be an unhelpful notion. After all, in our profession, the leader and the followers have no other legitimate basis of relationship than the mission. Emphasis on a "tension" between the mission and the people assumes the people in the organization aren't as interested in accomplishing the mission as is the leader. While this may be possible, it is not necessarily a useful premise. In my experience, leaders who see themselves in this dilemma often spend too much time emphasizing the needs of their people to the boss and the needs of the mission to their people, ultimately disappointing both.

Yet another "either/or" hypothesis presented in our leadership curriculum is the Theory X and Theory Y approach described by Douglas McGregor.[3] In this construct, Theory X leaders assume followers are either lazy or otherwise incapable of productive effort without close supervision. Theory Y leaders assume followers are bright, self-motivated, and mission oriented. Here again, we find the construct centered on the assumptions of the leader and described in generally polar terms. In practice, most leaders will find that any group of followers will present ranges of self-motivation and capability. The Theory X leader who relies primarily on his or her authority and close supervision will not likely evoke the best possible performance from the group. The Theory Y leader may create a similarly undesirable effect and wind up like Colonel Davenport—popular but ineffective and out of a job.

Rounding out the review of our leadership-training repertoire is a theory by James Mac-

Gregor Burns, one that I believe best applies to the profession of arms. In his 1978 work, *Leadership*, Burns describes "power wielders" as those whose leadership is designed to marshal resources to achieve ends or goals of their own.[4] He contrasts leadership of human beings as designed to engage followers in ways that motivate them to achieve goals mutually held. As much as any construct I've encountered to date, Burns touches on the situation of the military leader. On the one hand, the military leader is issued followers and provided the legal authority to coerce them to achieve goals. On the other hand, the followers of the modern military leader may not require coercion. Indeed, they may perform at much higher levels of productivity if they are engaged. After all, there is no reason to assume they are any less interested in mission performance than is the leader.

Burns goes on to describe "transforming leadership" as a practice in which one or more persons engage with others in such a way that leaders and followers raise one another to higher levels of motivation and morality.[5] Transforming leaders create environments in which leader and follower purposes become fused. Contrast this with his description of transactional leadership, in which leaders and followers retain separate purposes. The transactional leader may provide something of value to the followers in exchange for the support or labor of the followers. The purposes of leader and followers remain separate and distinct.

So far, we have focused—as has most of the business literature—on half of the leader/follower relationship: the leader. Robert E. Kelley reminds us that "followership" may be as important as "leadership." Writing in the *Harvard Business Review*, Kelley points out that leader and follower are both roles thrust upon people who may or may not be prepared to carry them out. He also points out that most managers play both roles, sometimes simultaneously. Kelley notes further that our preoccupation with leadership (resulting from the recognition, glamour, and attention focused on leaders) leaves us little time for serious attention to followership.[6]

Kelley categorizes followers as "effective followers," "yes people," "alienated followers," or "sheep," depending upon whether they are active or passive and whether they are independent, critical thinkers or dependent, uncritical thinkers.[7] In this context, the value of "effective followers" is obvious. Perhaps more importantly, his categories help us understand that followers have responsibilities just as important as the responsibilities we assume of leaders.

What Does All This Have to Do with *Leading Airmen?*

Consider for a moment that the vast majority of our Air Force members are performing simultaneous roles of leader and follower. Consider also that we now have more than 50 years of experience leading and following in the particular circumstances of the Air Force. Have we not now developed a leadership heritage unique to the Air Force? Should we not try to identify the model behaviors of successful Air Force leaders and followers? Should we not hold these behaviors up as examples in our education and training environments?

While the Air Force is composed of a broad variety of related disciplines, most of them relate to a central tenet of Air Force operations: centralized control and decentralized execution. At their most elemental level, centralized control and decentralized execution require leader vision and subordinate initiative. The Gulf War, the first in which theater airpower was brought under the command of a single airman, illustrates the concept. Over each 24-hour period, the command intent of a single leader was carried out across a broad battle space by 300 to 500 flight leads and mission commanders acting and reacting against thinking adversaries.

On the various flight lines supporting the effort, similar leader/follower behaviors were observable as fuel, supplies, munitions, and aircraft were marshaled into a coherent effect. Spanning several continents, a network

of aircraft under the centralized control of Air Mobility Command distributed the awesome capabilities of the US military to decentralized locations. Air Force Space Command networked a variety of capabilities to provide improved warning to decentralized locations around the theater. Air Combat Command marshaled resources from around the globe to support the effort in the Gulf.

Aerospace power grows out of the contributions of many airmen, often doing different things in separate locations and using innovation and initiative to support a single vision. It is what we do.

Our Emerging Leader/ Follower Heritage

Our original identity as a service and the central component of our contribution today rest on our operational flying forces. Within these forces, one can find many useful clues to Air Force leader/follower behaviors. As one learns to fly, the leader (instructor pilot) and the follower (student) carry out very specific responsibilities, gradually shifting responsibility for their combined task from the leader to the follower until the student finally solos. The new pilot learns to lead himself or herself, exploring the boundaries of this new, three-dimensional freedom.

In some operational environments, the new pilot next learns followership as a wingman. These responsibilities include maintaining an appropriate position relative to the lead aircraft and, importantly, covering the leader's blind spots and calling out "bogeys" for the flight. Both the leader and the wingman share responsibility for mission success while performing separate and distinct roles. After demonstrating prowess on the wing, the pilot will progress to flight-lead status. As a flight lead, the pilot will first lead one wingman and then an additional two-ship as a flight of four. Throughout this progression, the pilot will be graded on his or her ability to plan, think ahead of the flight, and operate the flight in consideration of the capabilities of the wingmen. Eventually, the experienced

pilot will learn to share his or her planning tasks with other flight members, involving their diverse experiences and backgrounds in sculpting the best plan to accomplish his or her vision.

In other operational environments, the new pilot will be assigned as a copilot, a member of a larger aircrew. In this environment, he or she will learn to command an aircraft in which the contributions of other crew members are fundamental to mission success. Once again, the pattern of shared planning and diverse operational duties organized around a single vision will manifest itself.

In our missile forces, success depends on the development of highly disciplined patterns of behavior in which centralized control is "decentrally" executed with profound precision. The patterns of mutual trust and reliance between leaders and followers found in the flying forces are replicated here.

Our space forces, involved in development, buildup, launch, and satellite-control activities, operate in an environment demanding perfection in both the leaders and the followers. Every space launch is an example of centralized control and decentralized execution—especially when one considers the myriad of related activities that must come together to assure success. In addition to the launch itself, there are telemetry, range safety, control handoffs, and on-orbit factors —all orchestrated to achieve a single mission. Throughout our expeditionary aerospace forces, we can find examples of centralized control and decentralized execution—leaders communicating vision, trusting followers with initiative, and getting important jobs done and missions accomplished across the globe.

Unfortunately, in our Air Force today, we can find less attractive examples of leadership and followership as well. We can find leaders who rely exclusively on their legal authority to command respect and obedience among subordinates. They get the job done—barely, and often at the expense of their subordinates. And we can find followers who are alienated, followers who are "yes people," and others who are merely sheep.

In spite of reports or rumors to the contrary, I believe the majority of airmen operate at the higher end of the leader and follower behaviors we have been discussing. The extraordinary performance of our Air Force in meeting a variety of tough challenges over the past 10 to 15 years attests to the quality and dedication of leaders and followers. By focusing more deliberately on the leader/follower behavior we would like to encourage, I believe we can do even better.

In summary, every airman is a follower; most are leaders. The nature of Air Force operations—combined with the highly educated, trained, and disciplined force—begins to characterize preferred leader and follower behaviors. The pace and tenor of day-to-day operations involving airmen performing as both leaders and followers and united in a concept of service above self further characterize these preferred behaviors.

What to Do

Why would we not hold up the transforming leader—the leader who works very hard to understand his or her mission and then labors to produce an uplifting vision worth communicating to followers—as the ideal Air Force leader? And why would we not hold up the effective follower—active in pursuit of or improving the leader's vision, thinking independently and critically, and sharing responsibility for mission success—as the ideal Air Force follower? And why would we not point out that almost every Air Force member is performing simultaneously as leader and follower?

Nothing here should suggest that we would ignore fundamental tenets of military service. Our "in extremis" mission requires an ultimate loyalty up and down the chain of command. I would argue that these fundamentals of military service should define the floor of acceptable leader/follower behavior, as opposed to the "preferred" or even the "norm." If we permit our military framework to rest on tyrant leaders and sheep followers, we will ignore our most noble responsibilities

and opportunities, both as leaders and as followers.

Why would we not hold up the transforming leader—the leader who works very hard to understand his or her mission and then labors to produce an uplifting vision worth communicating to followers—as the ideal Air Force leader?

A more valuable approach would be to identify the desired, or preferred, behaviors of Air Force leaders and followers. Then, our educators and trainers could develop more focused, even inspiring, examples of the kinds of behaviors we would like to encourage.

Some will point out that not every airman will be capable of these behaviors. While that may be true, I would suggest that such a purposeful approach to defining preferred Air Force leader/follower behaviors will produce more of these desired practices than are otherwise achieved. Many of our officers find their way to best practices in Air Force leadership and followership on their own. Others would benefit from clearer directions.

Finally, I would like to suggest a sense of urgency in this endeavor. Our Air Force is facing fundamental challenges, not in making itself more relevant but in meeting expectations built on superior performance. Recently, 40-some years after my first leader/follower observation, I visited our deployed airmen in Joint Task Force Southwest Asia. Once again, I was reminded of the extraordinarily bright, intelligent, and motivated airmen who elect to serve in our Air Force. I observed how today's airmen face new leadership challenges. Air expeditionary operations routinely pull our people out of one leader/follower relationship and set them down in another, albeit temporary but no less critical. The wide range of practices and expectations with regard to Air Force leader-

ship and followership complicates achieving the best results in these circumstances. Over the next few years, our Air Force is likely to

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transform itself more than it has since Orville and Wilbur began tinkering in their bicycle shop. Developing the very best leaders and followers is a must.

Our sister services have inherited solid leadership constructs that rest on a legacy of service characterized by their unique operations. In the Army, one can argue that the center of gravity, the touchstone, revolves around a concept of "troop leadership." For the Navy, it's "survival at sea," emphasizing the captain's authority and the disciplined response of the crew. After more than five decades of developing and perfecting our unique aerospace capabilities, it is time our Air Force found, identified, and taught our best practices for "Leading Airmen."

As our chief of staff has noted, "America needs and deserves the best airmen we can create. Our Air Force needs and deserves the best leaders we can develop."[8] □

Notes

1. See Paul Hersey, *The Situational Leader* (Escondido, Calif.: Center for Leadership Studies, 1984), 50; and Paul Hersey and Kenneth H. Blanchard, *Management of Organizational Behavior: Utilizing Human Resources*, 6th ed. (Englewood Cliffs, N.J.: Prentice Hall, 1993), 473–92.

2. Hersey and Blanchard, 110. As the authors note, Robert R. Blake and Jane S. Mouton developed some of these leadership concepts.

3. Ibid., 59; and Douglas McGregor, *The Professional Manager*, ed. Caroline McGregor and Warren G. Bennis (New York: McGraw-Hill Book Company, 1967), 79.

4. James MacGregor Burns, *Leadership* (New York: Harper & Row Publishers, 1978), 18–21.

5. Ibid., 4 and 106.

6. Robert E. Kelley, "In Praise of Followers," *Harvard Business Review*, no. 6 (November–December 1988): 142–48.

7. Ibid., 145.

8. Gen Michael E. Ryan, Commander's Notice to Airmen (NOTAM) 01-02, "Developing Aerospace Leaders," 22 March 2001.

The real leader displays his quality in his triumphs over adversity, however great it may be.

—George C. Marshall

Responding to the "Developing Aerospace Leaders" Initiative

A Master Attack Plan for Reforming Undergraduate Professional Development

COL TOM DROHAN, USAF
COL DOUG MURRAY, USAF

Editorial Abstract: Developing twenty-first century aerospace leaders will begin in the traditional way, with precommissioning education and training. Effective education in the basics of aerospace power and military principles will be more crucial than ever. Colonels Drohan and Murray propose an integration of the commissioning sources, led by the Air Force Academy, to produce a curriculum that more strongly emphasizes aerospace-power strategy while maintaining each source's unique character.

THE DEVELOPING AEROSPACE Leaders (DAL) initiative came about after senior Air Force leaders recognized that Air Force flag officers are not well prepared to assume senior leadership positions, which entail carrying out national security objectives in the twenty-first century.[1] To address this shortcoming, the DAL initiative calls for nothing less than a major revision of the process of officer development from cradle to grave. Professional development at the undergraduate level must be an integral part of this revision.

At the outset, it is important to note that the purpose of precommissioning professional development is not to produce the aerospace officer outright but to provide the foundation upon which aerospace competencies are built over a period of time. In what may be a career-long journey, the US Air Force Academy, Air Force Reserve Officer Training Corps (AFROTC), Officer Training School (OTS), and Air National Guard (ANG) Academy of Military Science are but the first steps. If precommissioning programs are to provide a foundation for developing aerospace leaders, each of these commissioning sources needs to develop a plan to focus on that common goal. They must develop a master attack plan—a
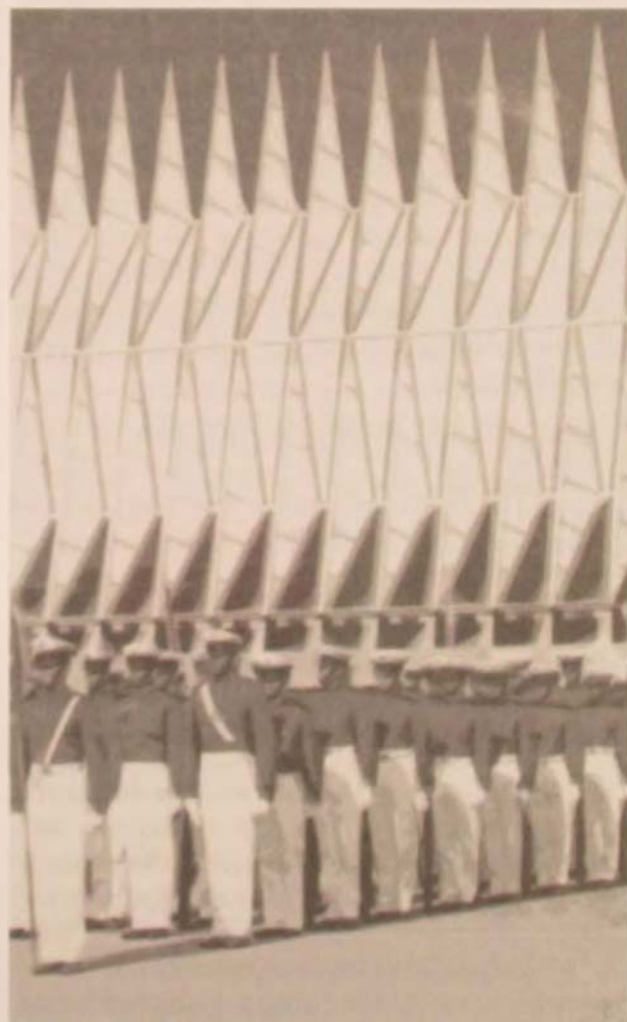
new paradigm for reforming undergraduate professional development.

This article first addresses why there is a need for the new paradigm. It then correlates those factors with the requirements stated in the DAL initiative, which is itself a response to these imperatives, and finally outlines the major elements of an attack plan—the linchpin of which is a three-tiered integrative process.

The first tier requires integration among each of the commissioning sources. Indeed, differences among the AFROTC, OTS, ANG Academy, and Air Force Academy programs provide added value to all. The key to success is to combine the relative strengths of each source rather than separately address weaknesses.

The second tier involves integration within each commissioning source, specifically between education and training. In the academic world, one often finds great debate over these two disciplines. There need not be. Both are important. Both need to work in harmony because the juncture between them is very gray. Too often, one finds the two developmental processes left undefined due to the assumption that course content determines the distinction between them. Therefore, the following working definitions of education and training allow for their similarities but acknowledge important differences:

Education: (a) developing intellectual capabilities based on broad principles or guidelines (b) to understand or explain (c) relatively ill-defined situations and problems.

Training: (a) engaging in disciplined practice according to specific principles or guidelines (b) to reach decisions or perform tasks (c) in more recognizable situations and problems.

The extent to which we train and/or educate is a matter of choice, and the education and training processes are inherently complementary, controllable by the individual instructor, and therefore worthy of integration. The third tier of integration requires each commissioning source to better integrate its individual courses that comprise education and individual programs that comprise training.

The Air Force Academy is the bellwether in this threefold effort to better integrate each of the commissioning sources, their individual education and training processes, and the courses and programs within each of these processes. It alone possesses the concentration of expertise, manpower, and material resources. While the primary mission of the Academy is to graduate second lieutenants and, as a by-product, mid-level professionals from its staff and faculty, the Academy must take on the responsibility to set the pace for all officer development. This lead role was first prescribed during the initial phase of the DAL initiative.

That role, however, does not reject but builds upon the fact that each of the commissioning sources fills specific requirements in preparing young men and women to be professional officers. The sources should complement and supplement each other's efforts. The process of integration maximizes the relative strengths of each of these programs. The Air Force Academy is equipped to produce graduates with a broad military training experience and an equally diverse academic core that addresses all of the DAL competencies. ANG Academy, AFROTC, and OTS graduates, on the other hand, have fewer training opportunities but more time for in-depth inquiry into academic disciplines that enhance specific DAL competencies. Taken together, professional development at the undergraduate level lays a firm, integrated foundation upon which the DAL vision can be realized.

But why are the vision and the initiative necessary? The answer rests on a set of imperatives for change.

Professional Context: Imperatives for Change

Numerous factors underlie the DAL initiative and demand change in the way we develop our institution's leaders. First, key transformations in the post–Cold War international environment impact Air Force roles and missions in the twenty-first century. Expanding

complexity; uncertainty; regional instability; and unrest from cultural, ethnic, and religious diversity all mean that newly commissioned officers cannot anticipate the threats they will likely face. They will need broad understanding of cultures, politics, economics, and developments in science and technology.

Second, the new security environment requires that leaders understand professional requirements in depth. Roles and missions are now more diverse and uncertain, demanding reform. We are currently in an era of obfuscated objectives, murky missions, and tampered target sets—and everyone expects aerospace power to be the panacea. Military forces increasingly receive taskings to take on non-combat roles but in the process often find themselves no less vulnerable. Survival will depend in no small part on the competence of aerospace leaders. Even the Air Force's very identity is a new leadership challenge, and both the Aerospace Integration Task Force and the Commission on Air and Space have explored alternative futures on the leadership horizon.

The third reason for reform is a perceived rupture in civil-military relations. Increasingly, civil-military experts point to an expanding chasm between the professional military and civilian society.[2] One can observe, for example, an absence of widespread military experience in government, especially in the US Congress. This is particularly problematic when the success of the new noncombat roles and missions of the military is dependent upon a closer working relationship with the civilian sector. In Operation Allied Force, for instance, substantial differences existed between the views of political leaders and the judgments of aerospace professionals with regard to what constituted justifiable targets.[3]

Furthermore, differences among alliance partners' strategic objectives complicated aerospace operations by denying the use of valuable resources in the fight. Graduates must be prepared to operate in these diverse coalitions as well as independently. Another manifestation of the civil-military rift is the divergence of political sentiment between the military and some civilian sectors.[4] This third

factor alone necessitates looking at better ways to explain the flexibility and limitations of aerospace power to those outside the profession by increasing opportunities for interaction between undergraduate military students and their civilian counterparts. Prior to commissioning, cadets need to explore civil-military issues fully so that they understand and accept the constitutional role of the military in American government and society.

Finally, our students must come to grips with the well-known technological explosion and the revolution it has created in military affairs. Weapons improvements; smarter satellites; lasers; and artificial-intelligence command, control, and communications all combine to produce unforeseen capabilities among aerospace, ground, and sea forces. And to accompany such capabilities come new vulnerabilities to challenge future leaders.

This demands a change in the way we educate and train aerospace professionals, a point recognized in *Air Force 2025*, which calls for a revolution in military education to correspond to the revolution in military affairs:

> This paper demonstrates that a new military education and training architecture, supported by investments in key technology components, will produce a Brilliant Force capable of meeting the challenges of 2025. Engagement in non-traditional missions will increase, and operations will be joint as well as combined. The demand for highly skilled people will intensify, and the pace of technological change will increase. Thus we will need to produce brilliant warriors. To do so we need an agile and adaptive education and training system to meet the demands of a constantly changing, complex, external environment.[5]

The best place to start developing aerospace leaders is at the beginning—in precommissioning programs that will provide the right kind of professional foundation.

Three-Tiered Paradigm: A Master Attack Plan

The Air Force Academy must take the lead in developing the three-tiered integrative

process that is at the heart of a new approach to undergraduate professional development. But if it is to take the lead in integrating each of the commissioning sources, it must first better integrate its own programs. Historically, the Academy has implemented programs separately, creating stovepiped execution and unfortunate gaps in understanding. Too often, education-oriented agencies regard training as something less than education, if not mindless indoctrination. Likewise, training-oriented offices sometimes suspect that academic pursuits are professionally irrelevant. Separate precommissioning training and education will no longer work because contemporary issues require both a broad intellectual understanding of complex problems and the decisive application of appropriate military force in support of national and coalition interests. This need to integrate training and education is particularly relevant to the Academy, which began boldly yet schizophrenically with an uneasy combination of diverse training and education goals. As the most entrenched precommissioning institution, with its own heritage, organizational biases, and bureaucratic barriers to reform, the Air Force Academy has a history of military education and training that provides a good case study for understanding the challenges of Tier 2 integration. In short, if the Academy is unable to better integrate its programs, the other commissioning sources never will.

Integrating across Mission Areas within an Institution (Tier 2): Historical Challenges at the Air Force Academy

On the one hand, the Academy emerged as a carbon copy of West Point's military and athletic-training programs—dominated by West Point graduates' traditional training emphasis on structured discipline and rote memorization of factoid-style knowledge. Today, the Academy still tends to implement military training as a "how-to" menu of guidelines and directives to complete specific tasks, although there is recent movement toward a broader training philosophy of leadership development in the Academy Training Philosophy, in-

stituted by the current commandant. Athletic training began with an unabashed commitment to National Collegiate Athletic Association Division I football. The idea that competing to win would build an ethos of maximum effort, perseverance, and team spirit led to an intramurals-for-all program and a robust physical education curriculum in the spirit of the 1919–22 West Point reforms led by Brig Gen Douglas MacArthur, superintendent at that time.

On the other hand, the Air Force Academy's early leaders initiated a clear departure from West Point's seminary-academy model of a totally prescribed curriculum and a daily recitational approach to learning.[6] This change led Academy programs toward more general curricula and greater choice for cadets—more fields of study, more opportunities for core substitutes, more variety in electives, and more academic majors.

Over time, the Academy has retained its dual personality of traditional training programs and a modern curriculum. But outside observers and new arrivals see an overloaded training and education structure that rather grudgingly produces incremental changes. Indeed, taken by themselves, modest changes made sense at the time and have yielded some first-rate individual programs. Examples of key incrementalism include the addition of summer military-training programs; more intercollegiate, intramural, and club sports; more academic departments and majors; expansion of the core curriculum; and the institution of the Center for Character Development.

A Legacy of Nonintegrated Programs. In 1954, just before legislation passed that established the Academy, Lt Gen Hubert R. Harmon (soon to be the Academy's first superintendent) testified that the distinctiveness of the Academy ought to ensure that its graduates would be "air-minded and thoroughly indoctrinated in all aspects of air operations."[7]

Due in part to the dominance of West Point graduates in key positions at the new service academy, however, the military-training system mirrored that of the traditional indoctrination

at West Point—a fourth-class versus upper-class system rather than a four-class system, a highly structured cadet schedule, attention to details, forced discipline, built-in pressure to stress cadets, drill and ceremonies, specified responsibilities and accountability, and so forth. The benefits of this indoctrination have been accepted partly because of its merits, partly through lack of proven alternatives, and partly due to the inertia of precedence—sometimes acknowledged as the "WHITLY [We had it tough last year] syndrome."

The education program at the Academy, however, was markedly different from the norm. All Academy professors had graduate-level academic credentials—the only service academy faculty at the time that could make such a claim. The desire to create the best academic program in the nation led to the unprecedented achievement of gaining accreditation before the first class graduated. As a result, the early years produced not only a broader prescribed core than the other academies, but also a rapid increase in the number of semester hours required to graduate (129 in 1957; 146 in 1960). The addition of 50 hours of airmanship studies and physical education during the academic year effectively levied on cadets no fewer than 180 semester hours of academic, military, and athletic programs.[8]

Few people with actual military experience would dispute the value of both the training and education programs at the Air Force Academy. The contentious issue remains the extent to which these programs should be separated or integrated and the time allotted for each activity. Despite the desire to produce an Academy experience that builds "the whole person," training and education processes at the Academy have been separate endeavors from the onset.[9] The effectiveness of each mission element has depended on the degree of harmony among the superintendent, dean, commandant, and—more recently—the director of athletics. This has resulted in periods marked by academic innovation and upgrades (McDermott reforms in the late 1950s to mid-1960s), followed by periods of tightened training. In addition, the short duration of superintendent and commandant assignments to the Academy relative to most deans' tenures has resulted in frequently changing policies and priorities between the academic and training elements.

Cadets and Academy graduates tend to refer to these buffeting policy changes as a pendulum that swings back and forth, rather than some sort of progressive model. Mission priorities competing for cadet time exacerbate the problem. In 1956 Col Robert F. McDermott (later dean) recognized the tendency to overschedule cadet time:

> If you schedule a man's activities six days a week and half of Sunday, you have reached the ultimate in discipline. You are producing the perfect follower. . . . Leaders develop from a system where a man has many opportunities to solve problems, make decisions, and assume responsibility for the decisions he makes. He has to have time to think, time to sit and time to reflect. . . . We have no right to isolate him mentally for four years, but we are doing just that by the simple device of not giving him enough time to pursue his own interests. If he takes the time, he does so at the risk of failure in one or more programs.[10]

Past Frameworks. How has the Academy attempted to reconcile competing time demands on cadets among separate programs? One view proposed in 1979 by John Lovell is that academies have tried to combine the liberal educational values of Athenian society with the authoritarian military ideals of Spartan society.[11] The tension between these two endpoints on a spectrum of ideals accounts for frequent changes in programmatic priorities at service academies. Lovell argues that the tension reflects the fact that service academies have not reconciled these opposed ideals (and opposed mission-oriented implementation bureaucracies); this results in a frustrating mediocrity in which one adequately achieves neither Athens nor Sparta.

The Academy's official framework involves describing the academic and training programs as separate "pillars" of excellence (along with the athletic and character pillars) that somehow congeal in an individual cadet to produce an officer with outstanding potential. The

pillars represent the elements that support a cadet's professional foundation of officership.

An alternative perspective is based on the assumption of separate mission elements attempting to maximize their programs. Each mission element is loath to reduce its programmatic claim on cadet time out of fear that one or more of the other mission elements will take its place. One version of such a model depicts a compass with a cadet standing in the middle. Instead of pointing the cadet to a common objective, the four elements (academics, athletics, character development, and military training) located at the cardinal points of the compass schedule and pull the cadet toward different specific objectives in different directions.

In 1958 the Army commissioned a board to identify the key characteristics its officers needed to meet the challenges of the 1968–78 period. The Ewell Board recommended a broadened curriculum based on external developments: "The inroads of physical science and political science into the military realm demand military leaders who are well based in these areas and who have the intellectual curiosity, the initiative, and the quality of creative thinking which will enable them to expand their base of knowledge in a flexible manner, and apply it to ever-changing situations."[12]

One finds elements of these various frameworks in the vision statements, mission statements, and objectives put forth by today's Air Force Academy mission elements. The Academy's strategic plan even refers to integration across mission elements in terms of character development, calling for "integrating character initiatives into all cadet programs." Other than character development, unfortunately, the plan refers to integration only in terms of efforts within separate mission elements, such as integrating the core, elective, and major curricula.

However, a good example of what one can achieve in terms of cross-mission integration of academic and military-training programs is the creation of the summer program—Global Engagement. This initiative began when the commandant acted on an opportunity to build upon two similar summer training and education programs. The commandant managed Operation Air Force (OAF), which sent many cadets to an Air Force base to experience current operations, and the Department of Civil Engineering managed a substitute program for OAF, Operation Air Force Civil Engineering, which sent civil engineering majors to an active duty base to practice combat support after field training at the Academy. Capitalizing on the civil engineering training area's facilities, the commandant developed a 10-day program called Global Engagement, in which all cadets would participate. Active, Guard, and Reserve duty mission-support officers deployed to the Academy to augment the instructor staff, teaching basic skills needed to run a bare-base operation.

Through Global Engagement, the commandant promoted training goals that prepared cadets for the Expeditionary Air Force they would enter upon graduation and supported educational goals in at least two academic areas. First, the Department of Civil Engineering incorporated a base-level war game in its core course for all third-class cadets and adjusted the content of its elective course in field engineering to mesh with the Global Engagement program. Second, the Education Group coordinated the content of its theater-level air-campaign war game (required of all second-class cadets) to flow with the Global Engagement and civil engineering scenarios. Due to the initiatives of the commandant and the Department of Civil Engineering, this program integrated training and educational goals instead of serving as only another stand-alone time commitment for cadets.

Relevance to All Commissioning Sources. This example of successful integration, as well as the four factors for reform reviewed earlier, invites hard questions about the possibilities of integration and the relevance of current programs in all of the commissioning sources. The first three factors—uncertain threats, expanded military roles, and ruptured civil-military relations—require on-scene educational experiences in diverse international

conditions. Yet, only a handful of Academy cadets and almost no AFROTC, OTS, or ANG Academy cadets have the opportunity to experience the Expeditionary Air Force, obtain postings in US embassies, serve on International Military Evaluation Teams, or work with civilian governmental employees. A variety of academic courses in foreign-area studies could precede or follow such summer programs. Likewise, courses in acquisitions or operations research could be linked with summer assignments on the Air Staff or in budget or policy offices. Engineering and science courses fit well with weapons or battle laboratories. The fourth factor of technological change calls for new methods and programs such as virtual reality, information warfare, and space operations. It is time to consider accompanying space-operations training with flight training, realizing that the Wright brothers' innovation was spurned at the turn of the last century. Why shouldn't initial space training accompany the existing initial flight training? Partnerships with operational units could be built into course syllabi, enabling cadets in advanced courses to apply what they learn in the classroom to actual problems and real issues.

Existing programs, although useful to the last century, have only marginal relevance to the emerging security environment. For instance, what is the operational value of parachute training, rifle drills, and marching in formation for the aerospace officer, compared to flight or satellite skills, war gaming in an operations center, or even physical fitness? One may pose similar questions about the Academy's rigid curriculum, consisting of a core academic program so broad that many requirements are greater than those of majors in the top schools in the country. When faced with such alternatives, we tend to weigh the options in a zero-sum fashion and then add more programs rather than transform or replace sacred cows.

Without more integrated programs, it is possible that the banquet of separately pursued, excellent programs at each of the commissioning sources is choking the relevance of the total experience of our cadets. In so doing, such programs fail to provide the education, training, and experiential base required for the core competencies set down in the DAL initiative. We need to integrate these excellent programs with a common vector toward what must become the fundamental purpose of professional development at the undergraduate level—producing officers to lead others in securing our nation's interests and values.

Integrating within Mission Areas in an Institution (Tier 3): The Academy Experience

The third tier of integration is in many respects the place where the overall process ought to begin. Before one can best integrate education and training processes across mission areas, one should understand the content of each and the ways in which the courses and programs that comprise them relate to one another. Instead, as the Global Engagement example suggests, Tier 2 integration has occurred first, because of somewhat random, common interests. The Department of Civil Engineering had an interest in teaching wartime basing-support skills, which coincided with the commandant's interest in a training program to prepare for the Expeditionary Air Force.

The third-tier effort examines individual education and training processes and disaggregates their content to determine what is being taught or trained and how that content relates to course or program objectives, DAL requirements, and the four sets of imperatives reviewed earlier. This effort does not target existing academic courses or training programs but the capabilities and competencies that these courses and programs develop. After one has identified these competencies, it is much easier to compare them with those identified by the DAL initiative and derived from the four sets of imperatives. One can then reaggregate the result of that comparison and assessment of competencies into new, perhaps interdisciplinary, courses and programs.

The disaggregation/reaggregation process effectively would be a comprehensive examination of the Academy's and the other commissioning sources' education and training programs. Taken seriously, it is no less than the analytical tearing down of academic fiefdoms, training rituals, and athletic recruitment practices for the purpose of rebuilding a curriculum and training program with a professional focus on aerospace power.

One instance of Tier 3 integration at the Academy occurred when the Departments of Law and Political Science realized they had been teaching two separate courses on space and that these courses had complementary content. They disaggregated the courses, assessed the capabilities and competencies addressed in each, reaggregated the results, and produced a single interdisciplinary course on space law and policy.

Another example occurred between the Education Group and the Training Group in a realignment of education and training processes. The Education Group transferred general military-training functions and publications to the Training Group, allowing the former to develop faculty expertise in aerospace power.[13] Training Group programs underwent review for relevance, an ongoing process. Recently, this resulted in the creation of Operation Air Force Space, a summer education and training program that will introduce cadets to space and missile operations.[14] These two modest examples demonstrate that disaggregating education and/or training courses and programs can provide a basis for accomplishing Tier 3 integration.

Integrating across Institutions (Tier 1): Proposals Involving the Air Force Academy

Integrating individual programs and courses within institutions produces a set of precedents—lessons that can become the basis for integrating the teaching of aerospace power across the commissioning sources. This first tier of integration will require greater interactions, meetings, and conferences among those sources.

DAL's universal competencies provide a basis for comparing existing curricula and programs against a standard. These competencies consist of several categories—aerospace operations, character, leadership, organization, technology, strategy, and perspective—that entail education and training programs. The task of developing and overseeing initiatives that integrate them across the commissioning sources must rest with a comprehensive oversight body. The recently created Commissioning Committee, composed of senior representatives from each of the commissioning sources, is such an organization. Empowered by their respective commanders, the committee members can enhance the level of undergraduate professional development and, in so doing, meet the DAL requirements. One should consider the following seven initiatives a first step:

1. Establish semester-long exchanges between AFROTC and Air Force Academy cadets, much like the existing service-academy exchanges during the junior year.

2. Create summer leadership opportunities for Air Force Academy cadets and interactions with OTS and ANG Academy cadets.

3. Continue and increase participation by AFROTC and OTS/ANG Academy cadets in Air Force Academy summer programs.

4. Arrange semester- and year-long faculty exchanges among the commissioning sources, including civilian as well as military faculty.

5. Use the many methodologies encompassing educational technology, such as distance learning and interactive teleconferencing between education and training courses and programs conducted by each of the commissioning sources; for example, a lesson from the multinational and joint-operations course at the Air Force Academy could

be teleconferenced to AFROTC, OTS, or ANG Academy classes.

6. Schedule frequent and routine interfaculty conferences and workshops; emphasize joint faculty development.

7. Develop joint courses and programs resulting from the individual integrative efforts within each of the four commissioning sources.

However, if the Commissioning Committee is to succeed with any of these initiatives, all commissioning sources would need to adopt an outward orientation toward the rest of the Air Force rather than isolationist perspectives embedded in relatively closed "schoolhouse" biospheres.

An Executable Plan: Drafting Air Tasking Orders

The proposal offered here needs implementation guidelines. Specifically, it needs a set of organizing principles upon which to build the process and the organization. These principles include (1) top-down guidance and support from the institution's senior leadership, (2) unambiguously stated objectives that provide the criteria with which to evaluate each step of the process, (3) process and organization design flexibility to adjust to changing requirements and to conduct overall assessment, and, most importantly, (4) process and organization that cut across traditional, institutional staff and bureaucratic lines to incorporate the perspectives of all individuals and agencies directly responsible for realizing the institution's mission. The guidance of the Air Force chief of staff and the resulting DAL initiative, with associated objectives and requirements, meet the first two organizing principles. The following process and organization are designed to meet the third and fourth.

An Executable Process

Step 1: Identify the Current Paradigm. Prior to undertaking a comprehensive review, any institution or organization must establish a baseline from which to evaluate change. For institutions of higher learning, this effort entails clarifying and explaining the existing approach and philosophy that they have taken in their education and training programs. It includes identifying and reviewing the institutions' founding documents, major tenets, assumptions, and organizing principles upon which the institutions and these programs are based.

Step 2: Clarify Constraints/Parameters for Change. Before initiating change, one must understand the existing constraints and parameters and the impact of changing them. Although it is possible to alter these parameters or attenuate the constraints, doing so can often conflict with the institution's founding principles identified in step 1.

Step 3: Conduct Review. One must carry out the actual comprehensive review of the institution's existing education and training programs and evaluate them in terms of the requirements derived from the strategic imperatives and the DAL initiative.

Step 4: Approve Changes. A higher-level authority must review and approve the recommended changes resulting from step 3 and create a work plan to implement them using the organization outlined below.

An Executable Organization

The structure or organization that executes the above process must adhere to the fourth organizing principle. As such, it must include a senior-level approval body and a midlevel steering committee to consolidate and assess recommendations developed at the lowest level by a series of working groups. At the Air Force Academy, this type of structure was developed to draft a new strategic vision and plan for charting the Academy's future. We propose the retention of that organization and the development of a similar one in each of the other commissioning sources—but modified appropriately to meet their unique structures and processes. Following approval by the senior-level approving authority, the Commissioning Committee would receive the output of these

organizations for assessment and ultimate implementation.

Conclusion: Time for Reform

The time has come for a comprehensive review of undergraduate professional development; the Developing Aerospace Leaders initiative is the catalyst for the effort. More importantly, it provides the critical criteria with which to conduct that review. This article has suggested a master attack plan based upon a three-tiered integration framework. Its successful execution, however, must begin with the Air Force Academy, which must take the lead in actively integrating training and education programs.

Nothing is more fundamental to the profession of arms than developing its human resources across all commissioning sources. Improved integration would increase opportunities for AFROTC, OTS, and the ANG Academy, while potentially enriching the diversity of the Air Force Academy experience. In leading this effort, the Academy's senior leaders would do well to update the advice of the first superintendent concerning that institution's distinctiveness: that our graduates be aerospace-minded and thoroughly indoctrinated in all aspects of aerospace operations. By focusing on this core function of the Air Force Academy in terms of internal reform and as an external duty, we can boost development in all the commissioning sources of a relevantly trained and educated aerospace force—the ultimate DAL objective.   □

Notes

1. Maj Gen Charles Link, "The Developing Aerospace Leaders Initiative," presentation to the Commissioning Education Committee Conference, Maxwell AFB, Ala., 24 July 2000.

2. See Peter D. Feaver and Richard H. Kohn, "The Gap: Soldiers, Civilians, and Their Mutual Misunderstanding," *The National Interest*, Fall 2000, 29–37.

3. Political leaders were loath to target the state-run television station, political leaders' financial assets or other property, or any target where enemy forces could house captive noncombatants. Air Force leaders recommended an instantly comprehensive air campaign against a wide variety of targets. Air Force leaders were keen to avoid another Operation Rolling Thunder (Vietnam, 1965), in which an escalatory approach to targeting failed to induce North Vietnam to negotiate. As it turned out, North Atlantic Treaty Organization (NATO) air forces ran out of targets approved by the coalition of political leaders, an arrangement whereby any NATO member could veto a target. See Gen Michael Short, commander, Allied Air Forces, Southern Europe, presentation to Air Force Association Air Warfare Symposium, 25 February 2000, on-line, Internet, available from http://www.aef.org/symposia/short200.html.

4. See Eliot A. Cohen, "Why the Gap Matters," *The National Interest*, Fall 2000, 38–48.

5. Lt Gen Jay W. Kelley, *2025: Executive Summary* (Maxwell AFB, Ala.: Air University, 1996), 49.

6. This approach has been referred to as the Thayer method, named after the reformist Sylvanus Thayer, superintendent of West Point from 1817 to 1833. See Stephen E. Ambrose, *Duty, Honor, Country: A History of West Point*, Johns Hopkins paperbacks ed. (Baltimore: Johns Hopkins University Press, 1999), chaps. 4–5.

7. John P. Lovell, *Neither Athens Nor Sparta? The American Service Academies in Transition* (Bloomington: Indiana University Press, 1979), 62.

8. Ibid., 74.

9. This separation of military and academic functions at service academies is a post–World War II phenomenon. Before West Point was "modernized" after World War II, the Thayer model's institutional context was that of a seminary-academy, which combined professional purpose with intellectual method. Military and academic priorities were fused. The superintendent was also the head of the Army Corps of Engineers, and the Academy's purpose was to produce military engineers. For a brief time at the Air Force Academy (the first two graduating classes), some degree of fusion occurred, as all cadets who were medically qualified also earned navigator wings. Over time, military and academics (some would add athletics) became more separated as mission elements grew and became more specialized and distinct from one another.

10. Lovell, 74.

11. See Lovell's introductory chapter "The Paradox of Change," particularly page 10.

12. Ibid., 110.

13. Training functions included military decorum, cadet-leadership development, and basic cadet-training orientation; publications included manuals on cadet military responsibilities, training knowledge, and Academy training philosophy. Developing faculty expertise in aerospace power requires a substantial, focused effort in military and aerospace theory, strategy, doctrine, operations, war gaming, and aviation and space simulators.

14. This proposal would send 10 cadets during each of the three summer training periods to visit a variety of operational space operations sites such as Peterson AFB, Colo. (US Space Command and Air Force Space Command); Schriever AFB, Colo. (Joint National Test Facility, Space Warfare Center, and space operations squadrons); Cheyenne Mountain, Colo. (North American Air Defense Command); Buckley AFB, Colo. (part of Air Force Space Command); Vandenberg AFB, Calif. (missile center, satellite range operations, tracking station); and Patrick AFB, Fla. (Cape Canaveral, Kennedy Space Center). Maj Russell Meyer, "Talking Paper on Operation Air Force Space" (Colorado Springs, Colo.: 34th Training Group, US Air Force Academy, 13 January 2000).

The Essence of Aerospace Power
What Leaders Need to Know

Col DENNIS M. DREW, USAF, RETIRED
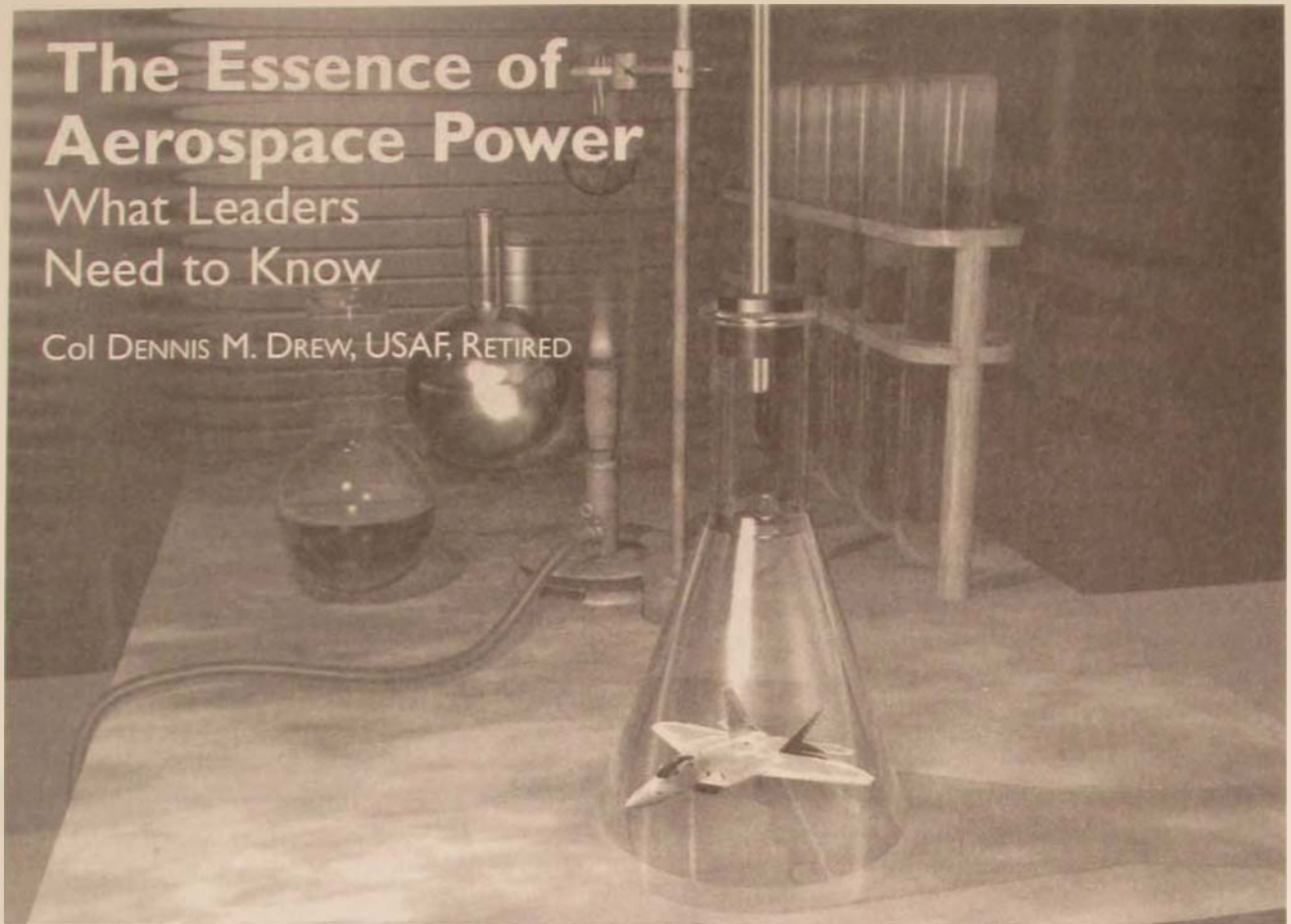
Editorial Abstract: Handling the chaotic pace of change in the coming century will require aerospace leaders who understand how air and space fit into joint military operations. Professor Drew provides a firm grounding in this "essence" for future leaders, including the absolute requirements and limitations of aerospace power.

THE US MILITARY became the ultimate victim of its own success following quiet victory in the Cold War and thunderous triumph in the Gulf War. Political decision makers challenged the need for such a powerful military when there appeared to be no "peer competitors," and the downsizing began in earnest. The US Air Force was not spared, as its operational heart for the previous 45 years was ripped apart and replaced with smaller pieces in unfamiliar patterns. At the same time, a bewildering array of operational requirements began to stretch the reduced force to the limit. In a bitter irony for airmen caught up in the escalating operations tempo, many of these operations probably would not have been necessary during the Cold War. Victory in the Cold War seemed to confirm the old adage that no good deed goes unpunished.

The angst and confusion created major leadership challenges, one of which was the need to redefine the Air Force. But well-intentioned efforts only added more confusion to an already chaotic situation. In a

sense, we tried too hard, too often, and in too many ways. Three different Air Force vision statements appeared in just one decade: "Global Reach, Global Power" in 1990; "Global Engagement" in 1996; and "Global Vigilance, Reach, and Power" in 2000. Adding to the muddle were the newly minted Air Force "core competencies," the "basic areas of expertise the Air Force brings to any activity."[1] Unfortunately, even these were quickly amended to accommodate items apparently forgotten.

> *In a bitter irony for airmen caught up in the escalating operations tempo, many of these operations probably would not have been necessary during the Cold War. Victory in the Cold War seemed to confirm the old adage that no good deed goes unpunished.*

The near-chaotic pace of change and the confusion it continues to generate present enormous leadership challenges that will likely remain with us well into the future.[2] The key to success in dealing with these challenges lies in understanding what aerospace power is all about. After a century of experience in the air and over four decades in space, how can we articulate what makes aerospace power unique? This article answers that key question by deriving and examining the "essence of aerospace power," including its absolute requirements and very real limitations. It explains how the *essence* provides the psychological and operational rationale for an independent Air Force and looks at conceptual difficulties surrounding the space portion of aerospace power. Finally, the article casts a glance at the future by noting the dilemma facing airmen as they fly into the third millennium.

Deriving the Essence of Aerospace Power

In trying to understand what airmen are all about, we must ask the critical question, What capabilities make aerospace power unique? The answer is not found in the relative advantages of speed, range, flexibility, and so forth, spawned by operating in the third dimension. Rather, what sets aerospace power apart is the product of those relative advantages, the essence of aerospace power, which holds that *only aerospace power can apply great power quickly to any tangible target on the planet.*

Parsing the Essence

Note that *aerospace power* rather than *Air Force* appears in the statement above. The *essence* of aerospace power has little to do with ownership. It exists whether one speaks of the US Air Force, aviation elements of the other services, or airpower possessed by allies and adversaries. Obviously, not every air force or aviation organization has the "full-service" force structure that can totally fulfill the *essence.*

The word *quickly* defines one of the cardinal advantages of airmen over surface forces. The speed at which modern aerospace forces can travel to any point on the globe is orders of magnitude greater than that of the fastest surface forces. No place on Earth is more than a few hours away, and traditional defensive barriers such as the great oceans no longer provide sanctuary. By the beginning of the second half of the twentieth century, airpower gave every military threat a sense of immediacy, and war became a "come as you are" affair—a situation that intensified with the dawn of space capabilities.

Perhaps the most important, and certainly the most misinterpreted, word in the *essence* is *power.* Traditionally, power has related to explosive ordnance and target destruction, nuclear weapons serving as the ultimate example. But in the post–Cold War world, the "power" most often delivered by airmen has taken the form of humanitarian aid: food, medical supplies, and heavy equipment.

Power can also include people—peacekeepers to the latest crisis, technical experts essential to an important foreign air program, or diplomats trying to avoid war. Shuttle diplomacy is a child of the aerospace age.

Power can also include information. Knowledge is the purest form of power and is the reason that overhead surveillance, reconnaissance, and intelligence-gathering efforts are so important in both war and peace. Information delivered from above can be used to strengthen a friendly regime, discredit an enemy regime, or directly attack the morale of an adversary's frontline troops. In less hostile circumstances, the information might consist of humanitarian warnings about impending natural disasters or news about disaster-relief efforts.

As for the term *target*, in the traditional military sense of the word, a target can be anything of military value to an adversary. For example, targets might be the sources of enemy military power (e.g., industrial targets), lines of communication through which military power flows (e.g., interdiction targets), or the enemy's fielded forces themselves. With regard to the last, it is worth noting that airpower can take direct offensive actions against an adversary's air forces *and* surface forces. The latter, however, can do nothing other than defend themselves against air attack—only in very unusual circumstances can they take direct offensive actions against air forces.[3] In a less traditional sense, a target can be hunger, disease, ignorance, lawlessness, or a myriad of other vexing problems.

Notwithstanding the requirements and limitations yet to be discussed, parsing the *essence* reveals that the options for using airpower are virtually unlimited, providing unparalleled flexibility. In truth, the airman's traditional axiom that "flexibility is the key to airpower" should be updated and reversed: aerospace power is the key to flexibility.

Absolute Requirements

Stunning technological progress during the twentieth century made the *essence* of aerospace power a physical reality. However, three fundamental requirements must be met before the physical reality becomes practical and useful. Left unfulfilled, any one of these three requirements is a showstopper.

The first requirement is the most obvious: the availability of appropriate kinds and numbers of air and space assets. One must understand that required air assets go far beyond airframes and munitions. Almost any nation can procure modern, sophisticated aircraft and munitions in the global arms bazaar. Infrastructure—which educates, trains, disciplines, motivates, and cares for airmen and their equipment—separates real aerospace power from high-tech flying clubs.

The second fundamental requirement is access to timely and accurate intelligence. Airpower historian Phillip Meilinger once claimed that "in essence Air Power is targeting, targeting is intelligence, and intelligence is analyzing the effects of air operations."[4] Meilinger may have engaged in a bit of hyperbole on this point, but not much. The target intelligence required is not just about technical and tactical matters such as location, construction, defenses, and so forth. Of equal importance are the strategic- and operational-level requirements to understand if, why, and to what extent operations against potential targets will contribute to the overall military effort and, ultimately, to political objectives. Strategic- and operational-level intelligence informs decisions about *what* airpower should do. Tactical-level intelligence informs decisions about *how* airpower should do it.

Part of the intelligence requirement is the need to accurately assess the results of operations. Assessing actual target damage has been difficult for airmen since the earliest days of military airpower.[5] Even with modern sensor capabilities, it remains a vexing problem.[6] The situation is further complicated by the need to assess not only tactical-level damage, but also the operational- and strategic-level effects of that damage.[7] Measuring first-order effects of aerospace operations remains a difficult and complex task. Mea-

suring second- and third-order effects is even more problematic.

The third fundamental requirement is the political will to fully exploit the *essence*. In the eyes of many airmen, political will has been their Achilles' heel. Cold War fears of nuclear escalation restrained the use of aerospace power in Korea and Vietnam. In the post–Cold War era, the fear of inflicting undue civilian casualties and the fear of losing public support have limited political will. In Operation Desert Storm, for example, the destruction of the Al Firdos bunker in Baghdad, killing many civilians hiding there, resulted in tight restrictions on subsequent bombing in the Iraqi capital. During Operation Allied Force, the need to maintain a united front provided every member of the North Atlantic Treaty Organization (NATO) the ability to virtually veto strikes on Serbian targets, thus seriously restricting NATO's aerial assault.

Disabilities, Vulnerabilities, and Limitations

The unparalleled flexibility of aerospace power does not produce unlimited military utility. Most obviously, aerospace power cannot physically seize and hold territory. Under certain circumstances, airpower alone may be able to force opposing forces to vacate territory or prevent them from entering territory. To do so, however, one must envision a situation of air superiority or air supremacy, a ground environment in which opposing forces would find concealment difficult, and an opposing force composed of "regular" forces with vulnerable lines of supply. The advent of operations such as Southern Watch and Northern Watch has led to some discussion of "air occupation" as a concept. Both of these operations met at least one of their major objectives—the enforcement of no-fly zones—but that is a far cry from "occupation" of anything other than the airspace over Iraq. Even Britain's "air control" concept used to police portions of its empire in the 1920s and 1930s, and often cited with regard to air oc-

cupation, required the coordinated use of ground forces.[8]

The most significant vulnerability of aerospace power occurs whenever aircraft leave their operating environment. On the ground, aircraft are helpless—fragile, unarmored, and unable to defend themselves. Unfortunately, combat aircraft—even in high-tempo wartime operations—spend most of their time on the ground. Their vulnerability is such that in a combat zone, one must take near-heroic measures to protect them in hardened shelters or, at a minimum, in revetments. One finds in the Vietnam War the most telling testimony to the vulnerability of aircraft on the ground. During that struggle, Vietcong and North Vietnamese sappers and mortar teams destroyed 43 percent more US Air Force aircraft on the ground than were lost in air-to-air combat, and they destroyed nearly as many Air Force aircraft on the ground as were lost to the vaunted North Vietnamese surface-to-air missile system.[9]

In addition to these vulnerabilities, aerospace power also has its limits. Three of the most important are directly related to one another. First, and most importantly, modern aerospace power is very expensive—on the order of 10s of millions of dollars per aircraft, with some even costing 100s of millions of dollars each. Their weapons can be quite pricey as well, particularly precision-guided standoff munitions.[10] Second, the combination of complexity and cost results in smaller and smaller aircraft inventories. Although modern aircraft are much more capable than their predecessors, their numbers are much more limited—and numbers do count, particularly for a global power wrestling with parallel requirements in the far corners of the globe. An aircraft can be in only one place at a time, doing one thing at a time. Further, smaller inventories magnify the importance of attrition.[11] Third, prudence dictates that expensive and relatively scarce airframes and crews should be put at risk and expensive weapons expended only against lucrative targets. As a result, high-tech precision aerial weapon systems can find themselves at a serious

disadvantage when facing adversaries employing strategies and tactics that emphasize dispersion rather than concentration of forces (e.g., insurgent strategies/guerrilla tactics).

Rationale for an Independent Air Force

Aerospace power's nearly unlimited options and unparalleled flexibility provide the fundamental and compelling rationale for an independent air force. Several of the world's great air forces, including the US Air Force, gained their independence from surface forces in order to more effectively carry out so-called independent missions—the most prominent being strategic attack. Independent missions, particularly after the advent of nuclear weapons (which some believed gave airmen a means to win wars without the aid of surface forces), provided a convenient bureaucratic rationale for an independent US Air Force in 1947. However, more than a half century of additional experience and perspective has shown that the fundamental rationale for an independent aerospace force is psychological and operational, not bureaucratic. One finds the reason for this in the very different worldviews or mind-sets of soldiers, sailors, marines, and airmen.[12] Ground forces traditionally have been most concerned about the immediate problem they confront—an understandable mind-set since most often an enemy at relatively close range does the shooting and killing. This mind-set has manifested itself in many ways. During World War II, for example, the ground officers who dominated invasion planning for D day were much more concerned about the immediate problem of securing a lodgment on the shores of France than they were about the subsequent breakout into the heart of that country. The beaches of Normandy offered favorable conditions for the amphibious assault, but the hedgerow country behind the beaches represented some of the worst imaginable terrain for breakout operations—a fact illustrated in the bloody yard-by-yard struggle through the hedgerows that lasted for nearly two months.[13] Another example found in US Army doctrine during the mid-1970s concentrated on "winning the first battle." The immediate problem, the first battle, was of most importance.[14] Only in the late 1970s and early 1980s, with the advent of AirLand Battle doctrine, did the Army look up, so to speak, and stress that what happens far beyond the battlefield is often of great importance. But even with a newfound appreciation for the "deep battle," ground-force commanders find their perceptions constrained by lateral confines that tend to channel their attention and interest. Ground commands must exist and operate "cheek by jowl" across an entire theater of operations. One must maintain clear divisions of command responsibility to prevent fratricide or counterproductive operations along command boundaries. The upshot is that ground commanders, from the corps level down, have strictly defined areas of responsibility (AOR) that generally extend considerably rearward (reflecting rear-area security concerns) and considerably forward (reflecting the newfound importance of the deep battle). Laterally, however, ground commands remain tightly constrained by the parallel AORs of their neighboring commands. This results in the so-called bowling-alley effect—long but relatively narrow AORs that channel attention and interest and thereby constrain perceptions.

The view held by airmen, because of the nature of aerospace power, is the antithesis of that held by or imposed on ground forces. An airman's—from the most junior pilot to the most senior air commander—AOR is the entire theater of operations. Airmen realize that, within political constraints, they can spread their operations across the entire theater or concentrate their operations—perhaps at one end of the theater in the morning and at the opposite end in the afternoon. Airmen also realize that, depending upon the adversary and the situation, the most important enemy targets—the destruction of which may lead to ultimate victory with the least cost—may not always be the most immediate, most obvious, or closest.

Compared to the views of soldiers, sailors have a much broader and less constrained worldview. But even their view is significantly constrained by physical and psychological realities. In terms of physical realities, a ship simply cannot sail to some places; thus, the naval worldview tends to focus on the high seas and the littorals. Also, some physical characteristics peculiar to shipborne aircraft impose limits on their capabilities.[15] Psychologically, because naval fighting ships are very expensive and difficult to replace, their protection rightfully has a very high priority, including a high priority in the tasking of naval aircraft. This defensive priority inevitably translates into reduced offensive utilization. During Desert Storm, for example, 38 percent of all "shooter" sorties flown from US Navy aircraft carriers were defensive counterair or defensive combat air patrol sorties. During the same period, only 12 percent of all shooter sorties flown by the US Air Force were defensive sorties.[16] These physical and psychological realities significantly constrain the perceptions and limit the options of sailors with regard to the use of aerospace power.

As the evidence indicates, if organized as part of a surface force and subject to the culture, customs, and mind-set of the parent surface force, airmen will be much less likely to fully and appropriately exploit the unlimited employment options available to them. Air Force leaders must understand and be able to articulate that the need to perform some mystical, "independent" mission is not the reason that a "full service" air force should be independent and coequal with surface forces. Nor is the rationale for an independent air force based on notions of a stand-alone, war-winning capability. Rather, the most fundamental and most compelling argument for an independent air force is the imperative to fully exploit the *essence* of aerospace power. Exactly the same arguments lead to the inevitable conclusion that, within a theater of operations, an airman should centrally control aerospace forces.

The Space-Power Conundrum

The term *aerospace* occurs throughout this article, yet one finds much vacillation at the highest command levels concerning the medium in which the Air Force operates. Three successive chiefs of staff went from using the time-honored appellation *aerospace* to *air and space* (which, it was said, would someday become *space and air)* and then back again to *aerospace.* Such inconstancy highlights the difficulty airmen face when considering mature airpower capabilities, the promise of space power, and the nexus between air and space power.

Space and space power are subjects of obvious and growing importance, but our consideration of them is hobbled by a dearth of conceptual thinking about the role of space in military operational matters. For much of its history, scientific wizards rather than operational warriors dominated the military-space community. As a result, military space power is still looking for its great theorist. A modern-day, space-power version of Alfred Thayer Mahan or Billy Mitchell has yet to make his or her presence felt. The problem became so painfully obvious in the latter 1990s that Gen Howell M. Estes III, then the commander in chief of US Space Command, commissioned a civilian academic to develop a space-power theory "as the opening statement in what I hope will be a meaningful debate about space power theory."[17] Unfortunately, the project fell on hard times, and the results have yet to provide the spark that General Estes sought.

Despite the paucity of general theory, space operations unquestionably have become vitally important to US military operations. Command, control, communications, intelligence, weather, reconnaissance, surveillance, global positioning, and mapping are just the most obvious areas in which space plays a major role. But even with the growing importance of space operations, how should Air Force leaders think about space power? Without some overarching theoretical framework, space and space operations remain only a collection of capabilities, albeit very important capabilities. Three sets of fundamental is-

sues must be vetted if we are to understand space power with the kind of clarity with which we now understand airpower and if we are to understand their nexus.

First, we must determine whether the *essence* actually applies to space power, as we have assumed throughout this article. Can space power "apply great power quickly to any tangible target on the planet"? Many people would answer no to this question because of political restraints on weaponizing space. Others would argue for an affirmative answer based on technical, if not political, feasibility. In either case, the question concerning the applicability of the *essence* remains assumed but undemonstrated. Or perhaps there exists a space-power version of the *essence* that differs from all other military operations, including airpower.

A second group of issues concerns the future of space power. What kinds of military operations are likely to migrate to space and why? Space may become another "battle space," or it may become only a home to military operations focused on nonlethal activities in support of combat elsewhere. The horizon is wide open on the options and ramifications of these alternative futures.

The third set of issues has to do with the relationship between space power and airpower. The defining characteristic of airpower is an operational regime elevated above Earth's surface. Conceptually, space power would seem to be more of the same at a higher elevation, a concept tacitly endorsed by the Air Force in its current (as of this writing) basic doctrine.[18] The term *aerospace,* coined in the late 1950s, echoes this same theme, as do official pronouncements such as "although there are physical differences between the atmosphere and space, there is no absolute boundary between them. The same basic military activities can be performed in each, albeit with different platforms and methods."[19] But in our conceptual thinking, can we so easily ignore the vast differences between operations in the atmosphere and in space? It is difficult to analyze these and many more issues dealing with space without a general, overarching theory of space power.

The task is made even more difficult by several other factors, such as the limited experience base in military-space operations, the tight security classification concerning much of what goes on in space, and the thoroughly subdivided responsibility for space operations.[20] Thus, we have a conundrum—a jigsaw puzzle that will someday picture how space power fits or doesn't fit with airpower. Solving the puzzle represents a major leadership challenge.

Explaining Aerospace Power and the Dilemma Airmen Face

Airmen generally try to explain aerospace power by using two broad themes that seem almost frozen in time at about the middle of the last century—updated technologically but not conceptually. The first and most common theme is some version of "higher, faster, farther" that emphasizes the relative advantages of operating above Earth's surface. The new Air Force slogan No One Comes Close is the latest incarnation of the relative-advantage theme. The second theme emphasizes the lists of things that aerospace power can do. Some of the listings are quite detailed, as in the Global Reach, Global Power white paper issued in 1990. Others, such as the Air Force's core competencies, are much more abbreviated. Neither of these themes captures the uniqueness of aerospace power.

The *essence* of aerospace power, on the other hand, takes a much broader and more fundamental view, founded on the *unique* capability of aerospace power. It concentrates on concepts, possibilities, and virtually unlimited options rather than on comparisons and lists. It is instructed by the absolute requirements that make it work and is tempered by vulnerabilities and limitations. A thorough understanding of the *essence* reveals the intellectual imperatives for an independent air force and for theater-level centralized command of aerospace forces. A thorough understanding of the *essence* makes clear that aerospace power is the key to the flexibility that we will certainly require in the new world disorder. In short, the *essence* provides the

foundation for aerospace leadership in the twenty-first century.

Aerospace power would seem to have a very bright future. But dark clouds loom on the horizon. Just as an *essence* exists, so does a twofold reality that produces a dilemma airmen must face. The reality is that because aerospace power has become so valuable to so many in so many different ways, the demand for it is virtually unlimited. As noted earlier, the reality is also that aerospace resources are very limited and becoming even more limited. In sum, we have a growing supply-and-demand mismatch. All of this produces a classic dilemma for tomorrow's leaders. How can airmen exploit unlimited options and satisfy unlimited demands with increasingly limited resources? How aerospace leaders deal with this dilemma across the entire spectrum of conflict will determine much about the future of aerospace power.   □

Notes

1. Air Force Doctrine Document (AFDD) 1, *Air Force Basic Doctrine*, 1 September 1997, 27.

2. With all of these challenges, it is no wonder that the Air Force chief of staff initiated the "Developing Aerospace Leaders" program, designed to ensure the production of future leaders capable of steering the Air Force through such troubled waters.

3. There are several well-known examples of such unusual circumstances. Examples of ground forces directly attacking air forces are found in the Vietnam War, in which Vietcong sappers successfully attacked a number of US air bases in South Vietnam, destroying aircraft and materiel, killing American personnel, and disrupting operations. An example of naval surface forces directly attacking an air force is found in the struggle for Guadalcanal in the Southwest Pacific theater during World War II. Japanese surface warships made nighttime raids on Henderson Field on Guadalcanal, which was within the range of heavy guns on Japanese ships sitting just off shore.

4. Col Phillip S. Meilinger, *10 Propositions Regarding Air Power* (Washington, D.C.: Air Force History and Museums Program, 1995), 20.

5. One finds countless instances of gross errors in bomb damage assessment (BDA). A classic example comes from the war in Vietnam and the effort to determine the number of North Vietnamese trucks destroyed on the Ho Chi Minh Trail as they infiltrated men, equipment, and supplies into South Vietnam. In April 1971, an Air Staff message to commanders in Southeast Asia noted that "Seventh Air Force is really concerned about the validity of the BDA reported by the AC-130 gunships in their truck killing operation. They stated all aircraft BDA for this hunting season indicates over 20,000 trucks destroyed or damaged to date, and if intelligence figures are correct, North Vietnam should be out of rolling stock. The trucks continue to roll however." Quoted in Donald J. Mrozek's *Air Power and the Ground War in Vietnam: Ideas and Actions* (Maxwell AFB, Ala.: Air University Press, January 1988), 131.

6. Two relatively recent examples illustrate the point. During the Gulf War, the Joint Chiefs of Staff (JCS)/US Central Command (CENTCOM), the Defense Intelligence Agency (DIA), and the Central Intelligence Agency (CIA) each came up with widely different estimates of the percentage of Iraqi tanks, armored personnel carriers, and artillery that had been destroyed by coalition air strikes. For example, on 23 February 1991, JCS/CENTCOM claimed that 39 percent of Iraqi tanks had been destroyed. DIA said only 16 percent had been destroyed, while the CIA claimed only 12 percent. Thomas A. Keaney and Eliot A. Cohen, *Gulf War Airpower Survey*, vol. 2, *Operations and Options: Effects and Effectiveness* (Washington, D.C.: Government Printing Office, 1993), pt. 2, p. 211, table 13. For an even more recent example, refer to the controversy between *Newsweek* magazine and NATO concerning the number of Serbian tanks, armored personnel carriers, and artillery pieces destroyed during Allied Force. For example, *Newsweek* claimed that only 14 Serbian tanks had been destroyed while NATO claimed 93. John Barry and Evan Thomas, "The Kosovo Cover-up," *Newsweek*, 14 May 2000, 23–26; and Stephen P. Aubin, "*Newsweek* and the 14 Tanks," *Air Force Magazine*, July 2000, 59–61.

7. This point is driven home by Michael R. Gordon and Gen Bernard E. Trainor in their comments on the widely differing estimates of damage done to Iraqi tanks, armored personnel carriers, and artillery (see note 6). In essence, they argue that the bar had been set too high. The goal had been to destroy 50 percent of the overall Iraqi armor and artillery, which, theoretically, was required to make the Iraqis combat-ineffective. No one's estimates came near the 50 percent level, yet "the air attacks made it impossible for the Iraqis to mount an effective defense. Airpower crippled the Iraqi war machine." Initially setting the bar too high in the Iraqi case seriously hindered the ability to estimate Iraqi capabilities prior to the start of ground operations against Iraq. Gordon and Trainor, *The Generals' War: The Inside Story of the Conflict in the Gulf* (Boston: Little, Brown and Company, 1995), 331 and 474.

8. For an excellent discussion of "air occupation," see Maj Marc K. Dippold, "Air Occupation: Asking the Right Questions," *Airpower Journal* 11, no. 4 (Winter 1997): 69–84. For a realistic look at British air-control operations, see Dr. James S. Corum, "The Myth of Air Control: Reassessing the History," *Aerospace Power Journal* 14, no. 4 (Winter 2000): 61–77.

9. Sappers and mortar teams destroyed 96 aircraft in attacks on US Air Force bases. Only 67 Air Force aircraft were lost in air-to-air combat, while surface-to-air missiles downed 110 Air Force aircraft. Walter Kross, *Military Reform: The High-Tech Debate in Tactical Air Forces* (Washington, D.C.: National Defense University Press, 1985), 98. Antiaircraft artillery was the biggest threat to US aircraft, particularly radar-guided guns ranging from 57 mm to 100 mm. Lon O. Nordeen, *Air Warfare in the Missile Age* (Washington, D.C.: Smithsonian Institution Press, 1985), 13.

10. The issue is not exactly how much aircraft cost or how much more they cost today than in the past. One can make such determinations in several different ways, using different sets of assumptions. Nor does the question concern the capabilities of the aircraft. Without question, modern aircraft are much more capable than their predecessors. But there is also no question that, by virtually any standard of measurement, modern aircraft cost considerably more than their predecessors. For a discussion of

the different dimensions and difficulties of comparing the costs of aircraft and weapons, see Kross, 24–57.

11. The decline in aircraft inventories over the past 40 years has been startling. "Snapshots" taken at 20-year intervals of bombers and fighters in the active inventory reveal the following:

	1960	1980	2000
Bombers	2.193	412	179
Fighters	3.922	2.804	1.594

See *Air Force Magazine* (almanac issue), May 1975, 137; May 1980, 162; and May 2000, 66.

12. For further explanation, see the author's article "Joint Operations: The World Looks Different from 10,000 Feet," *Airpower Journal* 2, no. 3 (Fall 1988): 4–16.

13. Russell F. Weigley, *Eisenhower's Lieutenants: The Campaign of France and Germany, 1944–1945* (Bloomington: Indiana University Press, 1981), 35. Weigley notes that "by concentrating almost all their planning effort on the assault and the immediately following buildup, the planners neglected a maze of troubles awaiting behind the French shore. The greatest trials of OVERLORD . . . were to appear when the invaders plunged inland . . . in the region of Normandy called the Bocage."

14. US Army Field Manual (FM) 100-5, *Operations*, 1 July 1976.

15. For example, because carrier aircraft must take off from and land on relatively small ship decks and must be able to "go below" for maintenance and so forth, their potential size is sharply limited; this puts limits on such capabilities as payload capacity, unrefueled range, and the like.

16. Keaney and Cohen, vol. 5, *A Statistical Compendium and Chronology*, 232, table 64.

17. Quoted in James E. Oberg, *Space Power Theory* (Washington, D.C.: Government Printing Office, March 1999), x.

18. AFDD 1, 21–22.

19. Air Force Manual (AFM) 1-1, *Basic Aerospace Doctrine of the United States Air Force*, vol. 1, March 1992, 5.

20. In addition to the Army, Navy, and Air Force, other government agencies involved in space operations pertinent to this discussion include the National Imagery and Mapping Agency (NIMA), CIA, National Aeronautics and Space Administration (NASA), National Oceanic and Atmospheric Administration (NOAA), National Reconnaissance Office (NRO), and National Security Agency (NSA). Tamar A. Mehuron, "Space Almanac 2000," *Air Force Magazine*, August 2000, 40.

Purple Virtues
A Leadership Cure for Unhealthy Rivalry

LT COL ERIC ASH, USAF

Editorial Abstract: Joint operations are the rule, not the exception, for the US military. Why then do interservice rivalries seem to work against becoming "more joint"? Colonel Ash proposes that the lack of a recognized set of common "core virtures" is the root of the problem. He suggests that the tenets of West Point's motto Duty, Honor, Country are these common, "purple" virtues.

Too often in this war did the leaders fight each other while the troops fought the foe.

—Capt Basil Liddell Hart

A S GREAT AS it is, the American military still lacks a common Weltanschauung. Its "jointness" comes not from the heart but traces its current popularity to the Goldwater-Nichols Department of Defense Reorganization Act of 1986. That act forces cooperation by law and personal careerist incentives; however, interservice friction produced by opposition to jointness still exists at many functional and operational levels. People—not systems—are fundamental to jointness. Yet, good teamwork may not be happening. Gen Anthony Zinni was right on target in a recent US Naval Institute *Proceedings* article in which he attacked service parochialism.[1] Interservice competition for roles, functions, and resources is not necessarily detrimental to the military and can be good, but interservice rivalry and friction based on lack of integrity or other unethical conduct are damaging to national defense efforts. In addition, breaches of integrity are not limited to the interservice domain, for at times the services work very well together from an ethical standpoint. But sometimes they collectively or singularly stoop to poor moral standards when dealing with other decision-making bodies and au-

DUTY
HONOR
COUNTRY

2

But when an airman talks about using airpower independently to kill the enemy instead of putting our troops in harm's way in the first place, he's being parochial and 'unjoint,' which is now viewed as a sin on the order of adultery.[4]

War fighters need joint ethics, and that begins and ends with leadership, both as the example and as the enforcer.

Army and Air Force perspectives may both be legitimate, based on competing paradigms, but according to some people, "the reality is that we simply cannot afford both approaches by 2010."[5] If this is true, continued competition is on the horizon.

The primary underlying issue normally seems to be funding. Doctrinal, strategic, and tactical debates translate at some point into dollars and "haggling over hardware." Yet, one can feel the effect back on the battlefield with confusion over command and control, as well as operational excess and inefficiency.

Defense spending in the United States has dropped significantly during the post-cold-war years.[6] The result of infighting for funds could be a mutually agreeable solution among the services, based on truly objective analyses of the most cost-effective force-structure mix. Yet, the services have a propensity to force a "tricameral" military solution whereby the only mutually agreeable option is to split available funding three ways.[7] That may seem fair, but is it right when one service has a more lethal or more cost-effective way than the others to defend national interests? President Lincoln said that "honesty is the best policy," and S. L. A. Marshall calls honesty the "governing principle" of the military.[8] With declining defense budgets and commensurate competition over resources, we must have integrity in funding decisions.

In many respects, "military members reflect the values and mores of the society that produced them,"[9] but the military must be careful not to play the blame game, rational-izing that the system of civilian control and/or the decadence of American society cause(s) interservice friction.[10] The military must maintain ethical standards in interservice relations not only for the military's sake, but also because "high character in the military officer is a safeguard of the character of the nation."[11]

Substandard ethical conduct is often the product of an unhealthy "system" rather than of corrupt individuals. Defenders of this system will claim that it is simply Realpolitik that others do not understand or appreciate until they have been in that system.[12] That is a weak argument. The system must change if it is corrupted with substandard ethics. It was the message of Nuremberg, and it is the standard by which we must live today.

New interservice battlefronts over roles and functions are surfacing daily, including space, information technology and operations, functions versus geography, missile defense, deep battle, special operations, and various small-scale contingencies. In addition, the accelerating pace of the military, from adjusting to faster operations tempos to incorporating new technologies, has an effect on interservice rivalry. Even minor symptomatic squabbles may become exaggerated under such conditions. As an Army general recently stated, "Speed bumps are tough to deal with at 100 miles per hour."[13]

Media coverage adds to the recipe for disaster in any of these situations. As many a politician knows, after finding oneself in the limelight of dishonor, unburdening the yoke of negative media attention becomes exceedingly difficult. In a bizarre way, then, interservice rivalry has taken on a new twist entailing scandal avoidance or "hope that the other guy is getting all the attention." From Tailhook to Aberdeen to Lt Kelly Flinn, it is a sad commentary when service personnel privately snicker at each other rather than come to a mutual defense. There is no jointness here. Given the explosive growth of infomedia, services must be ever more diligent in collectively avoiding potential land mines that can set off scandal.[14] Overall, the envi-

ronment promotes continued interservice rivalry, but the delineator between productive competition and unhealthy contention is ethics.

Cardinal Virtues

The erosion of ethical standards may be due, in part, to people's lack of clear understanding of ethical concepts. Ethics is a vast subject, but with regard to jointness, it basically involves character, honesty, and integrity—commonly known as virtues. Yet, our military services have established not virtues but "core values." This is a problem. Integrity-based conduct must flow more from fundamental virtues than situational values.

The problem with values is that they can be situational—culturally driven and temporal. Values are dictated by profit and by circumstance, because they are based on "valuation" or worth. The *Oxford English Dictionary* defines a value as something "worthy of esteem for its own sake; that which has intrinsic worth." The worth, strength, or excellence of the military is important, but it should be moral and ethical for reasons that go beyond its worth. Business as a whole is concerned entirely with one issue—worth—yet the business world is not well known for ethical practices. As one author notes, the National Socialists of Germany in 1940 had integrity, were excellent in what they did, and practiced service before self.[15]

Core values do not promote the moral factor necessary in military ethics. Virtues do. Values simply do not go deep enough because they are focused on means rather than ends.[16]

Alexis de Tocqueville once said that "Napoleon Bonaparte was as great as a man can be without virtue."[17] Indeed, Napoléon had many leadership abilities as a commander, yet his lack of virtue also detracted from those abilities. Virtue is neither temporal nor value-dependent. It involves "doing one's duties whatever the cost to self [as well as] an *ethical* obligation to put military duties first" (emphasis added).[18] In other words, it is courage—something fundamental to the military. Students of war have learned that a soldier's courage on the battlefield stems from a desire not to let down fellow comrades. Yet, that bond of camaraderie is destroyed by unethical behavior and unhealthy rivalry. Hence, joint ethics provides a basis of courage for the joint team.

One requires not only right thinking, but also right action. Although a variety of virtuous traits exists, in general one can distill them into four cardinal virtues. *Justice* involves relationships, both individual and institutional. Jointness fails this cardinal virtue when, as Perry Smith notes, "some people will never lie for themselves, but they'll lie for the institution."[19] *Prudence* is wisdom—the foundational virtue for the other three—and is linked to what Clausewitz calls *coup d'oeil.* It is the ingenious ability to grasp the obvious, to see through the fog, and to anticipate the unexpected. But it is also such intelligence tempered by morality. *Courage* is simply bravery. Rather than reckless or immoral willingness to fall in battle, however, it is virtuous bravery. The final cardinal virtue, *temperance,* involves balance and moderation. It involves avoiding extremes that may be tangential to the main mission. Temperance focuses systemically on the whole rather than just the parts.[20] It promotes strategic thinking and cohesiveness—critical issues to effective jointness.

Ethics

Ethics is imbedded in the officer's commission and oath of office: "special trust and confidence" and "no mental reservation or purpose of evasion."[21] According to military ethicist James Toner, ethics is best determined by a blend of customs, rules, goals, expectations, and circumstances. It involves the "study of good and evil, of right and wrong, of duty and obligation in human conduct, and of reasoning and choice about them."[22] In order for an act to be ethical, its means, ends, and circumstances must all be acceptable, which undermines Machiavellian arguments that in jointness the ends justify the means.[23]

The military cannot afford to have situational ethics in which cultural standards slip into what Herodotus and Polybius called "the decay of political glory."[24] History is replete with examples of "bureaucratic barriers" perverting ethical standards, which were nevertheless allowed to continue in a state of "honor among thieves."[25] According to Perry Smith, "I remember so often the Air Force people would say in the Air Staff, 'We've got to fudge the figures because the Navy's doing it.' "[26]

One of the fundamental military concepts linking means and ends is the familiar West Point motto Duty, Honor, Country.[27] Toner transcribes this motto into another application for military conduct: Principle, Purpose, and People.[28] Here, one's honor involves living according to principles. Duty is linked to purpose, and, finally, people—the nation—should be the focus of all actions. By concentrating efforts and loyalty to principle, purpose, and people, military members will more effectively work through bureaucratic barriers and dueling duties to maintain good ethical standards.

The difficulty lies in having the "strength of will" under difficult circumstances to put ethics into practice. If practiced regularly, it becomes second nature to "ethically fit" military members.[29]

Perhaps the key to such ethical fitness is integrity or "response-ability"—the ability to respond in all situations according to the right ethical orientation.[30] Although the military pays much attention to integrity *of* command, just as critical is integrity *in* command.

Core Values

Thus, integrity is one of the core values the Air Force has established to promote ethical conduct. The Air Force's values were first formally introduced by Brig Gen Ruben A. Cubero, dean of the faculty at the Air Force Academy, and then adopted by the rest of the Air Force: "integrity first, service before self, and excellence in all we do." This sounds great, but why are the Army's values different (duty, loyalty, selfless service, honor, courage, respect, and integrity), as are those of the Navy and Marine Corps (honor, courage, and commitment) (table 1)?

Despite the similarities, shouldn't all members of a joint profession of arms have the same bedrock ethical foundation in the same core values? Are interservice differences again influencing procedure, even to the point of affecting published ethical standards?

Fortunately, one finds some commonality in published standards at the joint level, where moral courage and ethical conduct

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Table 1

Core Values of the Military Services

Air Force	Army	Marine Corps	Navy
integrity first	integrity		
service before self	selfless service	commitment	commitment
excellence in all we do	duty		
	honor	honor	honor
	personal courage	courage	courage
	loyalty		
	respect		

are promoted. It would be helpful, however, if they also specifically addressed interservice relations. Joint Publication (Pub) 1, *Joint Warfare of the Armed Forces of the United States*, says that the team begins with integrity—the "cornerstone for building trust."[31] The document also states that military service is based on values—integrity, competence, physical courage, moral courage, and teamwork—common to all the services and the bedrock of combat success.[32] But the primary joint regulation on ethics, DOD Directive (DODD) 5500.7, *Standards of Conduct: Joint Ethics Regulation*, is principally concerned with financial matters,[33] and the section on ethical conduct occupies only the last four pages of a 160-page document. Also, this "single source of standards of ethical conduct and ethics guidance" contains different *values* than the ones embraced as "core" by each separate service.

The joint ethics regulation attempts to tie ethics and values together conceptually: "Ethics are standards by which one should act based on values. Values are core beliefs such as duty, honor, and integrity that motivate attitudes and actions. Ethical values relate to what is right and wrong."[34] The regulation's list of values contains important concepts for healthy interservice relations, and the regulation emphasizes ethical conduct, even to the point of stating that DOD personnel should "be prepared to fall somewhat short of some goals for the sake of ethics and other considerations."[35] Yet, evidence suggests that, within the services, nobody dares fall short, and fine-sounding ethical pronouncements are disregarded when it comes to protecting funding, roles, and functions.

Purple Virtues

The bottom line is that the joint team needs joint ethics. The challenge is how to make that happen, and leadership is the critical part of the answer. Good leaders must be moralists, and the military must have a union of leadership and virtue—what Toner calls the "ethics of leadership."[36] It is a huge leadership challenge because people cannot "touch, taste, or feel" ethics.[37] When subordinates abandon moral ethics, figuring that "what works is right,"[38] it is time for the leader to step in with moral authority.

Duty, Honor, Country provides linkage between the commission, the oath of office, and the professional military ethic. It is the motto of the "traditional idealistic code" unique to an American military founded on strength of character and universal equality rather than nobility.

In addition to leadership, the military also needs more education. William J. Bennett observes that people are not born with virtues; they must be learned.[39] Arguably, they can also be unlearned. Therefore, the educational process must never let up but continually reinforce ethical fitness.

But soldiers, sailors, and airmen do not have time to read Aristotle in the heat of battle.[40] They must have already probed the difficult and morally ambiguous issues, and they must have the benefit of a familiar code to carry them through challenging times. The best answer for this is the time-honored West Point motto.

According to military ethicist Anthony Hartle, Duty, Honor, Country provides linkage between the commission, the oath of office, and the professional military ethic. It is the motto of the "traditional idealistic code" unique to an American military founded on strength of character and universal equality rather than nobility.[41] As Perry Smith recently stated, "The military ethic of a strong institutional and personal commitment to duty, honor, and country has served this Nation well in war and peace for over 200 years."[42]

The West Point motto is a moral rallying point to remain committed to virtuous conduct. People tend to have a love-hate relationship with rules and checklists. Motorists may dislike speed limits, but they appreciate safer highways. Some drivers, however, will not follow speed limits unless patrols enforce them. To date, the military services and Congress have tried to develop various consensus-building mechanisms, such as the Program Objective Memorandum in the Planning, Programming, and Budgeting System and the Goldwater-Nichols Act.[43] One can criticize these programs as artificial enforcers, but they serve their purposes. The ethical questions that arise are, Can we and do we wish to enforce ethics artificially?

The answer is *yes.* As a common motto for all the services, Duty, Honor, Country would not be a legal benchmark conflicting with the *Uniform Code of Military Justice.* Rather, it would be an educational one to help stand the test of time and serve as tangible evidence that the military is serious about embracing ethics.[44] It is better to have moral standards "spelled out and defended, rather than assumed or ignored."[45] Properly endorsed by leadership, publicized, and embraced by military members, our common motto could promote a joint ethical renaissance in the military of the new millennium.

The motto would not promote narrow-mindedness but would serve as a springboard to moral thinking that is essential to the profession of arms.[46] Just as the Code of Conduct serves to support and guide the conduct of soldiers from all the services, particularly in prisoner of war (POW) status, the motto would promote interservice relations by serving and guiding the conduct of other "POWs" (prisoners of Washington).

Finally, Duty, Honor, Country can promote second-nature ethical fitness by providing a crucial link to the four cardinal virtues. Clearly, this motto implies both prudent and courageous behavior motivated by the noble relationship of soldier and nation as defined by love of country over self. Such sacrificial loyalty might appear on the surface to demonstrate a lack of temperance—one of the cardinal virtues. But deeper reflection shows that focusing on the paramount issue of duty to country rather than having tunnel vision on certain elements of the country—such as duty to an individual service or to a function within a service—makes sense in terms of temperance as well.

Conclusion

The most capable military in human history cannot afford to suffer from an ethical breakdown. Interservice competition is good and is here to stay, but unhealthy interservice rivalry must end. Presently, the Air Force, Army, Navy, and Marine Corps have different core values. This is dysfunctional. Core values are also limited in effecting joint ethical conduct because values don't go far enough. They are situationally tied to worth and lack a moral domain. Virtues are more appropriate as an ethical bedrock. West Point's respected motto Duty, Honor, Country is more closely linked to virtues than values because it has moral implications. What does this have to do with leadership? Everything. Ethics begins and ends with leadership—today's leaders living it and tomorrow's leaders believing it. The leaders we need for the twenty-first century are those with virtue and ethical superiority. Only then can our joint force be joint from the heart.   □

Notes

1. Anthony C. Zinni, "A Commander Reflects," US Naval Institute *Proceedings* 126, no. 1 (July 2000): 35.
2. James Brown and Michael J. Collins, eds., *Military Ethics and Professionalism: A Collection of Essays* (Washington, D.C.: National Defense University Press, 1981), 10–11. According to Sam Sarkesian, "the demand for institutional obedience and professional loyalty can lead to professional mediocrity and institutional sterility and constrain critical and responsible inquiry" (10–11).

3. Samuel P. Huntington, *The Soldier and the State: The Theory and Politics of Civil-Military Relations* (Cambridge, Mass.: Belknap Press of Harvard University Press, 1985), 8–10. The author suggests that expertise, responsibility, and corporateness are fundamental to a profession. Corporateness holds that interservice rivalry can be counterproductive to the collective sense of "organic unity." Huntington does not include service in either the Army or Navy as a profession but lists service in the collective military as the profession.

4. Quoted in James Kitfield, "To Halt an Enemy," *Air Force Magazine* 81, no. 1 (January 1988): 62.

5. Dan Coats, "Joint Experimentation—Unlocking the Promise of the Future," *Joint Force Quarterly*, no. 17 (Winter 1997): 17.

6. Sharon K. Weiner, "The Politics of Resource Allocation in the Post–Cold War Pentagon," *Security Studies* 5, no. 4 (Summer 1996): 125. Under President George Bush, spending declined 25 percent, and the Bottom Up Review under President Bill Clinton cut spending another 5 percent.

7. Maj Gen Hugh A. Parker, transcript of oral history interview, June 1972, Air Force Historical Research Agency, Maxwell AFB, Ala., K239.0512-601. Splitting funding is the "easy compromise solution" to jointness. For example, as a member of the Emergency War Plans Group on the JCS staff, Parker witnessed the splitting of every plan three ways because each service had its own perspective and was fighting for its own existence: "Now how honest some of it was remains in doubt."

8. S. L. A. Marshall, *The Armed Forces Officer* (Washington, D.C.: Armed Forces Information Service, Department of Defense, 1975), 79.

9. Keith Hutcheson, "The Discipline Crisis," *Armed Forces Journal*, March 1996, 40.

10. T. R. Fehrenbach, *This Kind of War* (London: Brassey's, 1963), 295.

11. Marshall, 2.

12. Richard A. Gabriel, *Military Incompetence: Why the American Military Doesn't Win* (New York: Hill and Wang, 1985), 4–6. Gabriel identifies systemic incompetence and "institutional practices" as the real problems behind military incompetence.

13. General officer, address to Air War College, Maxwell AFB, Ala. (nonattribution policy).

14. The service academies are notorious for pointing fingers at each other when scandal hits. For an example of Naval Academy problems, see Mark Fiore's "Top Brass at Naval Academy Are Subjects of Pentagon Probe into Recent Scandals," *Chronicle of Higher Education*, 23 June 1997.

15. Col Charles R. Myers, "The Core Values: Framing and Resolving Ethical Issues for the Air Force," *Airpower Journal* 11, no. 1 (Spring 1997): 40.

16. Dr. James H. Toner, Air War College, Maxwell AFB, Ala., interviewed by author, 3 September 1998.

17. Gordon Wright, *France in Modern Times, From the Enlightenment to the Present*, 4th ed. (New York: W. W. Norton & Company, 1987), 82.

18. Myers, 47.

19. Perry Smith, "Leadership and Ethics: A Practitioner's View," in *Moral Obligation and the Military: Collected Essays* (Washington, D.C.: National Defense University Press, 1988), 138–39.

20. Josef Pieper, trans. Richard and Clara Winston et al., *The Four Cardinal Virtues: Prudence, Justice, Fortitude, Temperance* (New York: Harcourt, Brace & World, Inc., 1965), 146–47.

21. Thomas Begines, "Special Trust and Confidence," in *Ethics and National Defense: The Timeless Issues*, ed. James C. Gaston and Janis Bren Hietala (Washington, D.C.: National Defense University Press, 1993), 6.

22. James H. Toner, *True Faith and Allegiance: The Burden of Military Ethics* (Lexington: University Press of Kentucky, 1995), 9–17.

23. William Ebstein, ed., *Great Political Thinkers, Plato to the Present*, 4th ed. (Hinsdale, Ill.: Dryden Press, 1969), 284.

24. Polybius, "The Histories," in ibid., 122.

25. Myers, 50.

26. Smith, 136–38.

27. Arthur J. Dyck, "Ethical Bases of the Military Profession," *Parameters*, 10 March 1980, 43.

28. Toner, *True Faith and Allegiance*, 100.

29. Rushworth M. Kidder, *How Good People Make Tough Choices* (New York: William Morrow and Company, Inc., 1995), 57.

30. Toner, *True Faith and Allegiance*, 101.

31. Joint Pub 1, *Joint Warfare of the Armed Forces of the United States*, 10 January 1995, vi–vii.

32. Ibid., ii, 1.

33. DODD 5500.7, *Standards of Conduct: Joint Ethics Regulation*, August 1993.

34. Ibid., 155.

35. Ibid., 157.

36. James H. Toner, "Leadership, Community, and Virtue," *Joint Force Quarterly*, no. 11 (Spring 1996): 101.

37. Douglas A. Martz, "Professional Military Ethics," *Marine Corps Gazette*, August 1990, 58.

38. Kermit D. Johnson, "Ethical Issues of Military Leadership," *Parameters* 4, no. 2 (1974): 36.

39. William J. Bennett, ed., *The Book of Virtues: A Treasury of Great Moral Stories* (New York: Simon & Schuster, 1993), 12.

40. Gaston and Hietala, 140.

41. Anthony E. Hartle, *Moral Issues in Military Decision Making* (Lawrence, Kans.: University Press of Kansas, 1989), 44–47.

42. Perry M. Smith, "Military Ethics in the Pentagon," *Marine Corps Gazette* 83, no. 11 (November 1999): 66–68.

43. Weiner, 130–32.

44. William F. Diehl, "Ethics and Leadership: The Pursuit Continues," *Military Review*, April 1985, 36–42.

45. Richard T. DeGeorge, "The Need for a Military Code of Ethics," *Army*, December 1984, 30.

46. Toner, *True Faith and Allegiance*, 91. Gen Malham Wakin warns that there is a danger in codes becoming narrow. They cannot become a substitute for sound education in wisdom.

In Search of a Twenty-First-Century Air-Leadership Model
Fodder for Your Professional Reading

DR. DAVID R. METS*

Editorial Abstract: Where can future aerospace leaders find guidance and inspiration? One route is to reap the benefit of past experience through a vigorous professional reading program. In the latest installment of his popular "fodder" series of articles, Dr. Mets provides the air warrior- scholar with a sampler of important books on aerospace leadership.

Read and reread the campaigns of Alexander, Hannibal, Caesar, Gustavus, Turenne, Eugene, and Frederick. Make them your models. This is the only way to become a great general and to master the art of war. With your own genius enlightened by this study, you will reject all maxims opposed to these great commanders.

—Napoléon Bonaparte

THE QUEST FOR a key to successful air leadership is as old as airpower itself. An Air Force Academy was first proposed in Congress in 1919, and by 1931 Randolph Air Force Base (AFB) was known as "The West Point of the Air." Yet, until fairly recently, professional air warriors have had slim pickings when they looked for case studies in airpower leadership. For a long time, we have had many biographies of soldiers and seamen, but common percep-

tions hold that airmen are not a contemplative lot and have little inclination toward literary efforts. Few of them have set pen to paper to tell either their own life stories or those of other flyers.[1] Still fewer scholars and foundations have felt sufficiently competent to undertake such studies. But in the past two decades, that void has begun to be filled.

This article first explores the nature of models. What are they? What are they good for? What are they not good for? It then turns to sources of biographical material on airmen and the nature of biography as a vehicle for exploring the subject of air leadership. It further examines the advantages of the biographical approach and its shortcomings. The article illustrates these matters with reviews of two forthcoming books about air leadership—one on Maj Gen Mason M. Patrick and the other on Adm Joseph M. Reeves. It then suggests some possible benefits as well as the limitations of biographies and, in keeping with my "fodder" series of articles, closes with a "10-Book Sampler for Professional Reading."

I am not sure to what degree either Napoléon or his marshals followed his advice. Certainly, his interpreter Carl von Clausewitz held that it takes more than maxims and that genius—intuitive judgment—is the crucial element.[2]

What Is a Model?

A model is an artificial construct; it is not real. It is a simplification of reality. At the very best, it is an approximation of reality. It has no more authority than the credibility of its originator. Its utility is that it yields a conceptual framework and perhaps a commonly understood vocabulary that enables us to analyze and discuss a problem. It is an academic device to facilitate explanation and learning. But it cannot be used as a definitive guide to action. It can help in thinking about leadership, but it will certainly not make anyone a good leader. Consequently, all the abstract literature on leadership and all the air-leader biographies can do nothing more than suggest. Thus, one should certainly consider

Napoléon's maxims but should do so in the light of his or her own genius—that is, professional judgment.

We have about as many leadership models as leaders. When I attended Squadron Officer School (SOS) in 1959, the institution's model was Body, Mind, Soul. Yet, we received instruction from a parade of dignitaries from the flights over Schweinfurt, Germany, and other unpleasant places who gave us their own prescriptions for successful leadership. They were all different, but as I saw it, they merely described their own leadership styles. Some left out the need for professional knowledge, and some even omitted courage—perhaps taking it for granted. West Point's motto for the last century has been Duty, Honor, Country, and a recent version of the Air Force's core values calls for "integrity, service before self, and excellence in all that we do." Still another maxim depicted by Prof. Dennis Drew suggests, "Know yourself, know your job, set the example, accept responsibility, foster teamwork, and care for people." The point is that no universal model for leadership exists. Drew suggests that leadership is highly situational, with the exception that one cannot compromise the constants of integrity, service before self, and the continual search for excellence.[3] I suppose that is largely the old SOS model of Body, Mind, Soul—just in other words.

We encounter so many models of a positive kind that they become a bit bewildering. Either they are so complex that no one can begin to use them in all their dimensions in a crisis, or they are so simplified that they become useless platitudes in the real world. Perhaps a leadership model cast in a negative way would prove more useful—specifying a set of things to avoid rather than identifying desirable practices. One should avoid being unlucky, unhealthy, short, ugly, hesitant, cowardly, reckless, lazy, careless, dishonest, tactless, reticent, and pushy, just as one should not become a workaholic, martinet, dummy, or an intellectual "geek." Readers will quickly perceive that many of those attributes, like luck, are not within the leader's control. They will

also see that only a very fine line separates some of them. Officers never want to say a dishonest word. Neither do they want to appear tactless when the general's wife asks what they think of her new hat.

So what's an aspiring leader to do if these models are so ambiguous, uncontrollable, and contradictory? He or she can resort to autobiographies and biographies—some positive, others negative, and all imperfect in one way or another. Some very fine people provide examples to avoid. Near the end of his days, Adm William Halsey lamented that it would have been better had Adm Raymond Spruance taken his place during the Battle of Leyte Gulf and had Halsey replaced Spruance during the Battle of the Philippine Sea.[4] Gen Ira Eaker was one of the finest officers in Air Force history, but what led to his relief as commander of Eighth Air Force, just as it approached its culminating point?[5] Gen Haywood Hansell, as fine a Southern gentleman as ever graced the portals of Maxwell AFB, Alabama, was relieved hardly six weeks after his first B-29 attack on Japan.[6] Why? Why was Air Marshal Hugh Dowding, whose leadership proved essential to victory in the Battle of Britain, shunted aside soon afterwards? All of these people have biographies that might be useful in suggesting things to avoid—like bad luck, if possible. But people who try too hard to avoid bad luck will surely never accomplish anything positive. Any air leader knows that one surefire way to bring the accident rate down is to stop flying.

We can do something about the "Body" part of the 1959 SOS model. Indeed, we in the Air Force have done so. There are far fewer smokers among us now, and our Air Force gymnasiums are far more heavily populated than before. But dwelling on physical problems is pointless since only the individual can solve them.

The man who inspired this series of "fodder" articles in *Aerospace Power Journal,* Col Roger Nye, once remarked on the unlikelihood of leadership training doing much to change the basic value systems ("Soul"?) of successful young people. He said that if a "crook" entered such training, he would likely remain a crook when he graduated.[7] The training does some good for the group as a whole through the process of elimination. Even if few members of the group are more honest by graduation, the class as a whole may indeed have more integrity. Over the course of the training, some dishonest people will be expelled, and some will self-select out. But if crooks wiggle through, they will likely lack integrity forever after. The point is that our hopes of making substantial moral improvements in individuals through preaching or training may be pretty dim, despite all our efforts. Setting an example may help, but coercing or coaxing people to be honest, humane, and all the rest is a formidable task.

For individuals, perhaps the most promising area for improvement lies in SOS's region of the "Mind." They can strive for excellence during formal training and education, and they can enhance those results through a serious program of professional reading when not so engaged. Unhappily, that will never eliminate the need for seasoned professional judgments (read guesses) because we can never know all the facts that bear on our strategic, operational, and tactical problems. But such striving might well reduce the number of "unknowns" and increase the number of "knowns," thus improving the odds that the final professional judgment will be right—or more so than the enemy's, at any rate.[8] In other words, inherent in attributing success to luck is the danger of failing to prepare one's self to take advantage of good fortune when it does appear.

Possible Sources for Leadership Models

Many possible sources can help in the building of personal leadership models. They might include after-action reports, end-of-tour reports, diaries, interviews, personal papers, leaders' published articles, visits to battlefields or the homes and schools of leaders, alumni magazines, memoirs, autobiographies, and biographies. All but the last two sources would

prove difficult for the aspiring air warrior-scholar to use in the field. Most of the others feed into autobiographies and biographies, but we know that the very act of selecting such materials filters things and skews interpretations. Thus, although we know that completely unbiased biographies don't exist, they are nonetheless the most usable resources we have for the greater parts of our careers.

Advantages of Biography as a Vehicle for Studying Leadership

Many students of leadership have difficulty relating theoretical studies to the real world. Many such studies recognize this and employ case studies, either to prove their point or explain it. But these treatments still tend toward the abstract. Too, the cases employed will often seem superficial and open to question. Many aspiring leaders find biographies less abstract—more grounded in real-world experience. Moreover, because we all must look at the world through human eyes, the biography almost automatically has more appeal because it deals with an individual. That tends to make it more entertaining than other kinds of books. The publishing industry knows that, so we find many more biographies of leaders than we do books on the subject of leadership. For the officer in the field, that means that biographies may be much more available and easier to use than other sources of information on leadership. My earlier comment about bias does not mean that biographies are necessarily untrue—only that the positive side of the truth seems to get a much more thorough treatment than the negative.

Shortcomings of Biography as a Vehicle for Studying Leadership

One of the most serious difficulties with biography is the tendency to overemphasize the importance of an individual. Every biographer must ask the question "What if my subject had never lived?" Too often, the answer would be that it would not have made much difference. When Franklin Roosevelt died, Adolph Hitler in his bunker, as well as most people around me, predicted that the Allies would now lose the war and that a depression would ensue. Neither happened. Air Force leaders for both the *Mayaguez* affair and the Son Tay raid were fine men indeed.[9] However, the success of the former and the failure of the latter had very little to do with leadership and a great deal to do with luck.

Yet another difficulty with studying leadership through biography is that pressures on the author tend to result in an embellishment of the truth—that is to say, one cannot write negative things without solid documentation. Most sponsoring organizations would not fund a biography for any purpose other than glorifying the subject's role and, by extension, that of the organization itself. One observes a rather powerful tendency among survivors for their memories to mellow with the passage of years. The old school tie can play a role here. Veteran military-academy tactical officers looked upon drinking and gambling cadets as mortal sinners; 50 years later, they tend to see such things in terms of "boys will be boys." In any event, there is something admirable about "beating the system." Moreover, witnesses to a leader's role, more often than not, will be unwilling to speak ill of the dead—even less so as long as the subject is alive. In fact, the latter case can prove dangerous. Hitler's generals were much freer with their criticism after the führer died. Commercial publishers have a tendency to get the product on the street as early as possible and to overdramatize the role of the leader—because it sells books.

Another problem is that leadership models drawn from the study of biographies tend to obsolesce quickly. As recently as Vietnam, probably no more than one in 10 colonels could manipulate a keyboard; now they all seem to be able to do it. A grasp of technology did not seem to matter much to

Napoléon's marshals; it is crucial to air leadership today.

All that aside, military biographies have always been and will continue to be attractive tools for the study of leadership. Aspiring air leaders have found themselves handicapped in this until recent times because of the scarcity of good biographies of air leaders. In the last two decades, that deficiency has been partially repaired (see the "sampler" at the end of this article). Plenty of biographies will keep readers busy for some time to come.

Samples of Biographies

Recent, worthy biographies that one might use for the positive side of an air-leadership model include books about Air Force generals Henry Arnold, Carl Spaatz, Hoyt Vandenberg, Billy Mitchell, Curtis LeMay, Claire Chennault, and Mason Patrick.[10] All of our potential subjects do not have Air Force ties, and, obviously, piloting is not the same as air leadership. Our list might include Navy admirals William Moffett, Joseph M. Reeves, Raymond Spruance, and Ernest King.[11] Neither Moffett nor Reeves were pilots although both earned observer wings. Both King and Patrick won pilot wings, but neither ever really served on an aircrew. Spruance had no wings at all but undoubtedly must rank among the most impressive air leaders in American history. Certainly, readers should not limit themselves to Americans, for good works exist on Air Marshals Arthur Tedder, Keith Parks, Arthur Coningham, and Hugh Dowding.[12] More recently, Lt Col Eric Ash, the editor of this journal, has done a corrective to the picture we have of the early days of the Royal Air Force in his book on Sir Frederick Sykes.[13] Further, David Irving has written controversial works on Hermann Göring and Erhard Milch.[14] There are many biographies on Göring, but most explore the sensational side of his character and don't have much to say about air leadership that is worthwhile. Indeed, biographical literature on the senior leaders of the Luftwaffe is rather thin.

Current Air-Leadership Biographies

Here, we turn to a closer look at two brand-new biographies—one on Maj Gen Mason Patrick, who commanded the US Army Air Service and Air Corps during their most formative years (Robert P. White's *Mason Patrick and the Fight for Air Service Independence* [Washington, D.C.: Smithsonian Institution Press, forthcoming in September 2001]). The other, from the same period, is about Adm Joseph Mason Reeves, who was the commander of the first American aircraft carrier, the USS *Langley,* and, ultimately, of the entire US fleet (Thomas Wildenberg's *All the Factors of Victory: Admiral Joseph Mason Reeves and the Origins of Carrier Air Power* [Washington, D.C.: Brassey's, forthcoming in Spring 2001]).

Both General Patrick and Admiral Reeves lived in the shadows of the more noted air leaders Brig Gen William Mitchell and Adm William Moffett. Patrick was Mitchell's boss, first with the American Expeditionary Force (AEF) Air Service in France in World War I and later as the chief of the Army Air Service from 1921 until Mitchell's resignation in 1926. Moffett was at the political vortex in Washington from his appointment as chief of the Bureau of Aeronautics in 1921 until his death in the 1933 crash of the airship *Akron.*[15] Moffett was not Reeves's boss, but he had visibility in Washington while Reeves was at sea doing the day-to-day labor to integrate aviation into the Navy. Too, Moffett was an adept politician—at least as able as Mitchell at that art—and good at public relations as well. As with Patrick and Mitchell, Reeves lived somewhat in the shadow of the more visible Moffett. Many books and articles have been written about Mitchell, and a feature motion picture with Gary Cooper (a Mel Gibson equivalent of an earlier day) in the role of Mitchell enjoyed wide circulation.[16] Moffett's reputation benefited from the work of a splendid biographer seven years ago, with the publication of William F. Trimble's *Admiral William A. Moffett: Architect of Naval Aviation.* Now, both Patrick and Reeves emerge from

the shadows because of the labors of two fine scholars, Robert P. White and Thomas Wildenberg.

Maj Gen Mason Patrick

Robert White is well suited to do a work on Patrick. He is a retired Air Force officer with long experience in writing and teaching in the Air Force History and Museums Program. He is now the civilian historian for the Air Force

Office of Scientific Research. At one time, he was chief of the Air Staff History Office. A Pennsylvanian, White has master's degrees in history and government as well as a PhD from Ohio State. The biography of Patrick is an adaptation of his dissertation, but it does not suffer from the usual defects found in that sort of work. White also seems at home with technology, perhaps as a result of his military service with the National Security Agency.

Thomas Wildenberg has a varied but fine background for the work at hand. Like White, he is at home with technology, in part the result of having earned a bachelor's degree in mechanical engineering from New York University. He also holds an MBA from the same school as well as another master's in library and information services from the University of Maryland. His scholarship has focused almost entirely on naval history. His second book, *Destined for Glory: Dive Bombing, Midway and the Evolution of Carrier Air Power*, is a fine piece of work and has received excellent reviews.[17]

Neither book is a complete biography. As always, authors are prisoners of their sources, limited to what they can find in archives and elsewhere. One finds a little more of the subject's personal history in *Mason Patrick and the*
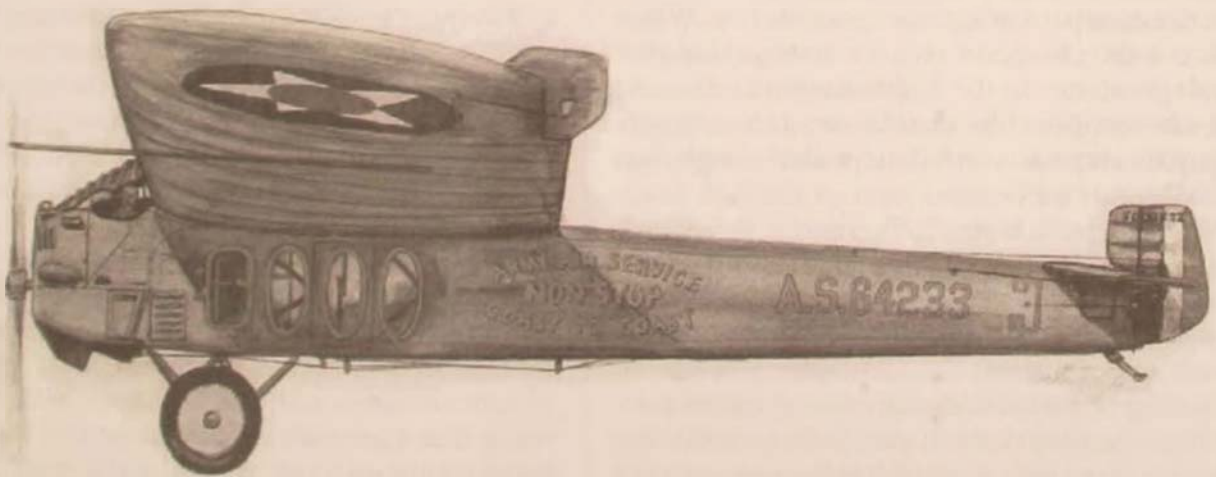
Both Billy Mitchell and Mason Patrick actively promoted an airpower synergy among military air forces, aircraft industry, and commercial airlines. Among other things, they supported record long-distance flights to impress upon both the media and the public the idea of aircraft and engine reliability. One such episode was John MacReady and Oakley Kelly's first transcontinental flight in the Fokker T-2 on 2 May 1923 in 26 hours.

Fight for Air Service Independence, but the book focuses on Patrick's service in the 1920s rather than his World War I work—and still less on his personal life. He was a West Pointer, second in his class there, and a friend of John Joseph Pershing, Army chief of staff. From the beginning, Pershing had very high regard for Patrick's intelligence, common sense, and mission orientation and sought him out to bring order out of the chaos that was the Air Service of the AEF. For practically identical reasons, Pershing drafted Patrick back into the Air Service to restore order among postwar airmen. One of the major instigators of disorder in both cases was Billy Mitchell.

In the years that followed, Patrick did manage to exert a measure of control over the behavior of his assistant—no mean trick since Mitchell probably was politically untouchable and certainly rich. Patrick was far from the reactionary lackey of the General Staff that the Mitchell worshipers have sometimes made him out to be (although Mitchell himself made no such accusation). Rather, General Patrick was a low-profile man who operated within the system yet was adept at making many of the very gains for the Air Service that Mitchell sought but failed to effect. They differed not in ideas but methods. Both favored an independent air force: Mitchell demanded it immediately, but his boss had a better grasp of what was possible. As White shows, the chief had enough sense to see that independence in the 1920s was beyond reach. Yet it was possible to take several very substantial steps toward that goal through less flamboyant methods.

Through his major influence on the Army's Lassiter Board and his labor with friends on the General Staff, as well as his work with Congress and the press, Patrick yielded several favorable outcomes. One was the General Staff's official blessing of the idea that air forces might have an independent role to play before mobilizing armies came into contact. Another was gaining general Army acceptance of the notion of two kinds of airpower: air service and air force. Patrick won approval to reduce the number of resources applied to the first and increase

those devoted to the second. Too, he managed to persuade the General Staff to accept the notion that the air force portion should not be farmed out to the control of divisions and other subordinate units. Rather, centralized control would permit the massing of air forces against targets in any threatened area and permit their use in independent operations, the ground situation permitting. Those ideas are not too far removed from the ones of the present-day Air Force, although ground forces still seem discontented with centralized control (but they now have their own "air service" forces in the form of helicopters).

Benjamin Foulois, later the chief of the Air Corps, found himself constantly at odds with Mitchell, who remained a bur under Patrick's saddle.[18] Yet, all three men—and the Air Service in general—shared much the same view of the world and the role of airpower in it. At times, Foulois was more radical than Mitchell and quite prone to "shoot from the hip." But for most of Patrick's tenure, Foulois was stationed in Germany, where he could not stir up chaos in the Washington arena. According to White, his man managed all these problems and kept a lid on things from the *Ostfriesland* bombing trials in 1921 to the relief of Mitchell as his assistant in early 1925.

Mitchell fans have denigrated Patrick over the court-martial trial, but the chief had in fact requested Mitchell's reappointment for another term as his assistant. However, the secretary of war did not honor the request. Mitchell was *not* demoted. Rather, the rank went with the assistant's position, and when Mitchell had to transfer out of it, he merely reverted to his permanent rank—as many, many Air Service men had done at the end of World War I (though not the senator's son).

Mitchell's court-martial in late 1925 is an oft-repeated tale. Unfortunately, Bob White cannot compete with Gary Cooper in dramatizing that dimension of the story. But Mason Patrick went on to win a substantial "half loaf" with the Air Corps Act of 1926. He got the name changed to *Corps,* which implied both a real combat mission and served as a step on the road to an independent air force. The act

also authorized a substantial air buildup that both he and Mitchell had fervently desired. Patrick retired the next year, and Congress never did appropriate the monies it had promised in 1926—but by then, Patrick was retired and no longer responsible.

With *Mason Patrick and the Fight for Air Service Independence,* Robert White does a substantial service for airpower historiography. He balances the picture by providing an important corrective to the Billy Mitchell legend and at the same time gives due credit to Mitchell's boss, who lived out of the limelight but nonetheless did more than has been recognized heretofore. I recommend this book most strongly to the readers of *Aerospace Power Journal.* The neophyte air leader could do worse than adopt Mason Patrick as a role model.

That young leader might do equally well to choose Adm Joseph Mason Reeves as yet another pillar of his or her study of air leadership. Unhappily, Tom Wildenberg could do no more with the youth and private life of Reeves than could White with Patrick. Young air warrior-scholars are at least as interested in how the people they study got to be great air leaders as they are in the way they behaved once they reached the pinnacle. Again, biographers can go only as far as their reliable sources let them, so we are inevitably left with a partial picture with some "knowns" and many "unknowns." Air leaders must simply make the assumptions that compensate for missing information.

Like practically all of the admirals of his day and well beyond, Reeves attended the US Naval Academy in Annapolis, Maryland. Born in 1872, he graduated in 1894, 37th in a class of 47, more distinguished for his football than his academics.[19] He spent much of the ensuing time at sea, but his only combat time came briefly in the Spanish-American War. Over the years, he gained substantial recognition as a master of technology and especially as a gunnery expert. As with army artillery, this was conducive to an association with aviation from the earliest times. As Wildenberg makes clear, the battleship admirals were not so disdainful of aviation as they

Adm Joseph Mason Reeves

were persuaded of its precious contribution to gunnery warfare at sea.

Assuming one had established air superiority over a battle area, one's guns were quite able to take the enemy under accurate fire long before he could return the favor. In all probability, the admiral who could sink an enemy's carrier first would then use air superiority for gun spotting to destroy his adversary's battlewagons well before they could hurt him with observing fire from their upper decks. Thus, battleship sailors had powerful motivation to get behind the development of good carriers and aircraft even without the incentives Mitchell provided. But the clear and present threat remained that if the Navy did not develop aviation on its own, then Mitchell would take it away—as had happened in Great Britain.

One of the reactions of the Navy was to create the Bureau of Aeronautics and promote Moffett to rear admiral in charge—an admirable choice. It showed Congress that the Navy did not need an external prod and at the same time brought in someone politically savvy and an expert in organizational development and public relations. Further, Moffett had powerful political backing from his friends in Illinois, which helped in the competition with Mitchell. He well understood that he had to have ships, money, and a protected career track for his aviators.[20] He himself was not a pilot. Immediately after taking office, though, he created an aircraft-
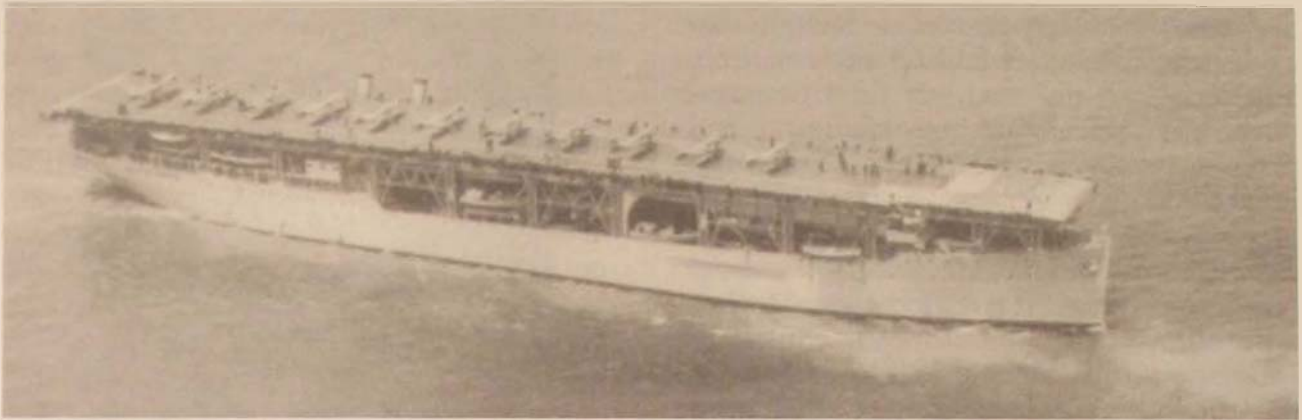
The USS Langley, CV-1, was America's first aircraft carrier, and its initial commander was Joseph Mason Reeves. He used that position to develop procedures and doctrines, some of which we still use today.

observer's course down at Pensacola, Florida, which included all parts of the pilot's flying syllabus except the solo. Thus, he was able to pin on wings of a sort, and that seemed to help with his own aviators—and even with Congress. Because Reeves was too old to undertake the whole syllabus, he too went through the observer's course.

Earlier, Reeves had served as skipper of the new collier *Jupiter,* and when the Navy converted it to the first US aircraft carrier USS *Langley* in 1924, he became her first commander. For the next decade and more, Reeves labored on developing the procedures, tactics, and carrier doctrine aboard the *Langley* and the third carrier, the USS *Saratoga.* Meanwhile, back in Washington, Moffett was providing top cover, funding, policy, and personnel, which allowed Reeves the time and resources to pursue other matters.

As Wildenberg and Trimble so adeptly show, the personalities of these two great leaders, both gunnery men and neither a pilot, enabled them to lead feisty aviators. Thus, they successfully integrated aviation into the US Navy, making it the leading naval force in the world—even after the disaster at Pearl Harbor. This was no mean feat. The qualities in Reeves that the prospective air leader might seek to emulate include a solid commitment to excellence and a continual desire for improvement (this long, long before the Total Quality Management folks came along in the 1990s). His firm but understanding personality enabled

him to impose his will on such spirited pilots as Marc Mitscher, greatly increasing the numbers in carrier deck loads and choreographing deck operations to significantly increase the sortie rate. He did so with far, far fewer accidents and injuries than the pilots thought would be inevitable. Like Patrick, Reeves operated in such a reformist (as opposed to a radical or conservative) manner, relating well with the service heavyweights, that he had made a substantial advance toward making the carrier a capital ship long before Pearl Harbor. Clearly, he had the requisite imagination and initiative. But he, Patrick, and Moffett combined those virtues with endurance. Progress takes time, and all three officers stayed in the saddle far longer than usual. Had Wildenberg found more documentation on Reeves's family life, we might have a better estimate of his selflessness. Certainly, he was more dedicated to his profession than most officers. But it also appears that his family life may have been such that it required far less of his attention than one might expect. Evidently, he and Admiral King had this in common. Both men seem to have concentrated their time and attention on their profession to a degree rarely seen.

Undoubtedly, Moffett especially, but also Reeves, demanded much of their people. But they cared for their charges deeply and went to great lengths to take care of them. As with Patrick, the aspiring air leader could do worse than use Wildenberg's fine book as a building block for a personal leadership model.

Possible Outcomes of Studying Leadership through Biography

Perhaps the most significant gain young officers can realize through this approach to leadership would come in the form of additions to a personal database. Most models assert that professional knowledge is one of the primary foundations of leadership. When the moment of truth comes, people never have all the data they need. But armed with a lifetime of study, they can at least increase their inventory of "knowns" and reduce their shortfall of "unknowns." That does not guarantee that their choices will be correct. But it *will* improve the odds that their guesses will be better than their adversary's.

More than that, though, the biographical approach seems more enjoyable than other methods. It also does something to cultivate a critical—hopefully, not cynical—approach to decision making. The biographical approach makes it much easier to identify poor choices and to say to one's self, "There, but for the grace of God, go I." Even if such study does not yield guidelines useful in dealing with immediate real-world problems, it may nonetheless preserve composure under stress. People have a strong tendency to feel alone under such conditions. But it helps to know that other leaders, in other places, in other times have always faced fatigue, danger, and uncertainty and survived—"This, too, will pass."

Improbable Outcomes

The benefits of biographical study—and study in general—have limits. It will not guarantee wisdom, charisma, certain victory, wealth, fame, love, self-fulfillment, or good looks; neither will it eliminate the need for the final guess. It might improve the odds for some of those things, but let us hope that the future does not hold the same thing that confronted Patrick and Reeves, both of whom lived to see the horrors of World War II. It's difficult to imagine anything worse—except losing that war. Perhaps if we prepare well enough, were a third world war to occur, we could prevent an even more terrible outcome.

A 10-Book Sampler for Professional Reading on Air Leadership*

Two for an Overview

The Challenge of Command: Reading for Military Excellence by Roger H. Nye. Wayne, N.J.: Avery, 1986.
One of America's greatest military educators, Nye was a West Pointer, an authority on George Patton, a tank commander in combat in Korea, and a long-time faculty member at the US Military Academy. He earned a PhD from Columbia University.

Makers of the United States Air Force edited by John L. Frisbee. Washington, D.C.: Office of Air Force History, 1987.
This book contains biographical chapters on many Air Force leaders. Frisbee, a retired Air Force officer, was an editor of *Air Force Magazine* and head of the History Department at the Air Force Academy.

Eight for Greater Depth

Master of Airpower: General Carl A. Spaatz by David R. Mets. Novato, Calif.: Presidio Press, 1988.
Although I wrote this book in two-and-a-half years after I retired from the Air Force, it is based on my research and experience as an active duty Air Force officer.

Hoyt S. Vandenberg: The Life of a General by Phillip S. Meilinger. Washington, D.C.: Air Force History and Museums Program, 2000.
The author is a graduate of the Air Force Academy, an Air Force pilot, a teacher of military history, former dean of the School of Advanced Airpower Studies, and former faculty member at the Naval War College. Now a researcher in Washington, D.C., he has a PhD from the University of Michigan.

The Quiet Warrior: A Biography of Admiral Raymond A. Spruance by Thomas B. Buell. 1974. Reprint, Annapolis: Naval Institute Press, 1987. *Master of Sea Power: A Biography of Fleet Admiral Ernest J. King* by Thomas B. Buell. Boston: Little, Brown, 1980.
The author is among the top three or four practicing military biographers in America. A retired Navy officer who once commanded a destroyer, Buell was a teacher at the Naval War College and at West Point.

Admiral William A. Moffett: Architect of Naval Aviation by William F. Trimble. Washington, D.C.: Smithsonian Institution Press, 1994.
Trimble, a professor at Auburn University, has also written an authoritative book on aircraft development in the US Navy.

Billy Mitchell: Crusader for Air Power by Alfred F. Hurley. New York: F. Watts, 1964.
Of the many books on Mitchell, this is the best. Hurley, a retired Air Force navigator and former head of the History Department at the Air Force Academy, is now chancellor of a large university in Texas. His doctorate is from Princeton.

Mission with LeMay: My Story by Curtis E. LeMay with MacKinlay Kantor. Garden City, N.Y.: Doubleday, 1965.
We have a biography of General LeMay, but it was written quickly for the popular market, leaving room for an authoritative, academic work on his life. Thus, the serving air warrior might as well use this book of memoirs, which is widely available.

Sir Frederick Sykes and the Air Revolution, 1912–1918 by Eric Ash. London: Frank Cass, 1999.
As was the case with Mason Patrick and Joseph Reeves, Sykes was overshadowed by someone more notable—in this case, Hugh Trenchard. This book gives us a completer picture. The author, who holds a PhD from the University of Calgary, is an Air Force officer and a graduate of and former teacher at the US Air Force Academy. At this writing, he is the editor of *Aerospace Power Journal.*

One for Good Measure

American Airpower Biography: A Survey of the Field by Phillip S. Meilinger. Maxwell AFB, Ala.: Air University Press, 1995.
This pamphlet summarizes the status of biographical writing about air leaders. Easily available to serving air warriors, it amplifies many of the ideas in this article.

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*I do not mean to imply that this is a definitive bibliography of military biographies—only a starter list of readable, widely available books. Most of them should be readily available in the field.

Notes

1. Those few included Gen George C. Kenney, *General Kenney Reports: A Personal History of the Pacific War* (1949; reprint, Washington, D.C.: Office of Air Force History, 1987); Lt Gen Lewis H. Brereton, *The Brereton Diaries: The War in the Air in the Pacific, Middle East and Europe, 3 October 1941–8 May 1945* (New York: Morrow, 1946); and Lt Gen William H. Tunner, *Over the Hump* (1964; new imprint, Washington, D.C.: Office of Air Force History, 1985).

2. Carl von Clausewitz, *On War*, ed. and trans. Michael Howard and Peter Paret (Princeton, N.J.: Princeton University Press, 1976), 100–112.

3. Col Dennis Drew, USAF, retired, "Leading Airmen into the Twenty-First Century: Meeting the Leadership Challenges of the United States Air Force," draft, Maxwell AFB, Ala., n.d.

4. Halsey had been criticized at Leyte for leaving the amphibious force unprotected while he went off chasing a decoy Japanese carrier force; earlier, Spruance had been criticized during the landings in the Mariana Islands for failing to pursue the Japanese carrier forces. The current biography of Halsey is Elmer B. Potter's *Bull Halsey* (Annapolis: Naval Institute Press, 1985); Thomas Hughes is preparing a new one. See also Thomas B. Buell's fine work *The Quiet Warrior: A Biography of Admiral Raymond A. Spruance* (1974; reprint, Annapolis: Naval Institute Press, 1987).

5. The answer is not really in the biography written by James Parton, *"Air Force Spoken Here": General Ira Eaker and the Command of the Air* (Bethesda, Md.: Adler & Adler, 1986). Parton was General Eaker's aide during World War II.

6. Haywood S. Hansell's *The Air Plan That Defeated Hitler* (Atlanta: Higgins-McArthur, Longino & Porter, 1972), and *Strategic Air War against Japan* (Maxwell AFB, Ala.: Airpower Research Institute, 1980), give his interpretation of the campaigns but do not answer our question. I believe he was too much the gentleman to explore such subjects in print.

7. Col Roger H. Nye, *The Challenge of Command: Reading for Military Excellence* (Wayne, N.J.: Avery, 1986). Nye was one of the great but unsung heroes of military education. The "crook" comment came in a conversation with the author—not from his book.

8. The inspiration for this paragraph is Michael Howard's "Military Science in an Age of Peace," Chesney Memorial Gold Medal Lecture, 3 October 1973, reprinted in *Journal of the Royal United Services Institute* 119 (March 1974): 3–11.

9. John F. Guilmartin's *A Very Short War: The Mayaguez and the Battle of Koh Tang* (College Station, Tex.: Texas A&M University Press, 1995), is the best work on the subject. See also Benjamin F. Schemmer's *The Raid* (New York: Harper & Row, 1976).

10. There is no complete, scholarly biography of Henry Arnold, but his own *Global Mission* (New York: Harper, 1949), is useful. The current, authoritative work on Arnold is Dik A. Daso's *Architects of American Air Supremacy: Gen Hap Arnold and Dr Theodore von Kármán* (Maxwell AFB, Ala.: Air University Press, 1997). When Daso retires from the Air Force in the summer of 2001, he is slated to become a curator at the Smithsonian Air and Space Museum; hopefully, a complete biography will be forthcoming after that. My own *Master of Airpower: General Carl A. Spaatz* (Novato, Calif.: Presidio Press, 1988), covers the life of Spaatz, and Richard G. Davis's impressive *Carl A. Spaatz and the Air War in Europe* (Washington, D.C.: Office of Air Force History, 1993), goes into great detail for that part of Spaatz's life. Phillip S. Meilinger's *Hoyt S. Vandenberg: The Life of a General* (Washington, D.C.: Air Force History and Museums Program, 2000), covers the latter part of Vandenberg's life, while Brig Gen Jon A. Reynolds's dissertation "Education and Training for High Command: General Hoyt S. Vandenberg's Early Career" (Duke University, 1980), deals with the earlier years. The latter may be difficult to obtain for the officer in the field, but a copy does reside in the Air University Library. Alfred F. Hurley's *Billy Mitchell: Crusader for Air Power* (New York: F. Watts, 1964), is the best work on Mitchell. Evidently, a good academic biography on LeMay does not exist, but his and MacKinlay Kantor's *Mission with LeMay: My Story* (Garden City, N.Y.: Doubleday, 1965), is widely available. Martha Byrd's *Chennault: Giving Wings to the Tiger* (University, Ala.: University of Alabama Press, 1987), is the best thing on Claire Chennault.

11. William F. Trimble's *Admiral William A. Moffett, Architect of Naval Aviation* (Washington, D.C.: Smithsonian Institution Press, 1994), is an authoritative interpretation of Moffett. Thomas B. Buell's *Master of Sea Power: A Biography of Fleet Admiral Ernest J. King* (Boston: Little, Brown, 1980), is doubtless one of the three or four best American military biographies ever written—truly a model for all young biographers. It is in the same league with Forrest Pogue's biography of George Marshall and Stephen Ambrose's work on Dwight Eisenhower.

12. See Vincent Orange's three books *A Life of Marshal of the RAF Lord Tedder of Glenguin* (London: Frank Cass, 2000); *Coningham: A Biography of Air Marshal Sir Arthur Coningham, KCB, KBE, DSO, MC, DFC, AFC* (Washington, D.C.: Center for Air Force History, 1992); and *A Biography of Air Chief Marshal Sir Keith Park, GCG, KBE, MC, DFC, DCL* (London: Methuen, 1984). See also Robert Wright's *The Man Who Won the Battle of Britain* (New York: Scribner, 1969).

13. Eric Ash, *Sir Frederick Sykes and the Air Revolution, 1912–1918* (London: Frank Cass, 1999).

14. See David Irving's books *Goring: A Biography* (New York: Morrow, 1989); and *The Rise and Fall of the Luftwaffe: The Life of Field Marshal Erhard Milch* (Boston: Little, Brown, 1973). Undoubtedly, Lee Asher's *Goering: Air Leader* (New York: Hippocrene, 1972), gives another, but less controversial, view.

15. Trimble, 266.

16. *The Court-Martial of Billy Mitchell*, Republic Pictures, 1955.

17. Thomas Wildenberg, *Destined for Glory: Dive Bombing, Midway, and the Evolution of Carrier Air Power* (Annapolis: Naval Institute Press, 1998).

18. On Foulois, see the late John F. Shiner's *Foulois and the U.S. Army Air Corps, 1931–1935* (Washington, D.C.: Office of Air Force History, 1984), although it is not the complete biography.

19. United States Naval Academy Alumni Association, *Register of Alumni, Graduates, and Former Naval Cadets and Midshipmen, 1845–1992* (Annapolis: US Naval Academy, 1992), 163.

20. Stephen Peter Rosen, *Winning the Next War: Innovation and the Modern Military* (Ithaca, N.Y.: Cornell University Press, 1991), 64–71; and Thomas C. Hone, "Navy Leadership: Rear Admiral William Moffett as Chief of the Bureau of Aeronautics," in *Air Leadership: Proceedings of a Conference at Bolling Air Force Base, April 13–14, 1984*, ed. Wayne Thompson (Washington, D.C.: Office of Air Force History, 1986), 83–117.

Developing Aerospace Leaders for the Twenty-First Century
A Historical Context for the DAL Concept

DR. MIKE THIRTLE

Editorial Abstract: Why is the Developing Aerospace Leaders (DAL) initiative needed? Dr. Thirtle points to a lack of unifying vision and the growth of occupationalism in the Air Force. In this article, reminiscent of Carl Builder's book The Icarus Syndrome, *he states DAL's objectives and explains why it is necessary to recapture the "heart and soul" of the service through deliberate cultivation of the aerospace power mind-set.*

To employ aerospace capabilities effectively, we'll continue to develop commanders who think in terms of exploiting the whole aerospace continuum—leaders able to employ forces that produce the desired effects, regardless of where platforms reside, fly, or orbit. These leaders with experience and cross-competence in the increasingly complex range of military disciplines will lead aerospace and joint forces to victory for our nation.

—*Air Force Vision 2020*

W E LIVE IN a different world today than we did in the past, with a different set of expectations, different security challenges, and a different context of American culture and economy than before the Cold War. The purposeful act of developing aerospace leaders who are focused upon the successful application of aerospace power in this century is perhaps one of the most important and far-reaching functions the Air Force will undertake during the new millennium to address existing challenges.

Whom will we fight? How will we fight? When will we fight? In what medium will we fight? How will we define what *fight* means from an operational perspective? In light of the many changes the Air Force will encounter during the next few decades with respect to technology and the employment of forces in the battle space, the task of developing top-notch, well-rounded, broadened,

and educated leadership will be paramount to ensuring that the Air Force remains the world's best air service. Although the Air Force's emphasis upon quality will never cease to exist (it cannot), the methods and processes by which the service attracts, retains, and develops the future leadership corps are likely to change—indeed, they must. Aerospace leaders of tomorrow will have to be even more broadly oriented than they have been in the past—we will need leaders who have experience across multiple competencies and who can think in terms of exploiting the entire aerospace continuum: from information operations to air operations to space operations.

Can We Meet the Need?

During his first year as chief of staff of the Air Force (CSAF), Gen Michael E. Ryan recognized that the Air Force would need a comprehensive examination of major areas of policy in order to reflect the changing nature of the service.[1] One of these areas, force development, rose to the top of his list. But why is force development such a priority, given other pressing needs, such as the F-22 program or replacement of the service's aging aircraft fleet? Don't we have great leaders today? Has the Air Force not produced the best leadership that it could possibly produce? Do we not have some of the most comprehensive personnel- and career-development systems in the world? Answers to these introspective questions led the CSAF to further exploration.

As he examined his past experiences, discussed them with senior mentors such as retired Air Force general Robert J. Dixon, and compared them to the Air Force's present and future challenges, General Ryan could not determine whether or not the Air Force (with the same systems and methods used today) would purposefully develop the "right" qualities (leadership and experience) it would require a generation from now. Likewise, he could not tell whether or not the current systems for developing such leaders were

as "healthy" as they could be—that is, did the Air Force need to improve the effectiveness, efficiency, flexibility, and clarity of its force-development process? The Developing Aerospace Leaders (DAL) initiative was designed to address such concerns.

The DAL program office will identify and modify counterproductive policies, practices, and procedures as well as explore and recommend processes to support and make the best practices routine.

DAL and Its Objectives

Instituted by General Ryan in March 2000 to examine and recommend actions necessary to prepare future officers for Air Force leadership.[2] DAL seeks to answer the types of questions posited above. It benefits from the advice of senior mentors such as retired Air Force generals Bradley C. Hosmer and Billy J. Boles, as well as General Dixon. All three of these men have played a significant role not only in developing the DAL construct, but also in mentoring the effort itself. Although General Ryan originally established DAL with a two-year charter,[3] he has indicated that "the DAL project is not an end state, but a continuing process. It transcends the tenure of leadership. Over time, development issues will require further analysis and modification as institutional needs transition to meet future requirements. The broader DAL approach will remain the critical foundation upon which force development programs will be measured and implemented well into the next century."[4] To fulfill part of the charter, the DAL program office will identify and modify counterproductive policies, practices, and procedures as well as explore and recommend processes to support and make the best practices routine. DAL objectives include establishing processes and procedures that build a senior leadership corps able to

- understand national security interests and fully exploit the aerospace domain to support national objectives;

- develop, cultivate, and maintain operational competence in the medium of aerospace;

- envision, develop, acquire, sustain, support, and employ capabilities that exploit the aerospace domain to create military effects; and

- communicate the absolute and relative value of aerospace capabilities to the American people and their representatives.[5]

Many service members today would contend that the Air Force lacks a unifying vision that is coherent, well understood, and embraced by the totality of the officer corps.

Although DAL will initially emphasize development of the active duty officer corps, it will eventually include an analysis of Air Force Reserve, Guard, and civilian personnel as well.

Why Do We Need DAL?

An examination of Air Force history reveals no single reason but a multitude of reasons why the Air Force has instituted the DAL initiative at this time. General Ryan's concern about the organization's development of future leaders provides the most well-documented reason for change; however, interviews with Air Force senior mentors (Generals Dixon, Hosmer, and many others inside and outside the Air Force) also provide a rationale. To their credit, Generals Dixon, Hosmer, and Boles have provided (during both their active duty and retirement) a solid legacy upon which both the CSAF and the DAL initiative have built. Specifically, the Air Force needs DAL because of the lack of a unifying vision, the growth of occupationalism within the officer corps, the loss of heart and soul, and the need for cultivating a healthier mind-set.

Lack of a Unifying Vision

Airpower theory was developed by visionaries who initially bucked the system of the traditional Army in order to establish airpower as a unique method for conducting warfare. Men like Gen Billy Mitchell sacrificed their careers to change paradigms in the face of daunting opposition.[6] Paradoxically, even though the early visionaries had a common focus of establishing the Air Force, they had different reasons for embracing the role of airpower:

- Military professionals conceived of airpower theory as a more effective way to wage war and organize its means.

- Military aviators embraced this theory because it gave a higher purpose to their love of airplanes and flying.

- The American public was dismayed by the bloody stalemate of trench warfare in World War I and hoped to avoid its repetition by the use of aerial bombardment.

- American politicians, who had to raise money for the military, saw the use of airpower as a way to buy defense capabilities that were less expensive than those of Army or Navy forces.

- Mitchell and others of like mind sought independence from the Army.[7]

Many service members today would contend that the Air Force lacks a unifying vision that is coherent, well understood, and embraced by the totality of the officer corps. One may attribute some portion of this misunderstanding to changes since the end of the Cold War; the historical reasons cited above account for the rest of the misunderstanding.

Because different stakeholders had unique beliefs as to the purpose of an air force, people embraced airpower theory in different ways—a phenomenon that remains essentially unchanged.

It is not too far-fetched to think that the lack of a unifying vision, although necessary to establish airpower during its formative years, may be exactly what has caused the deterioration of a sense of ideological bonding in the Air Force today—the same type of bonding that DAL seeks to develop and institutionalize. The signal that US policy makers sent to the military, specifically the Air Force in the post–World War II time frame, was undeniable: technology development and delivery were important mechanisms—not only for executing the military mission, but also for the very existence and continuance of a military service itself. The Air Force embraced this ideology.[8] As opposed to the other military services that have identified themselves with a mission, the Air Force has identified itself with technology and has subsequently become associated with a specific type (the airplane). This identification has resulted in a weaker sense of community among airmen than exists among members of the other military services. The lack of a unifying vision has led to weak organizational ties and a focus upon systems as opposed to missions.[9]

The Growth of Occupationalism—Focus upon Specialty

Differing reasons for embracing airpower theory, mentioned above, accompanied by the role of technology, created a scenario that Charles Moskos has referred to as occupationalism—a situation in which individuals bond more with their job specialty than they do with the service as a whole.[10] Many Air Force leaders are concerned that the rise of occupationalism has negatively affected a broader focus upon teamwork and unification to accomplish the mission. General Dixon stated it best when he said that the "narrowness of focus" during the past has caused many officers to become more concerned about their specialty than about officership.[11]

How one answers the question "What do you do?" clearly expresses one symptom of this problem. As General Ryan stated in the DAL charter, he (as well as others, such as Generals Dixon and Hosmer) expects the response will be, "I am an Air Force officer."[12] The reality of the current situation, however, is that Air Force officers tend to refer to their occupational specialty in their answer. For example, a pilot would say, "I am a pilot" (or fighter pilot, bomber pilot, etc.); an acquisition officer might say, "I am a program manager"; and so forth. The danger of this occupational focus is that, in the end, the officer becomes more committed to a specialization than to the concept of officership itself, which could likely result in a lack of occupational unity.[13]

Loss of Heart and Soul

Although somewhat intangible, the concept of "heart and soul" also plays a significant role in defining the health of the organizational culture within the service. In *The Icarus Syndrome*, Carl Builder emphasizes the importance of the relationship between the role of leadership and the culture of the organization. To him, they represent the organization's heart and soul—both of which are critical to the efficacy of the Air Force in the twenty-first century. He expressed as much in a 1991 letter to Lt Gen Phillip J. Ford (then commandant of Air University's Air Command and Staff College at Maxwell Air Force Base [AFB], Alabama):

> As you indicated, airpower is one piece, the profession of arms is the other. One is the heart of the Air Force, the other is its soul. The senior leadership of the Air Force is the trustee of the heart; but everyone in the Air Force is a trustee of its soul. The heart is about organizational purpose or mission—airpower—and the soul is the profession of arms—the absolute and total commitment to mission. . . .
>
> The problem, as I see it, is that the two—heart and soul—have failed each other: The senior leadership has failed to keep the heart—the mission of airpower—alive and vibrant by keeping it at the forefront of all its actions. And with-

out the mission, members of the Air Force have had nothing to commit themselves to except their own careers or specialties.

The leadership can't dedicate the organization to its mission just by lip service; its decisions (including promotions and rewards) must reflect that dedication, or its followers soon detect the duplicity. Given that dedication of the organization to its mission, everyone joining the organization can appreciate and elect (or not) to commit to the mission. . . . To be sure, not everyone who joins an organization will commit to its mission; but those persons are not professionals at arms and they are not people that the organization should normally seek and reward. If the organization sends out mixed signals about its mission or its dedication to its mission, it can hardly complain if professionalism and commitment to the mission falter among its people.

Thus, I think that both the heart and soul have failed each other in the Air Force.[14]

A Mind-Set in Need of Cultivating

Examination of Air Force policy during the recent past indicates that at least two major paradigm shifts are under way. Both are outgrowths of changes associated with the post–Cold War era. The first involves the very thing upon which the Air Force was founded—technology. In this context, technology refers to airplanes, hardware systems, and so forth. From the public's perspective, this is the face of the Air Force. The second paradigm shift is taking place in the human side of the organization and involves a change to the mind-set that exists within the Air Force. This change provided both the impetus for creating DAL and a significant challenge for the Air Force as it enters the twenty-first century.

A review of Air Force history, mentioned earlier, reveals the turbulent nature of Air Force culture. In general, such turbulence appears to be the result of introspection and the propagation of thoughts prevalent many decades ago. For example, recent Air Force leadership has referred to a need for a "back to basics approach" in terms of how its people should conduct themselves.[15] Leaders have purposefully articulated the words *integrity*, *honesty*, and *character* in hopes that the Air Force can once again capture a certain attribute perceived to have existed many decades ago but now lost for one reason or another.[16]

Firsthand discussions with senior Air Force policy makers, conducted as part of the research for this article, indicated a very similar tone: Air Force leaders desire to recapture what their service has lost. Thus, the word *change*, used in the context of organizational change, actually means recapturing a sort of "paradise lost." For the Air Force, the blurring of the old paradigm is in the works, and the DAL effort will concentrate on cultivating a new focus within the organization—a focus, as General Ryan indicates, that "will require a change in the Air Force mindset and to some, their Air Force identity."[17]

The DAL project is a positive step forward in attempting to address the type and quantity of institutional challenges the Air Force has faced during the past five decades. By breaking down occupationalism, unifying the service's vision, and reinvigorating both the heart and soul of the Air Force, a good chance exists for "putting the train back on the tracks," in the words of one senior leader. Despite some officers' skepticism of the potential success of the project,[18] a failure to act may prove detrimental to the national security of the country, to the efficacy of aerospace power, and to the very existence of the service.

How Will We Know If DAL Is Successful?

Clear indications of DAL's success may prove elusive. Perhaps when officers do not identify themselves with a specific occupational specialization or when the service experiences a greater cross-flow and robust leadership-development process for officers of all specialties, we can then say that DAL has succeeded. Other measures of success might include individuals' recognizing the core pur-

pose of the service and perceiving how they fit into the overarching strategy. In any case, we will more than likely reap the fruits of DAL's success in the long run—probably a couple of decades from now. The institution of new processes and themes will likely occur in the short run, but we will not observe their effects until the Air Force's new lieutenants become leaders of the service in the third decade of the twenty-first century. The winning of future conflicts, coupled with the type of cultural changes described here, will serve as the ultimate proof. In the words of General Hosmer, "DAL will be successful when our officers lead by example and they don't have to think about leading. Aerospace leadership will be like breathing—it will be innate."[19] □

Notes

1. "Air Force Evaluates Professional Development of Its Total Force," *Air Force News Service*, 9 February 2000, 1.

2. Gen Michael E. Ryan, "Developing Aerospace Leaders Charter" (Washington, D.C.: Headquarters United States Air Force, 13 October 1999).

3. Gen Michael E. Ryan, memorandum to the Air Staff, subject: Developing Aerospace Leaders Program Office, 19 January 2000.

4. Gen Michael E. Ryan, Commander's Notice to Airmen (NOTAM) 01-02, "Developing Aerospace Leaders," 22 March 2001, 2.

5. Maj Kathleen Cook, "Developing Aerospace Leaders" (Washington, D.C.: Headquarters Air Force, Public Affairs, 2001), 1.

6. For an excellent synopsis of the early years of the Air Force, see the first chapter of Herman S. Wolk's *The Struggle for Air Force Independence, 1943–1947* (Washington, D.C.: Air Force History and Museums Program, 1997). Carl H. Builder also provides a detailed account of the Air Force's beginnings in chaps. 4–9 of the *The Icarus Syndrome: The Role of Air Power Theory in the Evolution and Fate of the U.S. Air Force* (New Brunswick, N.J.: Transaction Publishers, 1994). Lt Col Johnny R. Jones's *William "Billy" Mitchell's Air Power* (Maxwell AFB, Ala.: Airpower Research Institute; College of Aerospace Doctrine, Research and Education, 1997), is yet another contemporary presentation of early airpower history that details the thoughts of General Mitchell.

7. Builder, 66.

8. See Maj Cynthia J. Grey's "Beyond the Wild Blue Yonder: Creating an 'Air and Space' Culture in Today's Air Force," research report (Maxwell AFB, Ala.: Air Command and Staff College, April 1998), for a contemporary version of the same issue.

9. Builder, 9.

10. The term *occupationalism* arose from the work of Charles C. Moskos and Frank R. Wood in their book *The Military: More Than Just a Job?* (Washington, D.C.: Pergamon-Brassey's International Defense Publishers, 1988), in which they raise the "institution versus occupation" dichotomy. One should not confuse *occupationalism* with *careerism*, which denotes an individual's attempts to manage his or her career with only promotions in mind—also cited by Air Force leadership as a problem in the late 1980s. For more on what careerism entails and how the Air Force's infusion of core values has alleviated this problem, see William Matthews's "Careerism Battle Is an Old One," *Air Force Times*, 24 February 1997, 16.

11. Gen Robert J. Dixon, interviewed by author, San Antonio, Texas, 23 September 2000.

12. Ryan, "Developing Aerospace Leaders Charter," 2.

13. See Lt Col John C. Scherer's "It's Time for the Basic Airpower School," research report (Maxwell AFB, Ala.: Air War College, 1 April 1996), for some interesting anecdotes and an extrapolation of this example.

14. Builder, xvii.

15. For specific examples, see Stephen Watkins's "Emphasizing Core Values: Fogleman Forges Onward to Change the Ethical Climate," *Air Force Times*, 6 January 1997, 14.

16. See *Preserving the Lambent Flame: Traditional Values and the USAF Officer Accession Program* (Maxwell AFB, Ala.: Air University Press, September 1984) by Richard W. Stokes Jr. for a more detailed description of values and ethics.

17. Ryan, "Developing Aerospace Leaders Charter," 1.

18. Elaine Grossman, "Air Force Meets Skepticism on Addressing Leadership Challenges," *Inside the Pentagon*, 19 October 2000, 1.

19. Lt Gen Bradley C. Hosmer, interviewed by author, Albuquerque, New Mexico, 9 September 2000.

Professional Military Education for Company Grade Officers
Targeting for "Affect"

Capt Alisen Iversen, USAF

Editorial Abstract: A crucial part of Air Force education in leadership occurs at Squadron Officer College (SOC), located at Air University, Maxwell Air Force Base (AFB), Alabama. This article explores curriculum changes in SOC's four-week Aerospace Basic Course (ABC) for newly commissioned officers and Air Force–equivalent civilians, and five-week Squadron Officer School (SOS) for junior and midgrade officers and Air Force–equivalent civilians. A majority of SOC students are members of "Generation X."
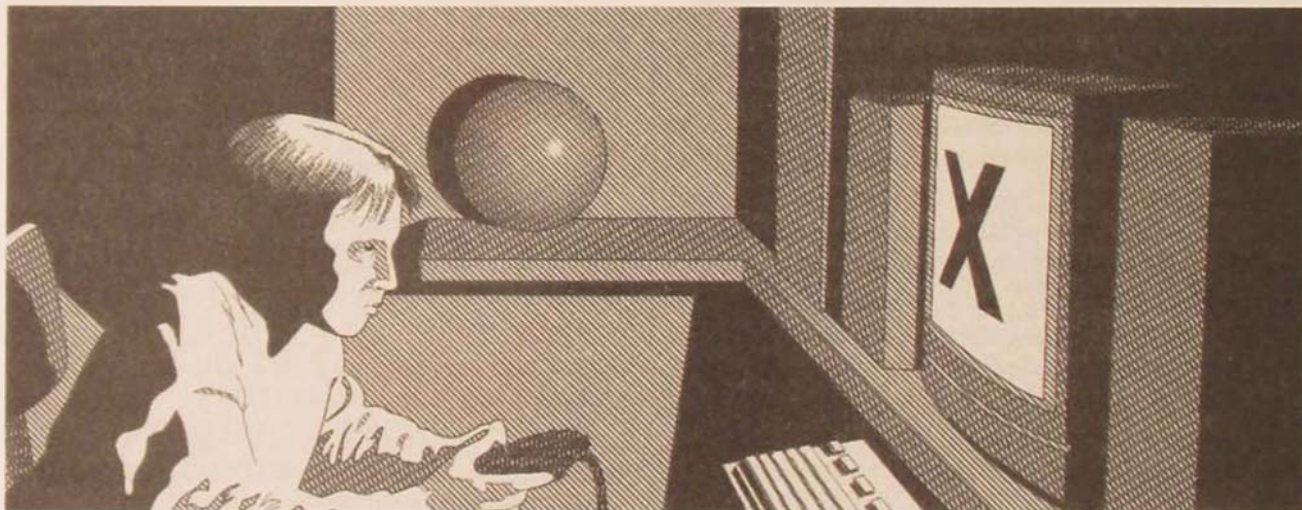
THROUGH THE YEARS, the professional military education (PME) curriculum for company grade officers (CGO) has been dynamic in order to meet Air Force needs as well as the changing characteristics of CGOs. Recently, SOC has initiated important changes by increasing its emphasis on the affective domain of learning in response to the demonstrated traits of the most recent generation of officers entering the Air Force.

This article outlines the characteristics of these officers—members of "Generation X"—compares them to those of the "baby boomer" generation, and provides some opinions of Air Force leaders regarding their expectations of these CGOs. It discusses how PME plays a role in preparing CGOs to meet the challenges they will face in their Air Force careers and shows how the SOC curricula have been redesigned to enhance effectiveness in educating our future Air Force leaders.

Changing of the Guard

A shift in leadership roles from one generation to another has begun. As baby boomers

retire, more and more Generation Xers enter the workforce.[1] By the early 1990s, they had surpassed baby boomers in total workforce population.[2] Soon, today's Air Force senior officers—consisting predominantly of baby boomers—will begin turning over the reins to Generation Xers.

Much has changed in American society over the last two generations, including the educational system. Some "progressive" educational movements produced curricula and methods that failed the average student. In fact, some curricula and methods have tended to create observable differences between Generation Xers and baby boomers so that today many of the nation's graduates do not share a common body of knowledge, common body of principles, or common moral and intellectual discipline.[3] Yet, to remain effective as an institution, the Air Force needs members who share those commonalities. PME can play a critical role in this endeavor.

PME and the Affective Domain

Education includes two main categories or domains of learning: the cognitive domain of facts and figures, measurable in levels of knowledge or comprehension,[4] and the affective domain of ideas, reflected in attitudes, values, and feelings.[5] Air Force PME has traditionally concentrated on cognitive learning, which will continue to take place at SOC in lessons on Air Force doctrine, theory, and history. Yet, some of those subjects—history, for example—also contain important affective elements. In some subject areas, the affective domain is dominant. Concentrating on this domain is only one of many recent changes at SOC.

PME at the CGO level helps prepare newly commissioned and junior officers for leadership roles at the tactical level. In PME they acquire many of the skills needed to fulfill the expectations of senior leaders. According to

Gen Gregory S. Martin, US Air Forces in Europe, "the role of PME is to broaden CGOs' understanding of the Air Force's structure and mission, as well as provide an exposure to the teamwork and functional interrelationships necessary for the Air Force to succeed."[6]

But PME falters in this role because curricula written to teach boomers aren't nearly as effective for Xers. For the most part, Generation Xers want to be entertained while they learn, and they don't look forward to hearing auditorium lectures from guest speakers who don't have dynamic, technologically savvy presentations. This is not to stereotype Xers as people who lack the boomers' attention span, patience, tolerance, or discipline. They simply appear to learn better under some circumstances than others. Why? They grew up that way—captivated by the media, advertising, and, most notably, educational methodologies designed to entertain and teach only the necessary requirements in minimum time.[7] Years ago, auditorium presentations were the standard practice, largely because of the available technology. A speaker's measure of merit was based on the power of words rather than the razzle-dazzle of his or her electronic slides. Students also accepted the premise that someone of higher rank was worth listening to and deserved their respect. Today, students might have respect for a higher rank but at the same time feel that guest speakers owe it to the audience to be entertaining. According to Dr. Hank Dasinger of SOC, "data [collected from SOC student critiques] suggests Generation X learners prefer to be engaged in their learning instead of [being] passive recipients." Seminar sessions are more likely to appeal to them because the environment is conducive to open discussion and interaction between student and instructor.[8]

The Air Force needs to understand the basic characteristics of Generation Xers in order to better educate them with tailor-made

programs. Obviously, not everyone in a particular generation displays the characteristics of that generation, and military members often don't fit into a generational stereotype due to the influence of the military-socialization process. Nevertheless, most personnel demonstrate similarities, making it important to identify those general characteristics of the two major generations that currently make up our officer corps. This is why SOC has changed from a primarily cognitive teaching focus to an affective one.

Boomers versus Xers

In general, baby boomers, born from 1943 to 1960, grew up with a positive view of the world.[9] Most of them lived in traditional nuclear families with a working father and a stay-at-home mother. Boomers were in the spotlight. They represented the hope for the future their parents had fought to preserve, so expectations for this generation were high. In fact, in January 1967, *Time* magazine actually gave its prestigious "Man of the Year" award to the baby-boom generation. *Time* proclaimed it the generation that would clean up our cities, end racial inequity, find a cure for cancer and the common cold, and prevent poverty and war.[10]

Common characteristics used to describe baby boomers include optimism, team orientation, drive to achieve, and strong ambition. As teenagers in the 1960s, many boomers rejected the traditional values held dear by the previous generation. Some of them challenged authority in every form—law, police, universities, elected officials, marriage—and developed new attitudes toward sexual mores and drug use. Boomers opposed or questioned almost all traditional beliefs.[11]

As boomers matured, some discarded their idealism and embraced the very institutions they had rejected earlier. Ironically, the institutions and traditions boomers reembraced deteriorated during their watch. Inflation, rising crime, declining family traditions, increasing violence, high national debt, and a nearly bankrupt Social Security system, to name a few, made up the legacy of the baby boomers.

One of the major contributors to the psyche of baby boomers in the late 1960s and early 1970s was the Vietnam War. There is no easy way to discuss what the Vietnam legacy meant, and still means, to this generation. The effect has been profound—almost haunting. The fallout of the Vietnam War and its various interpretations are more personal to this generation than to any other.

Also adding to the baby boomers' mind-set were many other significant events that occurred during their formative years—for example, the civil rights movement, the Cuban missile crisis, the assassination of President Kennedy, the first manned moon landing, Woodstock, and the Kent State University shootings, to name just a few. Each of these, along with many others, was an important experience for the generation of people at the helm of our Air Force today.

Similarly, members of Generation X had profound and unique experiences. Born from 1960 to 1980, Generation Xers have been described as self-reliant, skeptical, unimpressed by authority, and reluctant to commit to relationships, whether personal or professional.[12] These characteristics have many sources.

As a whole, Xers are an attention-deprived, parentally neglected generation. Two main reasons drive this condition. First, nearly half of all marriages during this time period have ended in divorce.[13] Many Generation X children grew up in an environment of joint custody. Second, this is the first generation of children predominantly from families in which both parents worked. Women are working in increasing numbers. Between 1969 and

1996, the number of working married women with children increased 84 percent.[14]

While their parents were busy earning a living, Generation Xers were left to entertain themselves. They watched TV, played video games, and learned how to use the personal computer. All of that free time created a technologically savvy generation. The typical Generation Xer coming on active duty today first began using computers in grade school. Many knew how to use a videocassette recorder before they could spell. But too much of anything can have negative consequences.

In the 1980s, child experts began warning that children were watching too much TV. Finally, in 1998 the American Academy of Pediatrics published the results of a three-year study of Generation Xers and members of the next generation ("Nexters" or "Generation Y"). After examining children from three to 18 years of age, they found that most of them watch approximately four hours of TV daily. The article further claimed that by the end of high school, many teenagers have viewed more than 18,000 hours of television—more time than they have spent in a classroom and second only to the time they have spent sleeping.[15]

In the '70s, '80s, and '90s, improved technology coupled with new media practices had TV bringing the violence of real-life wars and conflicts (Vietnam, Grenada, Panama, the Gulf War, and Bosnia) directly into their living rooms. This real-time, "entertaining" presentation of world events helped develop an "instantaneous" and "tell me what I need to know now" attitude.

Several of the major events affecting Generation Xers include the *Challenger* space-shuttle disaster, the fall of the Berlin Wall, Operation Desert Storm, the Los Angeles riots, and the O. J. Simpson trial. In addition, prominent leaders, including former president Clinton and Gene McKinney, formerly the sergeant major of the Army, were charged with various counts of sexual misconduct. These events adversely affected the basic levels of trust a generation should have in its leaders. This negative environment has left many Generations Xers very skeptical.

Characteristics of Generation X are prevalent throughout American society and may not be well understood or received by members of earlier generations, such as the baby boomers. For example, Generation Xers, often accused of having little or no attention span, may simply process information differently. According to one interpretation, "this under-30 generation thinks and sees the world in ways entirely different than their parents . . . largely because technology has created and reinforces certain cognitive changes in the way they perceive and process information."[16] This, in addition to their skeptical nature, has resulted in a generation that communicates differently. They tend to doubt information, ask more questions, and don't always settle for pat answers.

CGOs see these traits in their peers. Second Lieutenant Mark Bailey, from Peterson AFB, Colorado, said he sees lieutenants with a "gimme attitude—a 'what can you do for me?' instead of a 'what can I do for you?' attitude."[17] This really flies in the face of what a military service is all about, if not approached correctly.

Air Force Expectations

The Air Force expects great things from its junior officers. Top Air Force leaders have identified some of these expectations as loyalty, commitment, credibility, and integrity. The service's core values are the foundation of any Air Force member. One senior leader commented, "We need young CGOs to have strong values and an ethics foundation."[18] Technical expertise is also a high priority. According to Maj Gen Charles Link, USAF, retired, "we need leaders at the CGO level who are specialists, who are very highly trained in a fairly narrow piece of the workforce."[19] In

the opinion of Gen Ronald Fogleman, former Air Force chief of staff, the Air Force needs CGOs who have a strong focus on their primary functional area of expertise and the ability to build on an operational foundation for future growth.[20]

"I think we expect much more of folks today than in my day. . . . We expect them to lead, and we expect them to be knowledgeable about our Air Force across a broad spectrum."

There is no better authority than Gen Michael Ryan, the Air Force chief of staff, to spell out what the Air Force expects from its CGOs: "Excellence in the performance of their duty. Company grade is where we have the depth of our knowledge; it doesn't matter if it's space, rated, nonrated, engineers. . . . Captains are the backbone of our force. They are the ones that actually do the work—the ones who lead at the tactical level. So it's excellence in knowledge of their business."[21] Asked whether expectations have changed, he commented, "I think we expect much more of folks today than in my day. . . . We expect them to lead, and we expect them to be knowledgeable about our Air Force across a broad spectrum." As to the role of PME in fulfilling these greater expectations, the chief said that

> PME actually broadens folks and exposes them to other people in our Air Force. Sometimes you get in your stovepipe and are never exposed. We have pilots who are never exposed to leadership requirements that some CGOs have had to have in maintenance or supply or transportation or civil engineering. . . . It exposes them not only to subject matter but to people. It is terribly important, the human piece of this—you know, where you are actually eyeball to eyeball, folks listening to what they say, learning what they do. That's a very broadening part of the curriculum.[22]

Lt Gen Lance Lord, Air University commander, also discusses the need for CGOs who have a greater understanding of Air Force operations: "We can't afford to be stovepiped anymore. We aren't big enough. Tempo is too high. We all must have a profound appreciation for the profession of aerospace power. That's the business we're in."[23] Lt Gen Roger DeKok of Air Force Space Command summed it up by saying, "We still need CGOs who are committed to the future of our Air Force—an Air Force equipped with leaders who understand how to develop and employ a full spectrum of aerospace power. Our CGO PME helps build that understanding early in an officer's career."[24]

Interestingly, CGOs also know pretty well what the Air Force expects of them; their perception is very close to that of the generals. They recognize the need for dedicated leaders who are able to adapt to a variety of situations. Second Lieutenant Louise Williams, stationed at Elmendorf AFB, Alaska, said, "We need leaders—leaders who will lead by example and are willing to take responsibility for their actions."[25] Capt Rob Hume, of Einsiedlerhof Air Station, Germany, added that "the Air Force needs officers who are truly dedicated out of a calling to serve—not ones who didn't have job offers right out of college or are just here to get flying hours so they can go work for American Airlines."[26] The challenge for PME is to match curricula with people so that they can meet these expectations.

Solution

Since Generation Xers differ from their predecessors and because the Air Force culture has changed, the Air Force needed to change its PME methods for CGOs. Hence, SOC developed a two-pronged approach, modifying education in both the cognitive and affective domains of learning but emphasizing the latter. Affective learning is more difficult to teach

and measure, but—according to education experts involved in Air Force PME—it is more important right now. According to Col Ann Testa, SOC commander, "our number-one objective in ABC is to make our students proud of who they are as members of the finest institution in the world. In SOS we rededicate them and teach them to deal with future challenges. We are attempting to reach their hearts and souls in SOC!"[27]

What does this mean for the Air Force? Understanding these and future generational differences will allow the service to develop strategies to recruit, retain, and educate. It has helped SOC transform its teaching methodology. Specifically, ABC changed from lectures and slide presentations to guided discussions that more effectively engage students, providing ownership and "buy-in" of the subjects discussed. The newly modified SOS curriculum spends more time with history and doctrine, which helps students bond to the institution.

Self-reliant Generation Xers tend to have individualistic attitudes and usually prefer solitary activities. To help overcome this tendency, SOC incorporated challenging, team-based events into both the ABC and SOS curricula. ABC emphasizes teamwork and problem-solving skills during several outdoor athletic activities, and its capstone team event—Operation Blue Thunder II—has students conducting simulated combat operations as members of a deployed aerospace operations center. SOS puts its students through a war-game exercise called Operation Atlantis, and they participate in other team airpower simulations and athletic-field campaigns. These situations provide a dynamic challenge against a thinking opponent and reinforce the value of teamwork.

Because many Generation Xers are unimpressed by authority, SOC needed to enlighten students with a variety of impressive speakers who exemplify Air Force ideals and core values. Both SOS and ABC invite guest speakers who serve as positive role models, such as former prisoners of war, Medal of Honor recipients, and other heroes, like the Tuskegee airmen. SOC encourages open and frank discussions among the students, faculty, and speakers by facilitating discussions on important moral issues.

Generation Xers also have the reputation of making only short-term investments rather than long-term commitments. Therefore, the SOC curricula are designed to enhance their sense of commitment by emphasizing the unique capabilities of the Air Force. SOC wants its students to understand where they fit into the big picture and to appreciate their contributions to the Air Force mission.

To accommodate Generation X's desire for flashy, short-term learning, ABC and SOS have increased video, simulation, and technology methods to reinforce educational concepts. For example, ABC developed an award-winning digital video disc (DVD) series called "What Now, Lieutenant?" which presents ethical dilemmas for discussion. In addition, ABC modified a commercially available, computer-based, interactive war game that is not only entertaining, but also emphasizes relevant airpower concepts.

Is SOC providing its students the skills necessary to fulfill the expectations set forth by today's senior leaders? Students think it is. They believe SOC is providing them a greater knowledge of how the Air Force operates. "SOS exposed me to a broader understanding of the Air Force outside of my career field. I can now take what I have learned back to my unit and apply it to situations I will face in the future," commented Capt Thomas Sherman, stationed at Aviano Air Base, Italy.[28] Capt Joel Meyers, of Elmendorf AFB, Alaska, echoed that sentiment: "I appreciated learning the development of the Air Force and our role in society. It opened my eyes to the bigger picture."[29] Second Lieutenant Bailey said that "ABC gave me the resources—the tools

and ammunition—I needed to see how my piece fits into the puzzle."[30]

Today it is important for PME to affect the heart as well as the mind. With the downsizing of the force and demands for doing more with less, PME needs not only to educate our CGOs, but also to reinforce the dedication they felt when they first joined the Air Force. According to General Link,

> We rely on PME to help officers understand their importance to the larger institution. If we do this right, they will love the larger institution in a way that will be helpful in the discharge of their duties, in a way that will be helpful in their relationship with their subordinates, and in a way that will be helpful as they deal with frustrations and demands of day-to-day duty per-

formance in the Air Force. Loving the Air Force is something PME ought to be all about.[31]

Conclusion

Although not all CGOs born between 1960 and 1980 fit neatly into the stereotypical characteristics of Generation X, the Air Force has wisely taken them into consideration in modifying its company grade PME courses. PME must be as effective as it can be in order to reach members of this generation and provide them the tools necessary to become successful leaders. The Air Force currently has some of the best and brightest young officers it has ever had. If they love what they do and work together for the good of the nation, everyone wins. □

Notes

1. Margot Hornblower, "Great Xpectations," *Time*, 9 June 1997, 58. According to Hornblower, the term *Generation X* was first coined by Canadian writer Douglas Coupland.

2. *Statistical Abstract of the United States* (Washington, D.C.: US Department of Commerce, Bureau of the Census, 1999), table 651.

3. Diane Ravitch, *Left Back: A Century of Failed School Reforms* (New York: Simon & Schuster, 2000), 289, 320–21.

4. Benjamin Samuel Bloom, ed., *Taxonomy of Educational Objectives: The Classification of Educational Goals*, vol. 1, *Cognitive Domain* (New York: McKay, 1956), 201–7.

5. D. R. Kathwohl, Benjamin Samuel Bloom, and B. B. Masia, *Taxonomy of Educational Objectives: The Classification of Educational Goals*, vol. 2, *Affective Domain* (New York: McKay, 1964), 176–85.

6. Gen Gregory S. Martin, commander, US Air Forces in Europe, Ramstein Air Base (AB), Germany, interviewed by author, January 2001.

7. Ravitch, 295–96, 320–21.

8. Dr. Hank Dasinger, chief, Evaluations and Testing, SOC, Maxwell AFB, Ala., interviewed by author, 1 March 2001.

9. The birth years that define baby boomers vary from source to source. In *Marketing to Generation X* (New York: Lexington Books, 1995), Karen Ritchie says baby boomers are Americans born between 1946 and 1964 (page 12). In *Generations at Work: Managing the Clash of Veterans, Boomers, Xers, and Nexters in Your Workplace* (New York: AMACOM, 2000), Ron Zemke, Claire Raines, and Bob Filipczak say baby boomers were born between 1943 and 1960. They cite the addition of the three years prior to the end of World War II because they feel that these individuals identify with baby boomers more often than with the previous generation. They subtract people born from 1961 to 1964, arguing that those individuals feel more affinity with Generation Xers (pages 64–65). The recurring, accepted definition of a baby boomer is an American born from approximately the end of World War II to the beginning of the 1960s.

10. "Young Generation: The Inheritor," *Time*, 7 January 1967, on-line, Internet, 1 March 2001, available from http://www.time.com/time/special/moy/1966.html.

11. Zemke, Raines, and Filipczak, 69–70.

12. Ibid., 98–102.

13. US National Center for Health Statistics, *Vital Statistics of the United States* (Washington, D.C.: US Bureau of the Census, 1995), table 87.

14. *Futurework: Trends and Challenges for Work in the 21st Century* (Washington, D.C.: US Department of Labor, 1999), chap. 3, on-line, Internet, 1 March 2001, available from http://www.dol.gov/dol/asp/public/futurework/report/chapter3/main.htm.

15. Donald Shifrin, MD, "Three-Year Study Documents Nature of Television Violence," *AAP News*, August 1998, 23.

16. Marc Prenski, in Zemke, Raines, and Filipczak, 112.

17. 2d Lt Mark Bailey, program manager, Peterson AFB, Colo., interviewed by author, 29 January 2001.

18. General officer speaking on condition of anonymity.

19. Maj Gen Charles D. Link, USAF, retired, director, Developing Aerospace Leaders Program Office, Deputy Chief of Staff for Personnel, Headquarters US Air Force, Washington, D.C., interviewed by author, 29 November 2000.

20. Gen Ronald R. Fogleman, USAF, retired, interviewed by author, December 2000.

21. Gen Michael E. Ryan, Air Force chief of staff, Washington, D.C., interviewed by author, 5 March 2001.

22. Ibid.

23. Lt Gen Lance W. Lord, commander, Air University, Maxwell AFB, Ala., interviewed by author, 4 January 2001.

24. Lt Gen Roger DeKok, vice commander, Air Force Space Command, Peterson AFB, Colo., interviewed by author, December 2000.

25. 2d Lt Louise Williams, weather officer, Elmendorf AFB, Alaska, interviewed by author, 29 January 2001.

26. Capt Rob Hume, intelligence officer, Einsiedlerhof Air Station, Germany, interviewed by author, 9 February 2001.

27. Col Ann M. Testa, commander, Squadron Officer College, Maxwell AFB, Ala., interviewed by author, 31 January 2001.

28. Capt Thomas Sherman, security forces officer, Aviano AB, Italy, interviewed by author, 13 February 2001.

29. Capt Joel Meyers, F-15E pilot, Elmendorf AFB, Alaska, interviewed by author, 13 February 2001.

30. Bailey interview.

31. Link interview.

Leadership and Reorganization
A New Model for the Air Force

Lt Col John M. Fawcett Jr., USAF, Retired

Editorial Abstract: Although training and education are crucial in developing aerospace leaders, it is far more important that officers start honing leadership abilities early in their careers and begin developing an appreciation for the breadth of the aerospace mission through experience outside their specialties. In this provocative article, Colonel Fawcett proposes a substantial change in the Air Force's organizational structure that pushes leadership down to the lower ranks and drastically reduces the number of major commands.

THE MISSIONS OF the various uniformed services in the Department of Defense (DOD) as directed by Title 10, *United States Code*—to organize, train, and equip—are not new and have been the subject of arguments for some time regarding their application to air forces. In testimony before the Baker Board in 1934, Maj Gen Benjamin D. Foulois argued strenuously for an independent air force in order to establish a vision of American military aviation that could be sustained without the bureaucratic red tape that then characterized aircraft development and procurement.[1] General Foulois's struggle led to the establishment of a General Headquarters (GHQ) Air Force, which didn't meet all of his requirements but focused on providing airpower in a coherent fashion to a theater commander at all levels of combat.

American military forces fight as task forces organized for success, based on mission requirements—not as individual services. Task forces run the gamut from humanitarian relief to the geographical and functional commands dictated by the Goldwater-Nichols Department of Defense Reorganization Act of 1986, as modified. The goal is to provide a well-organized, trained, and equipped force structure built on an interlocking foundation of standardized processes for communication, logistics, and intelligence. These standardized forces can be combined to enable the joint task force commander to create imaginative operational art that can respond effectively in the chaos of war. Individual service doctrine provides each service's philosophical orientation to the task-force teaming concept. Joint doctrine articulates the formation and employment of the joint task force itself. This doctrine is challenged by the existence of characteristics of each level of warfare at every level of organization. For example, strategic and tactical implications exist at the theater level of warfare and so forth. These are straightforward military concepts, neatly—if somewhat simplistically—laid out. As usual, the difficulty, as General Foulois found out, lies in execution.
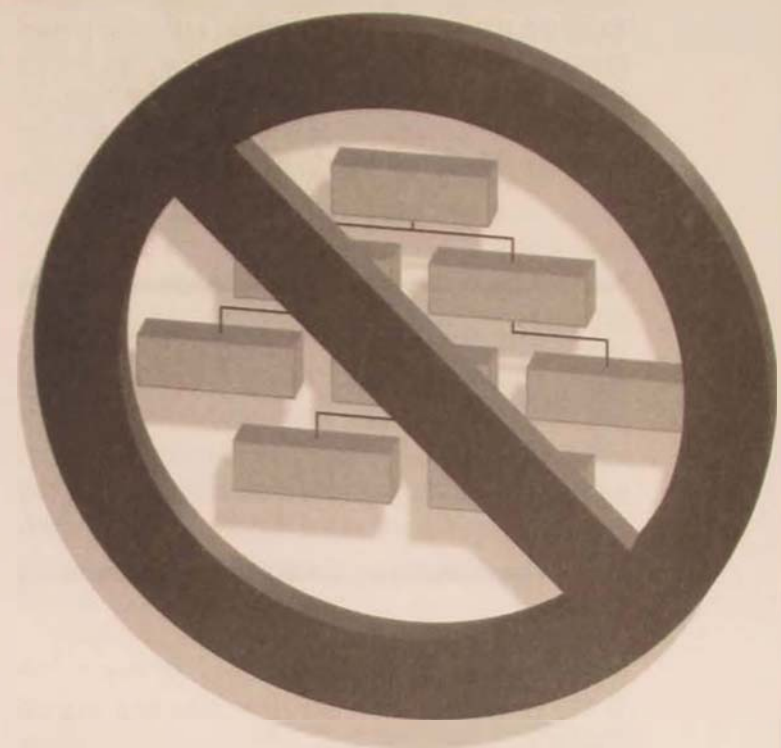
What follows is a proposed framework for the United States Air Force as it executes its

service role of organizing, training, and equipping in the twenty-first century. The concepts are not necessarily revolutionary; for the most part, they are modifications to existing structures. But certain cultural issues can and must be addressed as the Air Force struggles to develop aerospace leadership. In any case, organizational modifications can be effective when coupled with a distinct vision.

> *While the nature of ground forces dictates command, including Uniform Code of Military Justice authority, starting as a second lieutenant, the average fighter pilot sees responsible command for the first time as a lieutenant colonel.*

We begin with a basic organization and attempt to standardize structure across various aircraft types and missions as well as nonflying units with both kinetic and nonkinetic missions. By doing so, we establish a relationship among crew size, predominant mission type, and general system employment.

Tactical Level

In his cultural assessment of the Air Force, Carl Builder correctly identifies the various cultural tribes of the Air Force.[2] General officers with fighter-pilot backgrounds currently dominate the Air Force culture. So one would do well to start at the tactical level of warfare with an organization familiar to the leadership.

For the Air Force culture, the squadron has taken on the role of primary unit identification. This is a legacy of nearly 100 years of organizational engineering and even greater antecedents, going back to the days of the cavalry. The knight of the air is still a strong image for the men and women who fly.

Air Force fighter-squadron commanders are hampered by nothing so much as an introduction to a relatively large first-time command late in their careers. While the nature of ground forces dictates command, including Uniform Code of Military Justice authority, starting as a second lieutenant, the average fighter pilot sees responsible command for the first time as a lieutenant colonel. This is not to denigrate the leadership skills inherent in mission—or even formation—command, but these transitory opportunities are not the same as one finds in a full-time command position. Since periodic success in command is a generally accepted test of military leaders, the current Air Force command paradigm appears late in an officer's career. Under the current organizational structure, the squadron commander is responsible for 18 to 24 aircraft with associated crews, mission support, administration, and maintenance personnel.

By creating squadron formations based on 12 combat-ready, primary authorized aircraft (PAA) plus spares, and by reducing the grade required for command to major for both the squadron commander and the operations officer, the second in command, we could provide a realistic level of leadership opportunity early enough in an officer's career to start winnowing out the future leadership pool. This template also provides the opportunity to assign captains to flight-command positions with commensurate authority from the Uniform Code of Military Justice. This organizational concept actually harkens back to the days of the Second World War and can still be found in the rank structure of the Royal Air Force (i.e., the rank of squadron leader, equivalent to a US Air Force major). Based on current interpretation of aerospace expeditionary force (AEF) requirements, a 12 PAA squadron provides flexibility without having to disassemble a larger squadron to support the AEF. This results in the entire squadron's being deployed instead of pieces of an 18 or 24 PAA unit. With the AEF structure in mind, we achieve a benefit over the current paradigm, which often fractures squadrons by geographically separating vari-

ous bits and pieces in order to meet rotation requirements. Twelve PAA fighters appear, at least anecdotally, to meet most common-denominator requirements of AEF units.[3]

Nondeployed maintenance would be consolidated in maintenance squadrons with flying-squadron affiliations. Thus, flights of the maintenance squadrons would be aligned with their aircraft and flying squadrons for normal home-station training. When required, they would deploy together as an integrated force package that could be aggregated at a deployed location in support of an aerospace expeditionary task force (ASETF). With the garrison squadron defined as only its complement of flying officers and essential technical and administrative support, the unit size is manageable for an Air Force major's career experience. Training operations during nondeployed periods would provide a firm grounding, preparing the commander for the addition of maintenance personnel during deployments. Selection for promotion to lieutenant colonel would be largely dependent on completion of a successful tour as a squadron commander or operations officer.

Twelve PAA fighter squadrons create some inherent inefficiency with maintenance support by multiplying the number of deployment-support kits required, as well as supervisory personnel. Consolidated maintenance squadrons commanded by majors and flying-unit-aligned flights commanded by captains provide deployment support. This alignment system was actually common during the 1980s in the Air Force. The maintenance flights, called aircraft maintenance units, provided the strong unit identification with mission that fosters high morale. On the other hand, maintenance consolidation does provide for some economies of scale with personnel and allows the maintenance-squadron commanders the flexibility to shift experience across aircraft maintenance units to support the mission.

One can find rough parallels in the air mobility; missile; space; special operations forces; and intelligence, surveillance, and reconnaissance communities. Under this new model,

for example, bomber squadrons would include four or six B-52s or B-1s with a major in command. The B-2 will be organized more along the fighter model since it has only a two-man crew but with an eye toward the associated logistics tail. C-130s will be provided to a theater in six PAA squadrons. For the larger mobility aircraft and the tankers, command structure should conform to the six-aircraft squadron, with orders dictating the flow of aircraft to sustain intertheater and intratheater requirements. Joint surveillance, target attack radar system; RC-135; and airborne warning and control system aircraft have two possible organizational configurations. The wings can be organized with integrated flight deck and mission squadrons or with separate squadrons for flight deck and mission personnel. The cleanest organization is the integrated concept with an employment structure based on four-aircraft squadrons.

Medical, communications, force-protection, and support functions will be organized in their respective groups to facilitate their contribution to deployment requirements for both the 12 PAA squadrons and as a lead group contributing to an ASETF. For example, a wing may have a security police squadron with flight-size-deployment unit type codes that include a command function sized to support or lead in the force-protection role, based on tasking.

By placing a field-grade officer in command of a squadron, we can also send a message that the move to field grade starts the transition from the tactical to the operational level of command. Squadron commanders are expected to be tactically sound, to look at the higher echelons of command, and to expand their professional military thinking. This clearly marks a change in the Air Force's corporate culture.

The new structure of the operations group will absorb all additional duties as currently defined and incorporate them in the operations support squadron. These functions range from administrative support to special duties. Group commanders and deputy group commanders will be selected from a pool of lieu-

tenant colonels who have successfully completed tours as squadron commanders or operations officers. At the group level of command, the Air Force has the opportunity to provide a construct that addresses combat, combat support, and combat service support in a coherent framework that the rest of DOD can understand. These will be the three basic groups found in a standard wing. A wing may also include other types of groups—medical, security, and so forth. The groups can be aggregated into deployable units, as necessary, to support mission requirements.

Wings in the continental United States are force providers. The wing commander's mission is to provide a fully trained and employable force of squadrons and specified unit type codes that can be mobilized as part of an ASETF. The commander will also ensure that the wing's combat support units are prepared for deployment with the required command and control (C^2) elements organized into an Expeditionary Operations Center. Wing commanders will find most of their time taken up with base-management functions and will monitor the readiness levels of the assigned squadrons. With wings consisting of five or six flying squadrons, at least one flying squadron will probably be deployed at any given time, with at least one squadron in postdeployment reconstitution.

This is similar to the Navy's rotational model and will probably be decried as tiered readiness; it represents a harsh reality for a garrison force. During the Gulf War, it was common for a fighter wing to deploy only two of its three squadrons, and bombers were parceled out from various bases. It often required a judicious adjustment of crew numbers and capabilities to ensure that combat-ready squadrons were combat capable. There is a difference. Combat readiness, as defined during the Gulf War, related to the C status of the squadron, reported through the Joint Operation Planning and Execution System. Although C status determination can be, and was, leavened by the command chain, *combat capability* is a phrase chosen here to describe the ability of a squadron to function as a team

and to meet all of its flying and nonflying combat-mission requirements. These obligations range from providing commanders for large mission packages to supporting the wing's mission-planning cell.

Wing commanders will be chosen from officers who have successfully completed group-command tours and have been promoted to the rank of colonel. This concept raises the question of whether or not wing commanders have to be rated aviators. With legal exceptions noted, the answer is no. One can—and will have to—make a strong argument that, at the higher levels of command, ability is not reflected in technical, tactical expertise. However, there should not be a slavish adherence to some politically correct, ecumenical approach to command. Warriors—not bureaucrats—lead, and the culture must adjust to focus on producing warriors, regardless of skill specialization. Clearly, the airman prepared to enter the pit of combat has the advantage in training and attitude but not an exclusive claim to superior leadership.

So is there a bill to pay at the base level? Most certainly. Bases must be manned with appropriate-level garrison support that is independent of whether all, some, or none of the base units are on station. The base garrison is sized to maintain this minimum steady state and is augmented by the wing structure, as determined by the number of units on site. This type of system provides a built-in pool of experience to level out deployment requirements. For example, one finds both base civil engineering, with a large contingent of civilian or contract personnel, and a civil engineering deployment squadron. The latter will assist with base support when it is on station but will also focus on readiness training aimed at the individual and unit skills essential for deployment. This concept borrows from the Army. During the Gulf War, entire Army divisions deployed, but they left robust garrisons at their home posts that were responsible for everything from running the post to providing a replacement pipeline.

Toward an Expeditionary Aerospace Force

The Expeditionary Aerospace Force (EAF) embodies the Air Force vision to organize, train, equip, and sustain its Total Force—active, Air National Guard, and Air Force Reserve—to meet the security challenges of the twenty-first century. The EAF addresses these challenges through enhanced sustainability, readiness, and responsiveness and through fostering an expeditionary-warrior mind-set. The fundamental objective of the EAF is to enhance the operational capabilities the US Air Force provides today to its clients—the war-fighting commanders in chief (CINC)—while sustaining a viable force that can also provide those capabilities in the future.[4] The deployable Air Force construct is based on AEFs. These aggregates of the forces provided by wings still struggle with emerging definitions of everything from unit manning documents to deployable, wing-level C^2. An AEF represents a pool of readily deployable and employable forces that can be organized into aerospace expeditionary wings and aerospace expeditionary groups as required by mission tasking as part of an ASETF, which, in turn, draws its mission as part of a joint task force. From a C^2 perspective, it is important to note that theater-level C^2 is not the responsibility of the AEF or any of its deployed component parts. Theater C^2 is provided by a numbered air force (NAF), tasked for the job. The marriage of the NAF and AEF(s) creates the ASETF.

As part of the proposed reorganization, brigadier generals will be rotated through command billets to lead AEFs for an assignment period of not less than two years or more than three; furthermore, they should take at least two AEFs through a complete cycle (figs. 1 and 2). Centrally assigned, these generals will be provided with a small core staff and tasked to prepare their AEF for a deployment window in support of an ASETF. If the entire AEF, or a significant portion the size of an aerospace expeditionary wing, is required for the mission, the general will deploy and command the wing. If only an aerospace expeditionary group is required, the general will designate a colonel or lieutenant colonel from one of the participating wings to command.

As units move through their training and deployment cycles, they will come under the command of their assigned AEF commander (fig. 1, AEFs 9 and 10). This transition will occur prior to entering the deployment window and is a departure from current practice, which does not formalize the shift in command until deployment. During this period, the AEF will undergo a training deployment to Nellis Air Force Base (AFB), Nevada, to participate in an AEF Flag exercise. Nellis is the home of the very successful tactics exercise Red Flag. An AEF Flag will differ from Red Flag in its focus on the full range of deployment requirements, combat to combat support, and combat service support. C^2 in the context of a theater operation—the force-projection part of an ASETF—will be integral to this exercise. Upon completion of the Flag exercise, the AEF will be certified as deployment ready. When the deployment
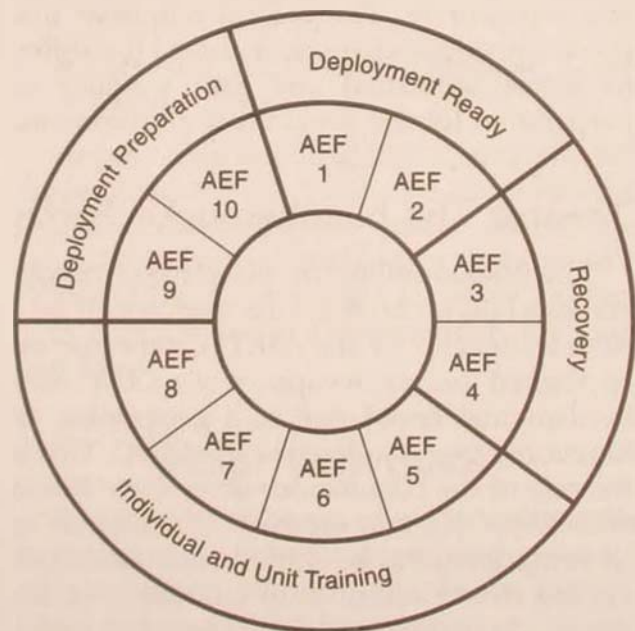
Figure 1. Aerospace Expeditionary Force Cycle
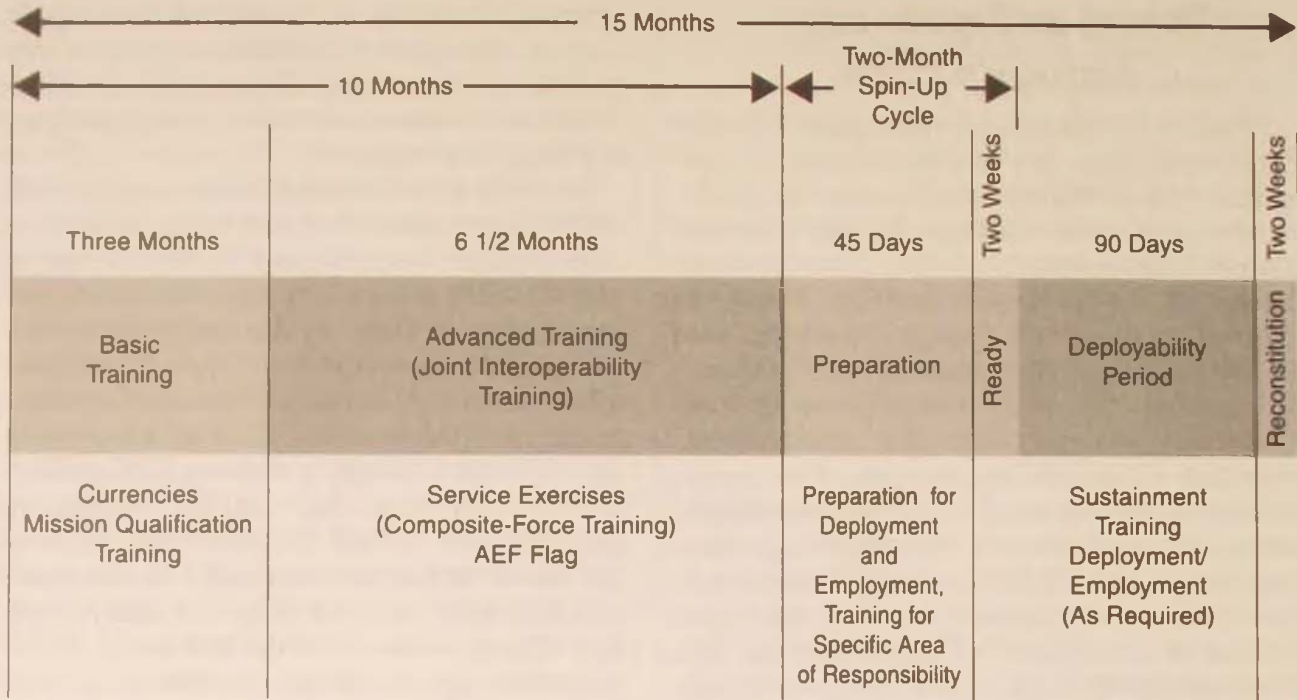
Figure 2. Life Cycle of an Aerospace Expeditionary Force (From US Air Force Aerospace Expeditionary Force Center, on-line, Internet, available from https://aefcenter.acc.af.mil)

window closes, the AEF units will change operational control back to their parent wing and reconstitute. The cyclical nature of this process provides wing commanders the ability to adjust individual and unit training in preparation for the demands of employment.

Theater: The Numbered Air Force

The responsibility for theater-specific operations falls squarely on the NAF, which provides leadership for the ASETFs, expertise on an aligned theater in support of a CINC, and fundamental knowledge of a geographic or functional area as related to the CINC. This is the role of the commander of air force forces (COMAFFOR), and the NAF fills this role at all component levels: unified command, subunified command, or joint task force. In addition, the NAF should be prepared to lead a joint task force. The only NAFs that exist are directly aligned with a regional or functional CINC, a subunified command, or a standing

alliance or coalition. A unit without a direct war-fighting role, supported or supporting, is not a NAF. There will be no training NAFs in the current structure.

NAFs will have a lieutenant general as commander and a major general as vice commander, as well as a brigadier general as chief of staff, having completed a tour as an AEF commander. The NAF will have a numbered staff in alignment with a joint staff structure. This staff is the core of the air force forces for a specific theater and will provide support for organizing, training, and equipping as identified by law and by joint and Air Force doctrine. NAFs may or may not have forces assigned on a day-to-day basis and therefore may not have administrative responsibilities for units unless engaged in ASETF tasking or an exercise. An example of an engaged NAF is Seventh Air Force's support to United States Forces Korea, a subunified command with major units assigned at Osan Air Base and Kunsan Air Base on the Korean penin-

Figure 3. Supporting CINCs Worldwide as "Full Service" Air Components (From briefing, Air Force Command and Control Training and Innovation Group, subject: Air Operations Center Baseline, Hurlburt Field, Florida, 3 January 2001)

sula. Authorized NAFs in the new model include the following:

- First Air Force – North American Air Defense Command (a special case of a standing alliance with a defined C² structure)

- Second Air Force – Transportation Command

- Third Air Force – Special Operations Command

- Fourth Air Force – Southern Command

- Fifth Air Force – Pacific Command

- Sixth Air Force – Space Command

- Seventh Air Force – United States Forces Korea

- Eighth Air Force – European Command

- Ninth Air Force – Central Command

- Tenth Air Force – Joint Forces Command

- Eleventh Air Force – Strategic Command

By providing the capability to meet the full range of tasking (fig. 3), the NAF provides the flexibility of aerospace power across the range of missions that could be required of a COMAFFOR from a joint force air component commander to a commander of a joint task force.

Major Commands

The Air Force has used major commands to delegate the tasks for organizing, training, and equipping that are inherent in the service's mission. These commands have also established component relationships with some CINCs during the 50 years of the Cold War. With the reductions in both overall troop
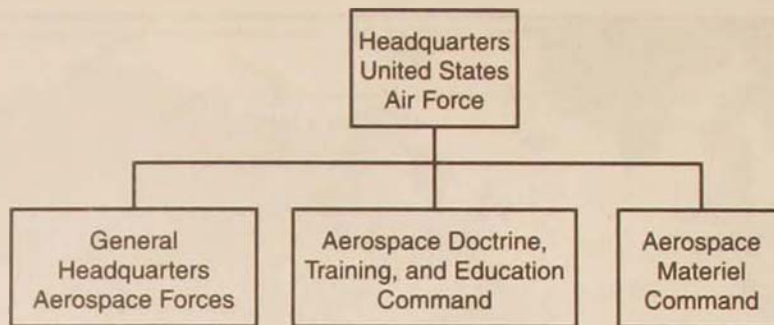
Figure 4. Major Commands

strengths and overseas basing structure, the Cold War major-command construct is no longer relevant. NAFs are war fighters, and major commands facilitate the providing of forces to the CINCs and joint task forces, as required.

Only three major commands are necessary to achieve the organize-train-equip mission (fig. 4). They will be commanded by four-star general officers, along with a three-star deputy and a three-star chief of staff. The chief of staff will have completed a NAF tour of duty as either a commander or vice commander prior to assignment. Reporting to the chief of staff will be staff oriented to the joint numerical-designation system:

- A1 – Personnel

- A2 – Intelligence

- A3 – Operations

- A4 – Logistics

- A5 – Planning and Programming

- A6 – Communications

- A7 – Training and Exercises

- A8 – Financial Management

- A9 – Experimentation

Aerospace Doctrine, Training, and Education Command

Aerospace Doctrine, Training, and Education Command (ADTEC), with a general as commander and a lieutenant general as vice com-

mander, is responsible for entry-level education and training, as well as doctrine and combat development. By incorporating all the basic missions in one command, the Air Force will finally achieve a focus that has eluded it. In order for this command to be effective, it is essential that all members of the Air Force realize that they are part of the training team, no matter the command in which they currently serve. In order to progress in rank, position, and authority, officers will be required to serve in ADTEC for at least one tour prior to selection for flag rank. Education, training, and doctrine are not nuisance assignments; nor are they to be left to "career trainers." Successful Air Force officers are also successful educators, doctrinal thinkers, and combat developers. Whenever possible, training will be contracted out to private firms or supported by the Air National Guard or the Air Force Reserve, always under the leadership of active duty officers at appropriate command levels.

Component organizations in ADTEC will be centers, which will have a range of flexibility for organizational structure and chain of command to get the job done (fig. 5). This is not to say that anarchy will rule but that center commanders will be able to adjust their units' structure with wide latitude as technology, processes, and missions change to reflect the changing demands of war fighters. Major generals will command the centers with brigadier generals as deputies.

Component commands of ADTEC include the Aerospace Doctrine Center, collocated with Air University, as well as the training cen-
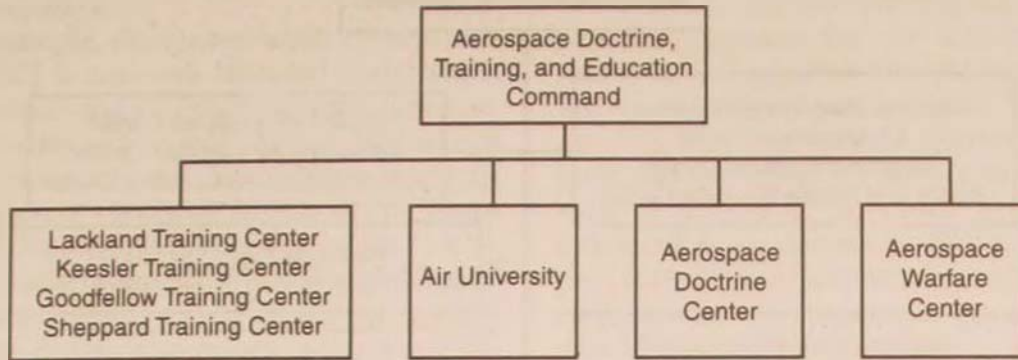
Figure 5. ADTEC Centers

ters at Lackland AFB, Texas; Keesler AFB, Mississippi; Goodfellow AFB, Texas; and Sheppard AFB, Texas. The commander of Air University will be a lieutenant general. Flying training wings will report to the ADTEC commander.

ADTEC will also contain the Aerospace Warfare Center at Nellis AFB, which will be responsible for the Air Force battlelab; the tactical center of excellence wing (57th Wing, Nellis AFB); the operational art center of excellence wing (53d Wing, Hurlburt Field, Florida); the functional wings for space (Schriever AFB, Colorado), air mobility (Fort Dix, New Jersey), and information warfare (Kelly AFB, Texas); and the Air Force Experimentation Office (fig. 6). The battlelab will be a central structure that will establish tem-

porary (a three-year minimum) detachments at locations as needed to support experimentation. This concept replaces the multitude of independent battlelabs in today's construct. All of these wings, the battlelab, and the Air Force Experimentation Office will be commanded by brigadier generals. Because of the need for experienced personnel with career maturity, the rank structure of the Aerospace Warfare Center units may be inflated from those of normal, equivalent operational and training wings. But the center will also have the flexibility to look for officers of relatively junior rank who have good ideas and leadership skills, and give them an opportunity to create new constructs in support of the warfighting mission.
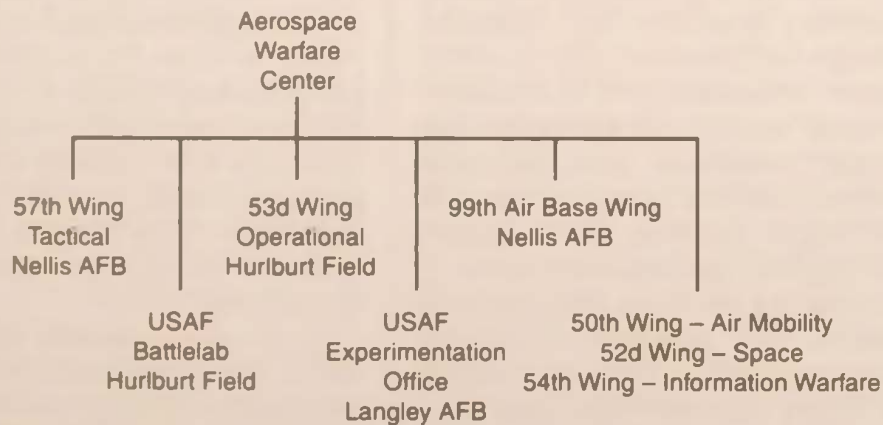
Figure 6. Aerospace Warfare Center
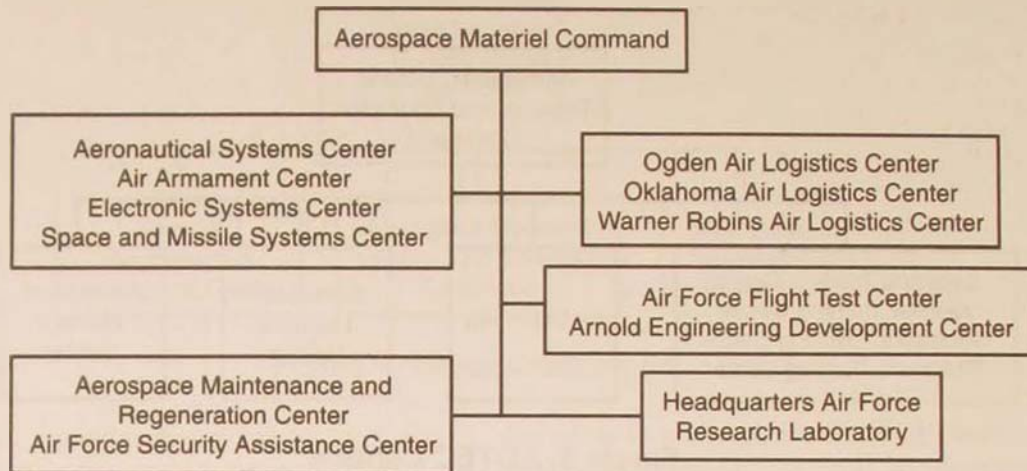
Figure 7. Aerospace Materiel Command

Aerospace Materiel Command

Aerospace Materiel Command (AMC), commanded by a general with a lieutenant general as vice commander, is responsible for the acquisition of all materiel that must be purchased to support the conduct of aerospace operations. This includes large-scale, long-range programs such as aircraft or satellite acquisition as well as the rapid turnover of software and hardware associated with C^2 systems.

Spiral acquisition will have to become the norm for all requirements. Small batch processes may be implemented with contractors for just-in-time logistics that rapidly adjust to advances in technology and changes in force-employment processes.

Component organizations in AMC will be centers, which will have a range of flexibility for organizational structure and chain of command to get the job done (fig. 7). As in ADTEC, center commanders will be able to adjust their units' structure with wide latitude as technology, processes, and missions change to reflect the changing demands of war fighters. Major generals will command centers with brigadier generals as deputies.

AMC will own the Air Force lab structure; product centers, such as Electronic System Center; and depots. In fact, the current structure of Air Force Materiel Command is a good starting point. The biggest changes to AMC will be in establishing new business practices that facilitate rapid acquisition, fielding, and institutionalization of new products and processes. Actually defining and implementing the concept of spiral development will be the first step on this path.

AMC must also deal with a realistic plan for getting a grip on the various black (secret) programs in the Air Force. Currently, these programs often exist in a stovepiped vacuum. The cost is exorbitant if these emerging capabilities cannot be integrated into the war fighter's tool kit. Extremism in national security may not be a vice, but it makes using classified programs difficult—if not impossible.

General Headquarters Air Force

GHQ Air Force, commanded by a general with a lieutenant general as vice commander, is the major command responsible for providing air force forces to war fighters. It will maintain employment training that relates to readiness capabilities required by Status of Resources and Training System (SORTS) reporting procedures. GHQ Air Force has responsibility for all NAFs and is the war-fighting advocate to the other major commands and the Air Staff.

A worldwide network of C^2 support nodes will be the responsibility of GHQ Air Force. The nodes will be oriented by region as well as function and will facilitate deployment of the EAF and its associated AEFs. Initially, at

least, the nodes will be the existing Air Force support centers.

For example, the tanker/airlift control center (TACC) is one such affiliated node, which already exists and can slide into the new construct. In conjunction with Second Air Force, it will be responsible for the employment of air mobility assets worldwide in support of Transportation Command. The existing TACC is already a node of expertise on the global network, simultaneously establishing air bridges for tanker and airlift support, maintaining enroute visibility on aircraft and cargo, and providing feedback to the logistics architecture, ranging from specific theaters to Air Force Materiel Command.

GHQ Air Force will monitor and direct all unit training worldwide, maintain knowledge of readiness status, and provide advice and feedback to the National Command Authorities through the Joint Chiefs of Staff on unit-deployment options. Once deployment options are assessed and deployment is initiated, the Air Force global network will provide the essential flow of information while forces are en route as well as upon arrival in-theater.

Air Staff

As usual, Washington provides the greatest challenge to a reorganization proposal. The Air Staff resides in the Pentagon and provides interface with the other services and the secretary of defense. Planning, programming, and budgeting are the harsh realities of the Pentagon, and the Air Staff is the Air Force advocate in this arena.

Currently, the head of the Air Staff is the chief of staff of the Air Force, a general; the vice chief of staff is also a general. The assistant vice chief of staff, a lieutenant general, has the day-to-day responsibility of assisting the vice chief in running the Air Staff and functions as the chief-of-staff-equivalent to the other command levels.

In any reorganization, the Air Staff must respond to the needs and direction of the secretary of the Air Force and chief of staff of the Air Force and provide the essential fiscal support to the major commands. In order to break across bureaucratic logjams, the secretary shall provide for the establishment of task-oriented agencies that will have specified life spans with renewal options. These agencies will have very specific charters with timelines and will report to the assembled leadership at Corona. Agencies may also be chartered at the direction of Congress and report back to that body, as required. An officer ranking no lower than major general will provide leadership for an agency.

The overarching rule for the Air Staff is very simple: staffs support war fighters. If a staff area or agency cannot provide a direct contribution to the war fighter, then it should be eliminated. Air Staff members are constantly challenged to contribute to effective solutions that can be funded and implemented while managing to avoid being impediments. The current advocacy role of program element monitors makes this challenge particularly daunting. Rewards are not given to monitors who cancel programs or make money available to other efforts, yet this is exactly the behavior that will be required if the existing Planning, Programming, and Budgeting System is to have any relevance to the constantly emerging requirements of an Air Force in transition. Pursuant to reorganization guidelines laid down in 1947, the Air Staff is organized in a Deputy Chief of Staff system reporting to the chief of staff of the Air Force. Currently, these are three-star billets: Air and Space Operations; Installations and Logistics; Personnel; and Plans and Programs.[5] Also on the Air Staff with various military and civilian ranks are the chief master sergeant of the Air Force; director of Security Forces; director of Communications and Information; Air Force historian; chief scientist; chief of the Air Force Reserve; director of the Air National Guard; USAF Scientific Advisory Board; judge advocate general; director of Test and Evaluation; surgeon general; and chief of Chaplain Services.[6]

Gen Carl Spaatz selected the deputy system after a study by both the secretary-general of the Air Board and the Air War College rec-

ommended that system, based on feedback from the wartime commanders.[7] The Air Staff was to be small and responsive, with the deputies working as commanders in their functional areas. This was perceived as an improvement on the assistant chief of staff system.[8] The staff goals have not changed over the last 50 years, so if the existing staff structure is not supporting the fundamental goals, then it must be changed. This is not to say that there have not been changes in the history of the Air Force. But most have been "salami slicing"—changes at the margins rather than changes in business practices.

Office of the Secretary of the Air Force

Complementary to the Air Staff is the organization of the Office of the Secretary of the Air Force, whose role is to provide civilian leadership essential to the integration of an effective military and the democratic government of the United States. This office currently includes the secretary and undersecretary of the Air Force as well as four assistant secretaries: Financial Management and Comptroller; Space and director of the National Reconnaissance Office; Acquisition; and Manpower, Reserve Affairs, Installations, and Environment. The office also includes the following positions: general counsel; legislative liaison; auditor general; inspector general; director of Public Affairs; director of Small and Disadvantaged Business Utilization; and deputy undersecretary for International Affairs.[9]

In the Office of the Secretary of the Air Force, the question for every organization should be, Is this done at the level of the Office of the Secretary of Defense? If the answer is yes, then the office should be eliminated or reduced to the minimum essential for coordination. At this level, the Air Force political interface shades all decisions, including organizational structure. Interservice rivalry also comes into play since no service is going to willingly give organizational advantage to another. Thus, the Air Force will be loath to give up its Directorate of Legislative Liaison unless the Departments of the Army and Navy do the same. The secretary of the Air Force is the primary advocate for human-resources issues and major program funding. Further complicating the Air Staff/secretary of the Air Force relationship are field operating agencies and direct reporting units.[10] Even a cursory reading of the names highlights some potential redundancies in organizations that encompass 32,815 military and civilian authorizations and raises the question of how many of the organizations are required and how many have simply grown over the years of the Cold War.[11]

If there is not a legislative requirement for an organization, it should be under immediate review. If there is a legislative requirement, the secretary of the Air Force should be asking why; if the requirement is in response to Cold War issues, the secretary should propose new legislation. Best business practices should not be held hostage to arbitrary manpower ceilings that drive the formation of below-the-line organizations, hiding manpower and making mission assessment difficult—if not impossible. In short, if we save a position here and one there, pretty soon we're talking about some real numbers that can be reallocated to the areas where manpower increases are needed. This includes innovative views on ongoing requirements. For example, the Air Force Academy could remain a direct reporting unit, but its command structure could be tasked to provide all officer accessions, including Officer Training School (OTS) and Reserve Officer Training Corps (ROTC) (fig. 8). The Preparatory School is already on the Academy campus; OTS classes could be scheduled to maximize use of the entire existing physical plant. Weather could be an issue, or OTS could be concentrated during the more clement season to train the current level of 1,700 graduates per year.[12] ROTC is essentially a distributed network that needs a hub for providing standards. What better way to concentrate consistency in all program standards while maintaining the unique characteristics of each commissioning source? This type of in-

Figure 8. United States Air Force Academy

novative approach should be applied to all the field operating agencies and direct reporting units and their missions.

These proposals for reorganization are sweeping, but they are within the realm of what could be implemented relatively rapidly. More evolutionary in nature than revolutionary, the changes take into account the debate over the revolution in military affairs, the cultural shift of the Air Force to an expeditionary force, and some needed post–Cold War adjustments. The biggest drawback is the politics in the reduction of the number of four-star generals. Even this issue can be side-

stepped in the short run by providing for four-star deputies of the major commands, although one could argue that there has not been a drawdown in flag officers commensurate with the overall post–Cold War force reduction. In any case, the preceding arrangements provide for a force that can transition to the full range of military missions with a minimum of confusion over command structure and responsibilities. Subsequent articles in a proposed series will deal with the train and equip missions, as well as force-employment C^2 and the underlying infrastructure necessary for the employment of forces. □

Notes

1. John F. Shiner, *Foulois and the U.S. Army Air Corps, 1931–1935* (Washington, D.C.: Office of Air Force History, 1984), 197–98.

2. Carl H. Builder, *The Icarus Syndrome: The Role of Air Power Theory in the Evolution and Fate of the U.S. Air Force* (New Brunswick, N.J.: Transaction Publishers, 1994), 179–88.

3. At the US Air Force Aerospace Expeditionary Force Center Web site, see "TPFDD Library" under "AEF Information" and ongoing evaluations at the AEF Center regarding the tasking of six- and 12-ship fighter packages in dependent and independent War Readiness Spares Kit configurations to meet AEF requirements, on-line, Internet, 24 January 2001, available from https://aefcenter.acc.af.mil.

4. EAF Homepage, Headquarters AF/XOP, on-line, Internet, 27 February 2001, available from http://www.xo.hq.af.mil/eaf/CD%20ROM%20Files/5%20-%20EAF%20Update%201%20Oct%2099.doc.

5. Herman S. Wolk, *Planning and Organizing the Postwar Air Force, 1943–1947* (Washington, D.C.: Office of Air Force History, 1984), 188–92.

6. *Air Force Magazine*, September 2000, 91.

7. Wolk, 188–92.

8. Ibid., 190.

9. *Air Force Magazine*, September 2000, 89.

10. Current field operating agencies include the Air Force Agency for Modeling and Simulation, Air Force Audit Agency, Air Force Base Conversion Agency, Air Force Center for Environmental Excellence, Air Force Civil Engineer Support Agency, Air Force Cost Analysis Agency, Air Force Flight Standards Agency, Air Force Historical Research Agency, Air Force History Support Office, Air Force Inspection Agency, Air Force Legal Services Agency, Air Force Logistics Management Agency, Air Force Manpower and Innovation Agency, Air Force Medical Operations Agency, Air Force Medical Support Agency, Air Force News Agency, Air Force Office of Special Investigations, Air Force Operations Group, Air Force Personnel Center, Air Force Personnel Operations Agency, Air Force Program Executive Office, Air Force Real Estate Agency, Air Force Review Board Agency, Air Force Safety Center, Air Force Services Agency, Air Force Studies and Analysis Agency, Air Force Technical Applications Center, Air Force Weather Agency, Air Intelligence Agency, and Air National Guard Readiness Center. Current direct reporting units include the Air Force Communications and Information Center, Air Force Doctrine Center, Air Force Operational Test and Evaluation Center, United States Air Force Academy, and the 11th Wing.

11. *Air Force Magazine*, May 2000, 56 (definitions start on page 106).

12. *Air Force Times*, 9 October 2000, 14.

Technology for the Future Leader
International Command and Control Enhancements

Capt Gilles Van Nederveen, USAF*

THE INFORMATION AGE has rapidly accelerated the exchange of information on the battlefield. Improved technology has enhanced the visibility of the battle space, removing much uncertainty and allowing the automation of many complex and contingent decisions (e.g., target/weapon pairing). The greatest challenge will be determining how to apply new capabilities to increase the speed and quality of decision making in command and control (C^2) systems and processes. For the modern military, C^2 still entails answering three basic questions: Where are my forces on the battle space? Where is the enemy? What is he doing? To find the answers, we must collect data to understand the situation (battle-space awareness), explore alternative courses of action, make decisions, and deploy/employ forces to execute the plan (battle management). Future leaders will need to understand how to operate in an environment where information is universally available and C^2 is governed by new paradigms.

Modernization of the C^2 environment will occur in five areas: improved battle-space visualization, more adaptive decision making, agile battle management, information-enabled organizations, and significant increases in force effectiveness and efficiency. Battle-space visualization will allow commanders and staffs improved access to information that is complete, current, and consistent, as well as understandable. Improved battle-space visualization will enhance adaptive decision making so that decisions are made in the context of a complete situation—not just fragments. The information must be provided in time for the user to take appropriate action and must meet a higher standard of accuracy than the current requirement. Information must be consistent across all command centers and echelons, across all functional areas, and over time. The exchange of knowledge will include understanding the situation and making projections about the future state of the battle space, including possible emergent situations and alternative futures, as well as their associated uncertainties. When coupled with a highly responsive intelligence, surveillance, and reconnaissance capability, new information technologies will allow continuous consultation and coordination. The result of these improvements will be the creation of information-enabled organizations characterized by virtual teams, established and

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disestablished as the situation requires. Command will decentralize as information and communications become more available to subordinate organizations.

In the aftermath of the Balkans operations, the North Atlantic Treaty Organization (NATO) has released new guidance on C^2 for command-post exercises—specifically, tighter political control than was the case in the Cold War era. Obviously, this could affect military effectiveness. Although the military may want to create the conditions for overwhelming force and decisive strikes, political considerations could lead to the incremental application of force alongside political, economic, and media pressures. The constant media presence will influence both governments and public support. The speed of modern communications allows media reporting to travel faster than orders through the military chain of command. As a result, senior military officers and politicians may well be tempted to bypass the chain and intervene at lower levels, based upon media reports alone. The need to minimize casualties and collateral damage will have an impact on orders of battle, operational doctrine, tactics, and weapons. Maneuver, rather than attrition and force-on-force engagements, may be the answer. Headquarters staffs will have to include a deputy commander for operations, a legal adviser, and a political adviser to support commanders, who may spend more time talking to the media than to their subordinates.

Although the United States has numerous developments in progress, foreign countries are working on initiatives to realize a new C^2 vision. NATO is developing an air command and control system (ACCS) to replace its air defense ground-environment system.[1] ACCS will provide air C^2 capabilities in static and deployable configurations from the north coast of Norway to eastern Turkey. The system unites missions traditionally managed by separate systems within NATO—air defense, air offense, and air support. The common operating environment will link NATO countries in combined air operations centers (AOC) and permit sending a common air picture down to the squadron level. Alliance sensors, such as airborne warning and control system aircraft, will provide input directly into the common operating environment. Communication configurations are currently being tested in four NATO air facilities. Integration of airborne ground surveillance—either airborne standoff radar or some other "to be bought" NATO system—is also planned. In light of the deployments now conducted by NATO and Europe outside the traditional Central European area of concern, parts of the system will be deployable, giving NATO a robust C^2 capability in contingencies.

Like ongoing projects in Sweden, future military command centers may take the form of distributed networks. Now in development, ROLF and Aquarium—the command posts of the future—will have a small number of selected commanding officers seated around a three-dimensional representation of a crisis situation, receiving suggestions and support from virtual-reality experts. The small staff size represents a major challenge that technology itself should overcome. Access to experts via increased wide-area networks would make up for reductions in staff size. Seating the commanders together at a table, as in modern boardrooms, would overcome psychological barriers and enhance communications. One of the most significant changes found in the Swedish model is the presentation of the crisis: a three-dimensional autostereoscopic view, which shows the battle space better than any map could and which provides each staff member a valuable perspective of volume and depth. Still under development are improvements to ensure that decision makers can manipulate or interact with the three-dimensional presentation.[2]

Other Swedish air force innovations include the special configuration of JAS 39D Gripen two-seater fighters as high-speed flying command posts with a so-called scenario commander in the second seat. During a demonstration to NATO officials at Satenas Air Base in November 2000, Sweden's air force integrated data from Saab unmanned aerial vehicles (UAV) as well as new signals-intelligence platforms and showcased the Gripen's capabilities as well. Erieye-equipped Argus airborne early warning platforms were also linked into this network-centric demonstra-

tion, allowing the linking of all airborne-surveillance data to joint command centers at the strategic, operational, and tactical levels.

Not be outdone, Sweden's neighbor Norway is also busy planning more network-centric air operations, using P-3C and Falcon 20 platforms to pinpoint locations of radar emitters along its rocky coastline. The Royal Norwegian Air Force demonstrated how new munitions launched from F-16s and guided by the Global Positioning System can hit targets by means of a process whereby digital images are first sent to an AOC. After confirmation of the target, the AOC then sends the digital images to the F-16, whose APS-137 (v)5 then paints the target using coordinates provided by the P-3, allowing its weapon to locate and lock onto the target. A similar strike using a ground-based forward air controller would have resulted in 33 10-second transmissions. This type of data linking, however, permits target acquisition and approval by the AOC without radio transmissions. By using such standoff target-acquisition techniques, the Royal Norwegian Air Force may be paving the way to future air warfare. It is currently soliciting bids for a UAV capable of providing such standoff target-acquisition capability to F-16s.

Members of the Gulf Cooperation Council (GCC)—Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates—have begun operating an aircraft tracking and identification system that may soon lead to an air C^2 system. Known as Hizam Al Taawun (HAT, "belt of cooperation"), this Raytheon product functions like a distributed command, control, communications, computers, and intelligence (C^4I) network. Currently monitoring aircraft movements and tracking aircraft in the surrounding airspace, it should allow for better coordination of air defense activities. The system is designed to meet perceived shortfalls of the Gulf War and improve the GCC's C^2 abilities. Operating in both Arabic and English, it uses map displays, databases, and other computer tools to improve military-to-military communications among the participants. Information passes from Kuwait, at the north end of the Gulf, to Oman, at the Strait of Hormuz, via a series of high-speed, encrypted data links that use fiber-optic lines. Although it utilizes some existing national infrastructures, most of HAT is new, state-of-the-art, and expandable, according to defense sources in the GCC. The latter feature would allow the network to serve as a ballistic-missile warning system if GCC so desired. Each GCC country has its own node and can monitor other nodes in addition to its own.

The growth of technology gives future leaders a better environment in which to carry out their primary function of commanding deployed or engaged forces. Whether they will be ready to do so and whether broad information access will change the current conduct of warfare remain to be seen.[3]

Notes

1. Andre Nicolau, "The ACCS Programme," *Military Technology*, March 2000, 64–66.

2. For more information, see the Web site of the National Defence College of Sweden, on-line, Internet, 5 April 2001, available from http://www.fhs.mil.se.

3. For more information on C^2, see such sites as Jane's (http://www.janes.com/index.shtml), Association of Old Crows (http://www.aochq.org), and C^4ISR Cooperative Research Program (http://www.dodccrp.org), among others.
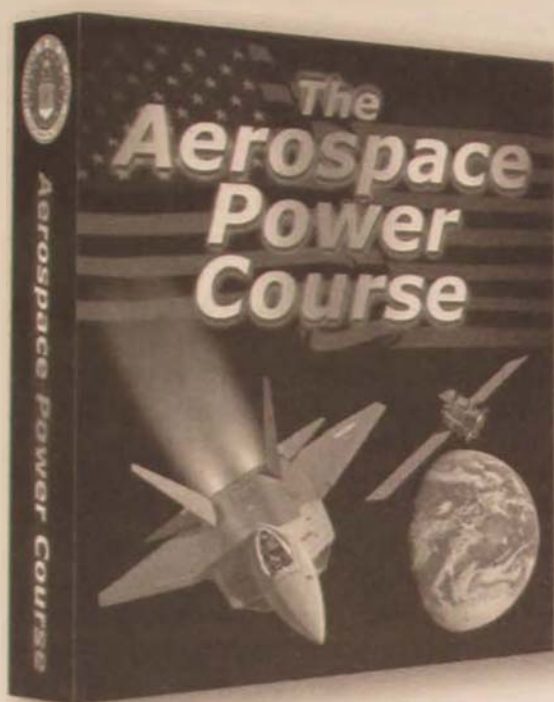
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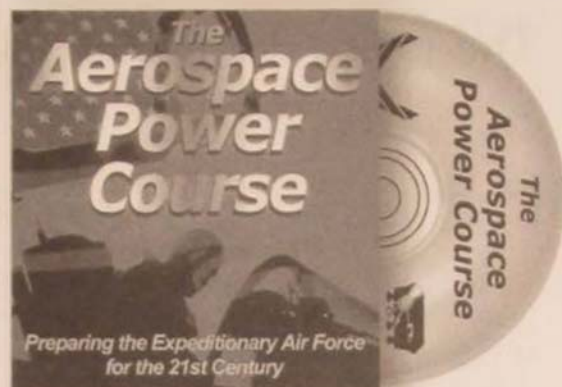
Air University's College of Aerospace Doctrine, Research and Education announces that the Aerospace Power Course (APC) is now available on-line for users with high-speed Internet connections. A self-paced, interactive course consisting of 12 separate lessons, APC allows students to develop a broader comprehension of the principles, concepts, and applications of aerospace power. Although it is primarily designed for Air Force officers in joint-duty assignments, the exposure that APC provides to aerospace power's principles and beliefs will benefit all enthusiasts.

Users without access to a high-speed Internet connection can request a CD-ROM version of APC. Please send inquiries to apchelp@maxwell.af.mil. For more information, visit our Web site at http://www.apc.maxwell.af.mil.

If you choose godly, honest men to be captains of the horse, honest men will follow them.

—Oliver Cromwell

"I'd Rather Be Flying"

The Ethos of the Air Force Officer Corps

COL TOM HALL, USAF*

THE AIR FORCE is very concerned about what it is and who it is. With about 68,000 officers on active duty alone—and those men and women comprising several generations—it is difficult for the institution as a whole to agree on anything. In fact, most readers of this article would be hard pressed to quickly articulate a cogent and mature description of the Air Force ethos; more importantly, it would probably not agree with many other readers' responses. Much of the ethos-identity problem is generational. Many young officers were adolescents—some hadn't even been born—when today's senior officers entered the service. The Air Force's senior leaders are investing time and effort in studying the issue and have seen valuable works produced, such as the late Carl H. Builder's *The Icarus Syndrome: The Role of Air Power Theory in the Evolution and Fate of the U.S. Air Force* (1994). Such books and other exhaustive studies aside, perhaps the simple, familiar bumper-sticker slogan *I'd rather be flying* can illustrate an important point about this situation. It will show that we need to pay close attention to a bold-faced warning about our institutional ethos if we are to remain the world's best air force.

Most officers can agree on certain qualities. For starters, we believe in the core values—integrity first, service before self, and excellence in all we do. We're also patriotic: "duty, honor, country" means something to us. We're mission oriented: each of us would *rather be flying* or doing our particular specialty. In the same way, we have a low tolerance for what we perceive to be excessive or needless paperwork or anything else that appears unessential to the mission. We're proud to be part of the military *profession*, and we respect civilian control. We value bravery, like to think of

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ourselves as warriors, and are wary of whatever might dull our war-fighting skills. We believe in the military family that embraces equal opportunity, we take care of our people, and we help them reach their full potential. We don't believe in diversity just because it's politically correct but because it's right and necessary to accomplish the mission. Moreover, we believe in pushing responsibility to the lowest level and use a collegial leadership style that says the "door is always open." We totally buy into the phrase "an officer and a gentleman" and hate screamers. We reject any kind of harassment, discrimination, or mistreatment. Our work ethic is strong, and we believe that if we work hard enough, there is nothing we can't do.

In addition, few organizations in the world have better leaders, dedicated to their service and convinced of the talent of its youth. With all these positives, how could we go wrong? Clearly, we have much in our ethos to be proud of, but dangerous tensions lurk just below the surface. To be fair, perhaps we can do better.

I'd rather be flying captures the tension of mission versus people. We can't put the mission first without asking people to make sacrifices. For junior officers, this is the most difficult part of our ethos. Baby boomers, like their parents, see no problem telling the troops to take care of their families, yet they work nights and weekends themselves. Their desire for troops to balance their personal and professional lives is sincere, but our leaders fail to say, "We have enough type-A people like us willing to put in the long hours. We admire your desire for balance—just don't expect to get promoted." Our junior officers have called us on this one. They *really* believe in balance and don't hesitate to question the "can-do/no-problem attitude," which they believe stands in direct contradiction to senior leaders' public statements about readiness and strategy. Junior officers resent being called complainers or being told they lack the warrior ethos just because they might question the necessity of missions that appear to have no end in sight.

I'd rather be flying also refers to the tension between doing the primary job and "just filling out paperwork" or performing other bureaucratic necessities. Here, our attitude hurts us in profound ways. A squadron commander at Squadron Officer School who has informally polled captains for over two years on performance feedback has found that *half of the junior officers polled report they never received performance feedback*. Many Air War College students, asked whether they believed this, agreed that it reflected their experience as well. Even more surprising was the reaction of some young officers who inferred that, because nobody has time to do feedback, it must somehow be acceptable that few do it. If this is true, we must consider the implications. Not only does this fly in the face of the "integrity first" core value (since signatures on the officer performance report attest to the date on which the evaluating officer provided written feedback), but also it makes a huge statement about priorities.

Our moral courage is on the line. Feedback is just one opportunity to look people straight in the eye and tell them the truth about themselves. At a time when junior officers say they lack faith in their leaders and when we have problems with recruiting and retention, how can we afford to miss this opportunity to speak frankly—one-on-one—about the issues affecting them? The ethical concern about simple honesty is one thing, but the other is that this situation most likely stems from contrasting perceptions. To the subordinate, a one-minute "you are doing fine; sign this" session *is not* feedback. To the busy supervisor who truly believes his or her troop is doing a great job, that one-minute session *is* feedback. The bottom-line impression on the subordinate, however, is that supervisors would rather be flying than leading.

I'd rather be flying also gets at our schizophrenic attitude toward professional military education (PME) and officer development. Few occupations invest so much in professional-development courses; however, PME still has the reputation of simply being a square that one must fill. PME students would *rather be flying* than reading, studying, and taking exams. Yet, when we have a problem—say, junior officers expressing a lack of confidence in leadership—we create a course! We fill the square rather than take on the problem for what it is—*a matter of leadership.* In *The Leadership Engine: How Winning Companies Build Leaders at Every Level* (1997), Professor Noel Tichy of the University of Michigan Business School said that Jack Welch, the chief executive officer of General Electric, personally spent a third of his time developing new leaders. We emphasize PME as a square to be filled but don't come close to having leaders develop leaders—it's simply not in our ethos. It needs to be if we are to remain the air force to which nobody else comes close.

I'd rather be flying also captures the notion that career-field identity plays a strong role in our ethos. It has been well advertised that we tend to think of ourselves as navigators, logisticians, pilots, cops, and so forth, instead of as Air Force officers. But it goes further than that. We are competitive by nature—a part of our culture reinforced by an up-or-out promotion system. As a result, we have developed an elitist mentality based upon a narrow definition of career specialties. Much of this competition is healthy, fostering unit cohesion and camaraderie. But how much does this also work against us as we prepare for the future? If we would *rather be flying,* how possible is it to envision a future without a peer competitor—or at least a future in which we cannot defeat the biggest threat with a manned air vehicle? What if the real enemy is a teenager with long hair, tattoos, and a pierced tongue, who wakes up at noon and sits barefoot in front of a computer screen writing malicious code?

With no peer competitor on the horizon, we have time to consider what it means to be an Air Force officer and what qualities we need in the future. This ought to be the time when leadership can listen to junior officers and learn something from them, thereby achieving some real

balance at all levels of the Air Force. If our service doesn't have time now to teach and develop new leaders and make that part of the ethos, it may never do it. We need an ethos that tells us to stand up for the right priorities—that values moral courage as much as the physical kind.

Most of us are aware that the generation of World War II bomber generals—epitomized by Gen Curtis LeMay—gave way to a new generation of fighter generals in the 1970s and 1980s. The bomber generals' legacy was a separate service and an ethos of hard-charging professionalism. They had little time for PME, politics, or people programs. The fighter generals, however, believed in empowerment, led the Air Force out of the hollow force to victory in the Gulf, and gave us a more collegial style. Both generations had remarkable leadership qualities, and both profoundly affected the ethos of today's officer corps. Both would rather be flying. It's time for a new generation—one that says "I'd rather be leading"—to make its mark on our ethos. ☐

Maxwell AFB, Alabama

The more a leader is in the habit of demanding from his men, the surer he will be that his demands will be answered.

—Clausewitz

Air Force Doctrine and Leadership

Maj Steve Michael, USAF*

MILITARY MEMBERS UNDERSTAND the critical value of doctrine to the military. They also critically value leadership. Without either doctrine or leadership, the service is a headless vector aiming in wild directions, subject to institutional failure and battlefield defeat. Does a link exist between doctrine and leadership? More specifically, should leadership doctrine exist at all? The answer to both questions is *yes*. This article provides the reasons.

If doctrine basically represents the best practices of how to organize, train, equip, fight, and win war, then why would we not want some fundamental principles about the best ways to lead people? Libraries are full of books and articles about military leadership. Some are good; others are out in left field. But they are not doctrine. Obviously, trying to codify leadership traits, techniques, and personality types into "approved solutions" can be dangerous. After all, Clausewitz was right on target in identifying the unique nature of war and the myriad circumstances (read fog and friction) commanders may face in the heat of battle. The successful general's coup d'oeil does not suggest a robotic or "by the numbers" approach to leadership. On the other hand, institutions led by amateurs whose leadership styles were ad hoc products of chaos have failed ignominiously.

Doctrine is not dogma, regardless of the subject. Doctrine on leadership needs to be authoritative but also appropriately flexible and descriptive, rather than prescriptive. Much of that type of appropriate doctrine on leadership is already in place—just not directly identified as such.

For example, consider some of the fundamental principles contained in Air Force Doctrine Document (AFDD) 1, *Air Force Basic Doctrine.*[1] The "principles of war" list security and simplicity as important. Who better than the person in command can promote planning and execution that are as secure and simple as practicable? The list goes on: surprise, objective, mass, and so forth. The leader—the decision-making authority—is responsible for keeping these principles in mind while he or she prepares units during peace or employs force against an enemy during war.

In addition, the tenets of aerospace power are inherently intertwined with leadership. Centralized control and decentralized execution speak expressly to leadership issues that are becoming increasingly complex due to technological advancements that bring detailed information about the battlefield into the lap of everyone involved, from the pilot in the cockpit

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to the four-star general at headquarters. Yet, even though we have doctrine that involves leadership, it is not the same as leadership doctrine.

We can benefit from the right kind of leadership doctrine for two reasons: it identifies leadership as a critically essential element of aerospace power in its own right, and it promotes the correct thinking that certain fundamental truths speak to the best way to lead troops in time of peace and war. Our Air Force leaders need to have a good working knowledge of those fundamental beliefs.

Many of today's great ideas are not new. In fact, that is part of the reason for doctrine in the first place—to record important ideas so that future soldiers won't have to reinvent them. Yet, in the area of Air Force leadership doctrine, official products have been few and far between. The Air Force last put out a leadership pamphlet in 1986 (even so, it wasn't necessarily considered doctrine). There is a danger of commanders failing to link leadership and doctrine.

Because Air Force senior leaders suspect that some members of the service are not doctrine-smart, they have placed new emphasis on doctrine in education and training. Thus, we have a golden opportunity to enhance the development of Air Force leaders at the same time. A thorough, working knowledge of aerospace-power doctrine is essential for all airmen, but it is also critically important for effective leadership. Leadership and doctrine are not separate worlds.

Gen Michael E. Ryan, Air Force chief of staff, effectively summed up the importance of doctrine: "Doctrine provides the Air Force with a common, integrated vision . . . , draws from agreed upon best practices . . . , and offers airmen a proven set of principles for how we organize, train for, and execute military operations."[2] Vision, practices, and execution—doctrine is covered with leadership's fingerprints.

Doctrine is inextricably interwoven with the concept of leadership and in many respects provides the basis for it.[3] Aerospace leaders develop their fundamental war-fighting beliefs from a study of doctrine. From their understanding of the integrated nature of aerospace operations and the need to properly combine diverse capabilities to fully exploit aerospace power's war-fighting potential, leaders have the mental ammunition to argue convincingly for the right use of assets.[4] In the complex interaction of politics, finances, and war, one must have solid leadership to ensure that the joint world uses aerospace power most effectively—without wasting lives needlessly and without setting false expectations. This was the lesson from Operation Torch in the Second World War, codified in Army Field Manual (FM) 100-20: an airman needs to lead air forces.[5] An airman knows how and why to achieve essentials such as air superiority, and as a leader, he or she must fight against other parochial interests to show that aerospace assets *are* the premier maneuver force. One finds much impressive-sounding, carefully crafted terminology in various vision statements and white papers. But only true leadership can turn words into

reality. And only a doctrinally smart leader can produce the synergistic effects of combined aerospace and surface-force operations.

Although doctrine codifies the best war-fighting methods and common beliefs, it does not stand alone as a formula for success. The most valid war-fighting principles are no substitute for sound, informed, professional judgment.[6] In this milieu, doctrine and leadership bond, for the correct application of doctrine requires shrewd judgment. Through judicious selection of doctrinal principles relevant to a given situation, leaders can take full advantage of their knowledge, training, and experience to make critical, mission-related decisions. As stated previously, war is incredibly complicated, with no two operations exactly alike. The skillful leader blends and tailors the appropriate war-fighting methods to employ aerospace power most effectively and accomplish the desired mission.[7] Maj Gen Lance L. Smith, commander of the Air Force Doctrine Center, succinctly argues the point: "An airman with a foundation in doctrine can effectively lead other airmen to success, since decisions will be made not only through the grasp of the technical aspects of applying aerospace power against a target, but through a broader comprehension of the fundamental truths of that power."[8]

The bottom line is that doctrine gives airmen a common reference to clearly articulate to the joint force commander and to subordinates how best to use aerospace power. Doctrine allows leaders to "focus on the margins that make a contingency unique."[9] To be an effective joint war fighter, an Air Force leader must be an effective airman. To be an effective airman, an Air Force leader must know service doctrine.[10]

Reading and studying doctrine prepares leaders for aerospace-power war fighting; it also offers guidance in the art of leadership. For example, the Air Force's core values, which are a part of doctrine, reflect sound character traits of leadership. Modern aerospace-power war fighting is such an extraordinarily complex endeavor that each airman in the chain of command must exemplify the core values to assure a mission's success. Leaders committed to excellence are more than desirable—in the profession of arms, they are essential. The Air Force's core values remind leaders of what they should expect from themselves, and they tell subordinates what leaders expect from them.[11]

In addition to core values, the nature and culture of aerospace-power war fighting require airmen to demonstrate unique leadership attributes. By its nature, aerospace power is employed across an entire joint-operating area. Effective aerospace leaders, therefore, must be knowledgeable in the functions and capabilities of other services and be able to establish appropriate command relationships with them. The nature of aerospace operations gives airmen unique opportunities for ingenuity. Leaders must be able to reach back into their theater, or even to the continental United States, to obtain personnel and capabilities to effectively augment forward-deployed operations. The wingman culture of aerospace operations also has

significant impact on the art of leadership. It places the requirement for and expectation of individual initiative on all airmen and causes them to consider the intended and unintended consequences of their leadership actions. Thus, Air Force leaders value both personal credibility, regardless of rank, and the contributions of specialized, competent subordinates. Finally, the service's culture reflects its technologically oriented capabilities. Leadership includes maintaining technical proficiency and the ability to employ technology and innovation to create war-fighting effects. Beyond operational requirements, these skills enable leaders to prove their worth and establish their credibility with present-day recruits.[12]

The service's technological orientation is one of the forces driving change in today's Air Force culture. Leaders face significant challenges— how to organize air and space; how to deal with blurring distinctions among strategic, operational, and tactical effects of aerospace power; and how to recognize that expeditionary operations and other deployment requirements are changing Air Force culture by broadening airmen's exposure to risk. The traditional approach, in which aircrew members constituted the predominant operational force vulnerable to hostile attack, is in transition. Leaders today must prepare all airmen to operate and thrive in a hostile environment.[13]

All of these leadership issues point to a need, and an answer to that need lies on the horizon. AFDD 1-3, *Air Force Leadership*, is in the conceptual stages of development.[14] This document will provide senior Air Force leaders with a quiver full of leadership wisdom to help airmen face tomorrow's challenges. It will complement their career-long study of all aerospace-power doctrine, which is essential for the development of airmen into leaders. All airmen need a thorough knowledge of aerospace-power doctrine—especially those who would lead.[15] □

Notes

1. AFDD 1, *Air Force Basic Doctrine*, 1 September 1997.

2. Special-Interest Commander's Notice to Airmen (NOTAM), "Air Force Doctrine," 4 January 1999.

3. Maj Gen Lance L. Smith, "Leadership and Doctrine," in AU-24, *Concepts for Air Force Leadership*, ed. Richard I. Lester and A. Glenn Morton (Maxwell AFB, Ala.: Air University Press, forthcoming).

4. Capt Frederick L. "Fritz" Baier, *50 Questions Every Airman Can Answer* (Maxwell AFB, Ala.: Air Force Doctrine Center, October 1999), 47–48.

5. FM 100-20, *Command and Employment of Air Power*, 21 July 1943.

6. AFDD 1, p. 12.

7. Ibid., 22.

8. Smith.

9. Karen Fleming-Michael, "Doctrine—Here to Stay," *Leader* 21 (November 2000): 14–15.

10. Briefing, Col Ron Dietz, Headquarters Air Force Doctrine Center/DD, subject: Doctrine for Developing Aerospace Leaders, December 2000.

11. Gen Michael E. Ryan, "Reflections on Core Values," in AU-24.

12. The ideas expressed here originated from the Headquarters Air Force Doctrine Center and Developing Aerospace Leaders (DAL) Conference on Leadership, 18–19 January 2001.

13. Ibid.

14. The approval date to develop AFDD 1-3 is summer 2001.

15. All Air Force doctrine documents are posted on the Headquarters Air Force Doctrine Center's Web site at http://www.doctrine.af.mil.

For Lieutenants Only!

1ST LT GLENN LEINBACH, USAF*

HERE'S THE LOWDOWN, one lieutenant to another: it's our responsibility to help make the Air Force the best it can be. I know that most junior officers agree with me because in an informal poll taken at Maxwell AFB, Alabama, the majority of respondents agreed that our opinions matter and should be heard.

How can we voice our opinions? Well, my suggestion is writing for publication. But where? *Aerospace Power Journal (APJ)* is the "professional journal of the United States Air Force," but it isn't really geared toward the lieutenant or junior captain. How do I know that, you ask?

Company-grade officers (CGO) make up nearly 50 percent of the Air Force, yet of the 351 articles submitted to *APJ* from 1998 to 2000, only 29 were from CGOs (11 from lieutenants). Of those, only three were accepted. In a confidential poll conducted throughout the Maxwell CGO community, 65 percent of the respondents indicated—using a scale from one to five (low to high)—that a CGO's opinion was of "low/medium" (a two) to "medium" (a three) importance to the Air Force. If that is true, a disconnect exists between how important we feel our voices are and the number of times we have been able to express ourselves in a servicewide medium. When asked how often CGOs should contribute to a professional journal, 90 percent felt they should do so more often than is actually the case. While we operate at a more tactical level than do our senior officers, I find it hard to believe that our leadership would scoff at well-reasoned arguments promoting a mutually beneficial goal. In fact, I feel we can safely assume that they value our opinions more than we do.

APJ's "Mission Debrief" section mentions that "the *Journal* focuses on the operational and strategic levels of war." That focus most obviously includes flag to field-grade officers and just a few senior captains. Yet, since all officers—from the most junior lieutenant to the chief of staff—are expected to assume leadership roles in the Air Force, we need to engage in a common dialogue that emphasizes improving our war-fighting capability. The leadership required of us includes pursuit of a professional dialogue that engenders change, suggests improvements, and contributes to an officer corps engaged in becoming better informed through the exchange of ideas.

For too long, junior officers have not taken the responsibility to play a role in this process. This may be for good reason—if *APJ* is aimed at a different audience, why join the fray? But we *should* join the fray, though perhaps at a different level. We have the opportunity to do so on the new *CGO Voices* Web page, which is part of *Aerospace Power Chronicles.*

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We have a fantastic opportunity here. Through this Web page, we can contribute to professional conversation in a meaningful way. This gives us a chance to provide well-reasoned, cogent opinions in an environment less imposing than a publication such as *APJ*. Perhaps, if we use this site as designed—as an avenue for providing thoughtful arguments and opinions from a CGO's perspective—we can increase our ability to contribute to the success of the Air Force. Whatever we think of the Aerospace Basic Course, we should remember that it had its origins in the suggestions of a lieutenant. We will have our senior leadership's attention if we use this site appropriately.

What are the rules of engagement? Most importantly, this site is *not* for complaining about the price of steak in the commissary. We have other avenues for that sort of thing. And this is not a pure "discussion board" although previous posts can certainly spur a response.

What *is* this site? It is a venue for thinking at a higher plane than the tactical level to which we are often consigned. Although we CGOs most likely operate tactically and our concerns and ideas most often rest there, the important thing is to try to relate those concerns to a broader level of interest. Before submitting something to *CGO Voices*, we should ask ourselves, "How does our concern affect Air Force senior leadership?" I hope all of us will see discussions here that we feel are important enough to share with our bosses or commanders. Using this page is also a way for us to sharpen our critical-thinking skills for the coming years. Ranking officers don't develop an ability to argue their positions by magic. They build such a skill over time; every CGO is welcomed and encouraged to do so on this new site.

How will it work? Although the format is subject to change, the staff plans to provide a monthly topic (wartime planning, operations tempo, deployments, the assignment process, leadership skills, and so forth) in an effort to generate discussion and promote a bit of guidance on shaping the direction of on-line participation. This is *not* to say that contributors *must* stick to the topic, but the site hopes to operate thematically. Respondents or contributors should forward text or any questions to the managing editor of *Aerospace Power Chronicles* at http://www.airpower. maxwell.af.mil. She and the editor of *APJ* will answer any inquiries and ensure that the submission generally fulfills the requirements outlined above. They will notify successful contributors and provide a projected date of on-line publication.

Here's what we hope this site will do:

- Provide a "friendly" outlet for testing ideas for improvement and asking questions.

- Serve as a central point for senior leadership to tap into (cogent) CGO perspectives.

- Sharpen critical-thinking skills in preparation for higher levels of leadership.

- Encourage opportunities to improve both our Air Force and its ability to prosecute its mission effectively.

This is our site; it will be what *we* make of it. Contributors should keep the ideas interesting, the tone civil, and the submissions tight. We are the Air Force's future senior leadership. Using *CGO Voices* as a springboard, we can do our part to make the Air Force a better place to live. □

Osan AB, South Korea

Aerospace Power
Chronicles

"Empowering Tomorrow's Leaders"

In keeping with the focus of this special leadership issue of *Aerospace Power Journal, Aerospace Power Chronicles* continues the dialogue on-line with other insightful leadership articles that we simply could not fit into the printed journal.

In "Decision Superiority: A Junior Officer's Practical Guide to Knowledge-Based Operations," an article sponsored by the Institute for National Security Studies (INSS), Capt Tom Coakley offers a practical approach to operating in the information age. His suggestions apply to leadership challenges faced by noncommissioned officers and junior enlisted members.

INSS also sponsored an article by Capt Troy Thomas, Capt Sam Grable, and Capt Jim Stratton on cognitive skills for leaders of aerospace expeditionary forces. The authors believe that modern expeditionary leaders must be prepared to perform in an unforgiving, "naturalistic" setting characterized by time compression, uncertainty, and high stress. Advances in information technology have increased the quality and quantity of information that one must process to enable action, often within the adversary's decision loop.

Finally, in "Human-in-Command: Peace-Support Operations," Dr. Richard Lester presents a perspective on the leadership element of command in peace-support operations. His goal is for leaders to comprehend the meaning and characteristics of leadership, management, and command; to differentiate among these elements and explore their interconnections; to analyze the skills and attitudes needed by effective leaders and commanders in peace-support actions; and to determine what makes these characteristics effective or ineffective in the human element of command as they relate to peace-support activities.

These are just a few of the leadership articles we have on-line. We anticipate publishing many more as the topic catches our readers' attention. Please continue to submit papers, articles, letters, and other comments to *Aerospace Power Chronicles* at apj@maxwell.af.mil, and visit our Web site at http://www.airpower.maxwell.af.mil.

Luetwinder T. Eaves
Managing Editor
Aerospace Power Chronicles

Ricochets and Replies
Continued from page 6

THE ROLE OF AIRPOWER IN VIETNAM

Editor's Note: The Vietnam War continues to provide fertile ground for the study of leadership. In addition to reading leadership case studies of well-known personalities like Gen John D. Lavelle and Lt William Calley, one can learn much by studying how the leadership and decision making of President Lyndon Johnson and members of his Joint Chiefs of Staff affected US strategies, operations, and targeting during that conflict. The following exchange of opinions occasioned by Charles Tustin Kamps's article "The JCS 94-Target List: A Vietnam Myth That Still Distorts Military Thought" (Spring 2001) promotes important discussion. It also reminds students of history that the Vietnam legacy is far more than a haunting memory which generates further American sensitivities to casualties in war. APJ applauds the following scholarly contributions for providing another facet to the complex study of military leadership.

In his provocative article, Charles Tustin Kamps takes me and several of my professional colleagues to task for our writings about the air war over North Vietnam. Mr. Kamps's critique reveals, however, that he misunderstands the nature of the bombing campaign the Joint Chiefs of Staff (JCS) wanted to conduct in 1965. Further, it is clear he does not understand the tenuous connection between the conflict in South Vietnam and the bombing of North Vietnam during the early years of the war.

Mr. Kamps takes issue with a claim I made in my CADRE Paper of 1986 that "in essence, the JCS planned to take the World War II bombing campaign in Europe and transplant it 20 years later in North Vietnam" (*Rolling Thunder 1965: Anatomy of a Failure* [Maxwell AFB, Ala.: Air University Press], 30–31). He disagrees, based on his detection of "remarkable" contrasts between JCS plans for bombing North Vietnam (the famous 94-Target List) and the World War II Combined Bomber Offensive (CBO) target priorities.

A more discerning analysis reveals the remarkable similarities between the two plans. The six CBO target priorities were (1) enemy airpower, (2) submarines, an *immediate problem* that threatened the capabilities of the Allies to mount an invasion of northwest Europe, and (3–6) German industry. In the Vietnam case, enemy airpower was also the highest-priority target set. The next priority dealt with an *immediate problem* by targeting barracks and staging areas of North Vietnamese army (NVA) troops infiltrating into South Vietnam. As to industrial targets, the plan called for bombers to destroy the minuscule North Vietnamese industrial base and, in a third-world equivalent to first-world industrial targets, to destroy those targets (e.g., ports, rail bridges, road bridges, and storage facilities) essential for importing the implements of war. In sum, the CBO plan and the 94-target plan are strikingly similar even though the situations could hardly have been more dissimilar.

Although the similarity in target priorities is interesting, a far more important issue is whether or not the planned bombing campaign was appropriate for the war at hand. I have argued that even the most vigorous bombing of North Vietnam in the early years of the war could have had only a tangential impact on the war in South Vietnam. The reason is obvious—until the Tet offensive of 1968, the war in the south was fought by an adversary who controlled the tempo of operations (and thus controlled his logistical requirements) by using guerrilla-style tactics. Kamps takes the opposite view and asserts that the war in the south rapidly evolved toward a conventional conflict dominated by NVA regular forces supported from North Vietnam. His evidence is the increasing tempo of NVA infiltration into South Vietnam and the so-called big battles of 1967. If Kamps is correct, bombing North Vietnam's industries, ports, and bridges could have had a significant impact on the ability of North Vietnam to support a conventional war in the south.

Much better evidence suggests that Kamps is seriously in error. Even as the Vietcong organized into bigger administrative units and even as NVA forces infiltrated south, they continued to employ guerrilla-style tactics. This was well illustrated in the big battles of 1967. The biggest of these was Operation Junction City, which serves as an excellent example. Junction City involved 22 US and four South Vietnamese battalions in an 83-day operation supported by massive air and artillery fires. The results included only 2,728 enemy casualties, about 33 per day (Gen W. C. Westmoreland, "Report on Operations in South Vietnam, January 1964–June 1968," in *Report on the War in Vietnam [As of 30 June 1968]*, by United States Pacific Command [Washington, D.C.: Government Printing Office, 1969], appendix L, 284). The list of similar "search and destroy" operations goes on and on with similarly "underwhelming" results. Such paltry enemy casualty figures were not the fruits of big battles even if the body counts were correct—and that is a dubious proposition. Rather, they resulted from "big operations" by US and South Vietnamese forces, during which enemy forces using guerrilla tactics were difficult to find, fought only when they wanted to fight, and thus controlled the tempo of combat. Rather than big battles, a 1968 report by the Office of the Secretary of Defense, Studies and Analysis (OSDSA) indicated that "96 percent of all engagements with the enemy forces were at company strength or less" (Andrew F. Krepinevich Jr., *The Army and Vietnam* [Baltimore, Md.: Johns Hopkins University Press, 1986], 192). Another OSDSA report indicated that 88 percent of all engagements were initiated by the enemy (Krepinevich, 188). Perhaps the most revealing statement about enemy operations in the big-battle era is found in the 4th Infantry Division's after-action report for Operation Sam Houston in 1967: "The most difficult tactical problem found in fighting the NVA in large areas of difficult terrain is finding the enemy" (quoted in Shelby L. Stanton, *The Rise and Fall of an American Army: U.S. Ground Forces in Vietnam, 1965–1973* [Novato,

Calif.: Presidio Press, 1985], 164). Note that the reference is to NVA regular soldiers—not to the Vietcong.

Finally, Mr. Kamps advances the incongruous notion that "turning the bombers loose" in 1965 would have forced the North Vietnamese to withdraw from the south and implies that with their withdrawal, all would have ended well. On the contrary, even if the bombing in 1965 had been intense enough to make the North Vietnamese withdraw from the south (another dubious proposition), the growing insurgency in South Vietnam would have remained problematic for the South Vietnamese government and for the United States. In 1965 nearly 95 percent of enemy combat forces in South Vietnam were indigenous Southerners—the Vietcong. Not until 1968 did NVA troops comprise the majority of enemy forces in South Vietnam (*Report on the War in Vietnam*, chart 3, p. 195). Although we tend to focus on the military support and political leadership provided by North Vietnam, tens of thousands of South Vietnamese chose to become Vietcong fighters, and hundreds of thousands supported them because of bitter opposition to the South Vietnamese government. A critical causal factor for the insurgency—an unpopular government that generated strong, widespread political disaffection—was not in North Vietnam. Rather, it was in Saigon, and bombing North Vietnam in 1965 could neither heal the political wounds in South Vietnam nor quell the raging insurgency.

Col Dennis M. Drew, USAF, Retired
Maxwell AFB, Alabama

I read Charles Tustin Kamps's article on the Joint Chiefs of Staff (JCS) 94-Target List with great interest since I have devoted a significant amount of study to the air war against North Vietnam. His assertion that in the spring of 1965, "the combination of a whirlwind air attack against the 94 targets, the naval mining of the [Democratic Republic of Vietnam] coast, and a ground maneuver to block the Laotian panhandle. . . . These actions could have stabilized South Vietnam (like

Korea), leading to democratic and economic progress in the following decades" (78–79) *may* be correct because there is no way to disprove conclusively such a counterfactual contention. Yet, I would contend that his interpretation of the character and conduct of the Vietnam War throughout the Rolling Thunder era is flawed. I also believe, in contrast to Professor Kamps, that the 94-target scheme had direct ties to long-standing notions of American strategic-bombing doctrine.

Professor Kamps's view of the Vietnam War mirrors that of the late Col Harry Summers, USA, who argued in his classic book *On Strategy: The Vietnam War in Context* (Carlisle Barracks, Pa.: Strategic Studies Institute, 1981) that the arrival of North Vietnamese troops in the south in 1964 changed the complexion of the Vietnam War to a conventional struggle. Facts argue otherwise. Only 7,500 North Vietnamese army (NVA) troops were in South Vietnam by July 1965 ("Memorandum, McNamara to the President," 3 November 1965, National Security Files, Country File: Vietnam, Folder 2EE, Box 75, Lyndon Johnson Presidential Library, Austin, Texas). The main enemy in the south from 1964 to the 1968 Tet offensive was the Vietcong, totaling roughly 245,000 men in a 300,000-man enemy force five months before Tet (the remaining 55,000 troops were NVA) ("Meeting with Foreign Policy Advisors on Vietnam," 18 August 1967, Meeting Notes File, Box 1, Johnson Presidential Library). That entire force waged an infrequent guerrilla war and fought an average of *one* day in *30*. Thus, its supply needs from sources outside of South Vietnam were minimal—34 tons a day is the *highest* figure I ever saw in the myriad of intelligence reports that I reviewed (Headquarters USAF, "Analysis of Effectiveness of Interdiction in Southeast Asia, Second Progress Report," May 1966, 7, Air Force Historical Research Agency, Maxwell AFB, Ala., file no. K168.187-21; US Congress, Senate, Committee on Armed Services, Preparedness Investigating Subcommittee, *Air War against North Vietnam*, 90th Cong., 1st sess., 25 August 1967, pt. 4, p. 299; and Annex A to JCSM 613-65, 27 August

1965, National Security Files, Country File: Vietnam, Folder 2EE, Box 75, Johnson Presidential Library). The communist army simply refused to fight unless it had a distinct advantage. The JCS reported in 1972 that of all the American patrols conducted in 1967 and 1968—years of peak combat activity in the war—less than 1 percent resulted in contact with the enemy. When South Vietnamese patrols are considered as well, the number drops to one-tenth of 1 percent! (Edward Doyle, Samuel Lipsman et al., *America Takes Over*, The Vietnam Experience [Boston: Boston Publishing Company, 1982], 60). In short, the main enemy force in South Vietnam simply did not need the military imports that Professor Kamps insists "the JCS planners quite logically aimed to cut off" (76).

The JCS planners who designed the 94-target scheme had an incomplete understanding of the type of war being fought, and that understanding related directly to the message contained in Air Force doctrine. That doctrine, first published in the mid-1950s during the era of massive retaliation, stated the following: "Of the various types of military forces, those which conduct air operations are most capable of decisive results. This preeminence accrues to them because of their versatility—with or without armed conflict—and because their capabilities permit them to be employed wherever necessary. They provide the dominant military means of exercising the initiative and gaining decisions in all forms of international relations, including full peace, cold war, limited wars of all types, and total war" (Air Force Manual [AFM] 1-2, *United States Air Force Basic Doctrine*, 1 April 1955, 10).

The authors of AFM 1-2 based their assertions on the experience of World War II and Korea as well as on airpower's perceived potential to dominate a future conflict. In AFM 1-8, *Strategic Air Operations*, Air Force writers made a specific reference to the "industrial-web theory" that had guided pre–World War II planning at the Air Corps Tactical School. They noted that the destruction of petroleum or transportation systems would be most

likely to tear apart the "fabric" of an enemy state and lead to "the collapse of the national structure" (AFM 1-8, 1 May 1954, 4). AFM 1-8 remained current until its revision in December 1965—by which time the Rolling Thunder air campaign against North Vietnam had been going on for almost 10 months.

As Professor Kamps correctly observes, the start of Rolling Thunder did not match the desires of the JCS. The chiefs wanted to implement the 94-target scheme in a "sudden, sharp knock" that varied in length from three weeks to three months. Kamps is also correct that the chiefs realized North Vietnam had to rely on Soviet and Chinese benefactors for military hardware and resupply. Yet, the fundamental premise of the 94-target scheme (and of Operation Rolling Thunder)—that North Vietnamese support and direction were essential to the success of the Vietcong insurgency—was fundamentally flawed. Kamps's analysis fails to acknowledge this key distinction. Moreover, his listing of the 94 proposed targets shows that the preponderance of targets selected were transportation-related—consistent with the thinking that guided postwar Air Force doctrine and the planning for and conduct of the air campaign against World War II Germany. Petroleum, oil, and lubricants (POL) also received emphasis in the 94-target plan, as was the case in the projected and actual air campaign against Hitler's Reich and in the Air Force doctrine that followed. The majority of remaining targets—such as airfields, military barracks, supply depots, and headquarters—is consistent with those for an enemy waging conventional war, as did Germany in World War II.

What of North Vietnam's "industrial" targets, like the Thai Nguyen steel complex, the Hanoi machine-tool plant, and the three electric power plants included in the 94-Target List? According to Kamps, the JCS contended that these facilities were showcases of the regime and were not critical to the North Vietnamese. A more telling assessment of their perceived value comes from Army general and chairman of the joint chiefs Earle Wheeler. When asked by President Lyndon Johnson in 1966 to explain the difference between prospective air attacks on POL storage areas and electric power plants, General Wheeler replied, "POL is recognized as a legitimate military target" ("National Security Council Meeting, 22 June 1966," Meeting Notes File, Box 1, Johnson Presidential Library). To Wheeler, an attack on electric power represented a direct assault on the will of the enemy populace to support the war effort, in addition to its detrimental effects on the enemy's war-making capability. That logic mirrored the reasoning found in the Air Force's industrial-web theory.

Had the Vietcong and their North Vietnamese allies fought a conventional war during the Rolling Thunder period, the focus on the 94 targets might have paid great dividends—as was the case during the 1972 Easter offensive, when the NVA relied on large amounts of armor and artillery in a large-scale, fast-paced war against the south. But that was not the type of conflict being fought throughout most of the Rolling Thunder era. Nor was it the type of war fought after the 1968 Tet offensive and before the 1972 assault. Douglas Pike, whom Professor Kamps rightly acknowledges as a superb historian, states that after Tet the NVA fought infrequently and refused to mass, "seeking victory at the gnat-swarm stage" (Douglas Pike, *PAVN: People's Army of North Vietnam* [Novato, Calif.: Presidio Press, 1986], 223). Professor Kamps cites Pike's observation that a Linebacker II–type air attack against the north might have caused Hanoi to remove its forces from South Vietnam in early 1965. Had that small number of NVA troops left, I contend that their departure would have made little difference on the enemy's war effort.

Professor Kamps opines near the end of his article that "given that the 94-Target List was realistic for the purpose for which it was designed, and given that the JCS plan for its implementation addressed the military objectives at hand, could there have been a different outcome to the Vietnam War?" (78). Yet, it is not a "given" that the 94-Target List was realistic for its purpose. President Johnson's

ultimate goal in Southeast Asia was an independent, noncommunist, stable South Vietnam, and bombing the north was not going to achieve that objective. The key to achieving Johnson's goal was in Saigon, not Hanoi. Johnson was reluctant to curb American support to the various South Vietnamese regimes that controlled the country even though the southern leaders were corrupt individuals completely out of touch with the populace they supposedly represented. As former Vietcong minister of justice Truong Nhu Tang makes clear in his autobiographical *A Viet Cong Memoir* (San Diego: Harcourt Brace Jovanovich, 1985), a majority of his countrymen fought because of the despicable nature of the southern government, not because of any great love of communist ideology. Johnson, however, refused to try to change the basic nature of the regime in Saigon. He and his advisors—military as well as political—viewed Vietnam primarily as a military problem rather than one stemming from social and economic ills.

That mind-set, combined with the type of war being waged from 1965 to 1968, guaranteed failure for America's efforts to "save" South Vietnam. *Had* Johnson permitted the joint chiefs to implement the 94-target scheme as they desired in the spring of 1965 and *had* that effort caused North Vietnam to withdraw from the war, the impact on the Vietcong insurgency likely would have been minimal. Professor Kamps wistfully reflects, "What might have been" (79). That answer is unlikely to be much different from what was.

Lt Col Mark Clodfelter, USAF, Retired
Washington, D.C.

What is special about history is that while there is a definitive truth, we may be wise never to let ourselves think we have grasped it because new sources may alter our thinking and assumptions. The Joint Chiefs of Staff 94-Target List "surfaced" by Charles Tustin Kamps offers absolutely no evidence that would change conclusions I reached in the late 1980s when researching Operation Rolling Thunder for my book *Setup: What the Air Force Did in Vietnam and Why* (Maxwell AFB, Ala.: Air University Press, 1991).

I find his arguments both noncompelling and tired—more old wine in new skins. Indeed, the 94-Target List looks like a strategic web to me: airfields; petroleum, oil, and lubricant storage facilities; a transportation infrastructure; military training facilities; electrical power plants; and North Vietnam's few factories all qualify as strategic targets, much like those bombed in Germany during World War II. Any reading of the Pentagon Papers and memoirs like U. S. Grant Sharp's *Strategy for Defeat: Vietnam in Retrospect* (San Rafael, Calif.: Presidio Press, 1978) clearly indicates that airpower leaders believed that the same kind of bombing that helped to defeat Nazi Germany and Imperial Japan in World War II would compel North Vietnam to stop supporting the Vietcong and negotiate an end to the war.

Rolling Thunder was, at best, a poor excuse for a strategic-bombing campaign. In July 1965, as the American troop buildup began in South Vietnam, the primary emphasis switched from strategic persuasion to interdiction, although aspects of strategic persuasion remained a secondary goal throughout.

Mr. Kamps, like the late Col Harry Summers, argues that the war in South Vietnam was not a guerrilla war but a contest between conventional forces. That is what it became, but not until after 1969, after the United States had been defeated—in effect, if not in fact—and the American withdrawal was under way. Meanwhile, during Rolling Thunder, the flow of troops and supplies moving from North Vietnam into South Vietnam increased substantially each year of the operation so that by the time of the Tet offensive, the North Vietnamese had the wherewithal to turn the Vietnam War into a more conventional conflict—which they attempted to do with tragic tactical but brilliant strategic results.

Mr. Kamps does not understand that strategy can operate at a number of levels simultaneously. Hanoi had devised a very flexible, multipurposed strategy suitable for addressing the Vietnam War at strategic levels appropriate to its two primary enemies—the Saigon govern-

ment and its army and the United States and its armed forces. North Vietnam's strategy against South Vietnam was a total-war strategy. It involved defeating and destroying the army of the Republic of Vietnam and supplanting the Saigon government. It took Hanoi until 1975 to accomplish those goals, but in the end its land forces did what only land forces can do—they supplanted a regime.

Conversely, Hanoi's strategy against the United States was a limited one. The North Vietnamese did not have to defeat American forces in the field, although they sometimes did, and they had no intention of supplanting the US government, although one can argue that the Vietnam War played a key role in toppling the Johnson administration.

Operation Rolling Thunder's primary strategic flaw was that it was inappropriate for the war at hand. The notion that bombing North Vietnam more vigorously in 1965, with the same intensity with which we bombed it during Linebacker operations in 1972, might have compelled Hanoi to settle on terms more suitable to the United States fails to take into account how the war in 1972 differed from that of 1965. In 1965, North Vietnamese forces did not yet have a major presence in South Vietnam, certainly nothing like the 14 divisions they had there in 1972. Also, in 1972 the peace terms Hanoi agreed to sign amounted to virtual victory. In 1965 they were still a long way from achieving their ultimate war goal of uniting their country under a single regime. That was not the case by late 1972. And with the United States out of the picture, Hanoi knew that eventually it would achieve its ultimate goal of total victory.

Invading Laos, cutting the Ho Chi Minh Trail on the ground, bombing the North Vietnamese heartland, closing the harbors at Haiphong, and bombing the railroads and highways north of Hanoi leading to the Chinese border might have compelled Hanoi to accept a different end to the war. But in 1965 these options were neither militarily nor politically viable.

Finally, one of Mr. Kamps's conclusions is that "instructors at Air Force professional mil-

itary education schools need to do their homework" (79). The implication is that Colonel Drew, Dr. Clodfelter, and I were not only guilty of sloppy scholarship, but also of distorting "student officers' views about the capabilities and limitations of airpower" (79). All good scholars strive to be better and will admit their mistakes when new evidence turns up to refute earlier assumptions and conclusions. But for whatever else you can say about us, we were willing to take considerable professional risks to write and teach as we did. Speaking for myself alone, if I revisit the air war in Vietnam, I probably will reassess some of my assumptions and conclusions, although not based on anything "surfaced" by Mr. Kamps. Meanwhile, I am satisfied that when it was both unpopular and prejudicial to do so, we called it like we saw it.

Maj Earl H. Tilford Jr., USAF, Retired
Grove City, Pennsylvania

Given the provocation of Charles Kamps's article, you have no doubt heard from many folks—Dennis Drew and Mark Clodfelter among them. No doubt their responses have been reasoned and quite detailed in their refutation of Mr. Kamps's basic assertions. So I shall not belabor points I'm sure that they have made. But I do want to offer one very salient observation: The fact that the United States turned to bombing North Vietnam at all in 1965 is an indication in and of itself that the counterinsurgency campaign against the Vietcong in South Vietnam had failed. Thus, the central issue before 1965 that Mr. Kamps failed to address was the failure of airpower in countering the communist insurgency, which led to escalation of the air war to the north.

Airpower had played a major role in the counterinsurgency effort of the French, from their return in 1945 to their departure in 1954. As the late Bernard B. Fall pointed out in his classic *Street without Joy* (Harrisburg, Pa.: Stackpole Co., 1964), the *Armée de l'Air* "fulfilled its mission as well as could be expected." The problem was not with French airpower but with the French strategy for de-

feating the Vietminh. Regrettably, the United States did not avail itself of the lessons of the French defeat and made many of the same—and often worse—mistakes between 1961 and 1965 in fighting the Vietcong. Two themes emerged during the American phase that are worthy of our attention in that regard. The first was the American concept of airpower itself and its utility in counterinsurgency warfare. The second, largely emerging from the first, was the hostility and competition between the US Air Force and the US Army regarding what was then described as "sublimited" war in Southeast Asia and to what end airpower would play a role.

The failure to suppress the insurgency before 1965 was rooted in the paralogism of "classical" airpower theory with respect to insurgency and guerrilla warfare. As one senior French officer put it, "First, it has been confirmed once again that air power, when it is armed only with classical bombs, has not the strength that too many theorists grant it. . . . [Moreover,] the airplane needs 'paying' objectives, which guerrilla warfare hardly affords." The classical airpower theory paradigm, at least as the US Air Force understood it at the time, was pseudosyllogistic insofar as the role of airpower in counterinsurgency was concerned. Insurgents generally do not have strategic assets and infrastructure that can be targeted by airpower. And guerrillas generally do not have easily identifiable fielded forces that can be targeted from the air; they also quite often mingle with the civilian population. Inasmuch as the Vietcong did not present a lucrative target for strategic air attack, it seems in retrospect inevitable that US Air Force leaders would have wished to take the air war to North Vietnam—the ostensible source of subversion in the south. But the graduated air attacks on North Vietnam did not dissuade the Vietcong. On the contrary, they set off an escalation of guerrilla warfare in South Vietnam and prompted the North Vietnamese to retaliate for the air strikes by sending regular divisions into the south in what the French called "big guerrilla warfare."

Aside from the inappropriateness of "classical" airpower theory in counterinsurgency, the airpower polemic also caused the American counterinsurgency effort to fractionate, as evidenced by the constant bickering between the Army and the Air Force in Washington, D.C., as well as in Saigon. The question of who was in charge and who controlled air assets—rotary-wing as well as fixed-wing—was a continual source of friction. In the end, the vitiating nature of the dual identity of the advisory effort upon the application of airpower in combatting the insurgency contributed materially to its ineffectiveness. As the director of plans for Headquarters USAF noted in 1962, "It may be improper to say we are at war with the Army. However, we believe that if the Army efforts are successful, they may have a long term adverse effect in the U.S. military posture that could be more important than the battle presently being waged against the Viet Cong." Such astonishing animosity at the highest levels was mirrored in South Vietnam between Gen Paul Harkins, the Army commander of the advisory mission in Saigon, and Maj Gen Rollen H. Anthis, commander of the 2d Air Division. The existence of these two essentially separate and competing advisory bodies within an ostensibly joint and combined effort exemplified the paralogism of the American counterinsurgency effort—particularly with respect to the application of airpower. With the arrival of three US Army helicopter units in January 1962, the two themes of airpower theory in counterinsurgency and interservice animosity merged, creating a dynamic and corrosive environment that arguably had more to do with the divorce between the Army and the Air Force than defeating the insurgency.

The influx of American airmen dramatically altered the role of airpower in South Vietnam. Whereas earlier in the conflict, the South Vietnamese air force understood its role to be in support of the South Vietnamese army, US Air Force advisors proselytized the South Vietnamese airmen, promoting an American-style air war, one largely free of sur-

face tethers. Air strikes were to be conducted against Vietcong infrastructure and lines of communication—an independent effort in the best keeping of the American airpower tradition. But at the same time, American airmen became convinced that the South Vietnamese were incapable of conducting the air war in a conclusive fashion. Consequently, the Air Force's advisory effort expanded far beyond its original mandate to the point that the air war in South Vietnam became an American air war by 1965.

The original mandate of "Farm Gate"—the first American airmen to engage the Vietcong—was to provide training support to the South Vietnamese in a strategically defensive effort. This in itself was counter to US Air Force philosophy, theory, and tradition. But as the British had learned in Greece and Malaya—and as the Americans should have learned in Greece and the Philippines—unless and until guerrillas begin operating as conventional forces, they are seldom vulnerable to air attack and not at all vulnerable to strategic air attack. In that sense, the lethal application of airpower generally takes a backseat to other uses, such as the rapid insertion and movement of troops; aerial resupply of isolated units and deep-penetration hunter-killer teams; reconnaissance and intelligence collection; and psychological warfare. For one thing, aerial firepower often results in unintended civilian casualties, which is wholly counterproductive in a type of warfare in which the popular support of the civilian population is the key to victory or defeat. Yet, the US Air Force approached this strategically defensive task with an offensive predisposition, one that inexorably led it to strike suspected Vietcong positions with considerable collateral damage, as well as conclude that widening the war to strike at the vitals of North Vietnam was worth the political and military risks. As Gen Harry C. "Heinie" Aderholt recalled bitterly, "We should never have had our regular Air Force and Army units over there. It should have been dealt with as an insurgency, and it should have been the Vietnamese's fight and not ours."

There were certainly models of cooperative effort between air and ground forces in counterinsurgency that the United States could have emulated. US Air Force lieutenant colonel Edward G. Lansdale orchestrated a superb counterinsurgency campaign against the Hukbalahap insurgency in the Philippines after World War II and helped shape the Philippine air force into a vital instrument in defeating the Huks. One could even go as far back as the intervention of the US Marine Corps in Nicaragua between 1927 and 1933, when no less a person than the secretary of the Navy opined that defeating the insurgency led by Augusto Sandino could not have been accomplished without Marine Corps aviation. Arguably the best model—and one that was immediately available to American military analysts at the time—was the role of the Royal Air Force in defeating communist insurgents in the Malayan Emergency. But it seems that all of these models were ignored—or at least not taken seriously.

In the final analysis, the American experience in South Vietnam is a stark reminder that in counterinsurgency, airpower is but one variable in a complex equation. Airpower is not an end in itself. This is perhaps especially true in counterinsurgency, in which social, political, economic, juridical, and other issues beyond the military dimension are the key to victory or defeat. Yet, the inevitable interplay that occurred between the US Air Force and the US Army in South Vietnam exacerbated decades-old rivalries between the two services—to the detriment of the air effort in South Vietnam and, ultimately, the counterinsurgency campaign itself. The insurgency in South Vietnam was a conflict that the Air Force had not envisioned and had not adequately prepared for. Without a clear idea of its purpose in South Vietnam or a clear conception of what role airpower was to play in combatting the insurgency, it is not surprising that Air Force leaders looked to a

more comfortable paradigm—strategic attack against the North Vietnamese.

The American concept of airpower as it affects conventional war has a pellucid edge that is absent in small wars. US Air Force officers in the 1950s and 1960s thought of airpower in terms of key vulnerabilities in industrialized societies that could be struck in what amounted to a "decisive point." It is difficult enough to ascertain these key vulnerabilities in "big" war; the challenge is magnified in small wars, in which the unique juxtaposition of political and operational restraints invariably plays a major role in the application of airpower. The problem in South Vietnam was that there was never any agreement on how airpower was to be employed, what its relationship was to other instruments of counterinsurgency, and what practical steps were necessary for airpower to contribute to ultimate victory. The danger of such confusion, as Clausewitz wrote, is manifest: "So long as no acceptable theory, no intelligent analysis of war exists, routine methods will tend to take over even at the highest level." In that light, without agreement on the nature of the war, the way to fight it, and the role that airpower was to play, the US Air Force approached the conflict in South Vietnam in a manner that Marshal Hermann Maurice de Saxe described in *Mes Rêveries* over 250 years ago: "In default of knowing how to do what they ought, [they] are very naturally led to do what they know."

Professor Kamps missed the central point: the war was lost long before the JCS 94-Target List was ever developed.

Lt Col Wray R. Johnson, USAF
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THE AUTHOR REPLIES

My point stands. Any characterization of the 94-Target List as an "industrial" bombing plan (like that against Germany) is patently absurd. I am encouraged that the letter writers simply trot out the same timeworn theses used in their original flagellation of the Air Force and the Joint Chiefs of Staff (JCS). As

to possible alternative futures to the war, there are, of course, differences of opinion. However, I feel comfortable that my opinion is shared by the overwhelming majority of senior officers who actually fought the war (see "The Stennis Subcommittee Summary Report on the Air War against North Vietnam," *Air Force Magazine*, October 1967; and the memoirs of Gen William C. Westmoreland, Adm U. S. Grant Sharp, and others.) As one current commentator put it, Vietnam is the first war America refused to win.

The critics collectively fail to see the triple-canopy jungle through the trees for several common reasons: their extreme institutional myopia, which focuses on the Air Force rather than on warfare; their simplistic reduction of the war to a Maoist insurgency rather than recognition of the unique North Vietnamese war theory of Dau Tranh; a naive belief that enemy forces required little in the way of outside assistance; a shared lack of appreciation of how war is conducted on land (either conventional or insurgent); and, underlying it all, an unspoken premise that the war could not be won militarily. However, as my colleague Prof. Matthew Caffrey put it, "Some people think that there couldn't be a military solution to Vietnam. Well, somebody found one. It just happened to be the enemy." There is insufficient space to reply to all the tangents put forward by the letter writers, but I will address some of the more egregious statements.

1. Two of the critics make an extremely long stretch to try to philosophically link the bombing programs of Vietnam and World War II. Germany was an industrial giant while Vietnam required its war materiel to be imported. This was explicitly stated by the participants, explicitly acknowledged in the target list, and clearly stated in the article.

2. One critic fails to see the difference between "guerrilla war" and "guerrilla-style tactics," and is fixated by body counts (or lack of them) in a major operation.

Hit-and-run warfare is largely practiced by anyone in jungle and mountain environments. Yes, Operation Junction City yielded fewer enemy dead than one could have expected, but that was because the 9th Vietcong Division simply retreated into the sanctuary of Cambodia. The communist supply network in the Iron Triangle was never as robust after Junction City.

3. There are a couple of examples cited of disappointing ground operations in 1967, but I would challenge the critic to ask a couple of veterans of Dak To, Con Thien, Khe Sanh, or the Bong Son Plains if their experiences were "low intensity" or if they had any problem finding the enemy. I would also ask him to talk to a few infantry officers. I've been assured by a number of them that they would not be alive today except for "tac air" saving them from being overrun.

4. It is worth reminding the reader that we won the counterinsurgency war. I say again, we won the counterinsurgency war. After the Vietcong infrastructure was exposed during Tet '68, "Blowtorch Bob" Komer's Accelerated Pacification Program, the Central Intelligence Agency's (CIA) "Phoenix" (highly regarded by the North Vietnamese), and other operations literally shut down the insurgency. After that, it was only the North Vietnamese army (NVA) that had the capability to topple the Saigon regime—a government that lasted two years after our complete withdrawal and our slashing appropriations for their ammunition and spare parts to the bone. The communists never won the "hearts and minds" of the South Vietnamese—something that can be attested to by the fierce resistance shown during Tet and the 1972 offensive.

5. If we want to quibble over precise figures of NVA versus Vietcong at any particular time, then let's get a couple of things straight. First, if we buy that there were only 55,000 NVA troops in the south prior to Tet, then let's add 64,000 Main Force and Local Force Vietcong regulars. These were supplemented by 90,000 Vietcong guerrillas. NVA and hard-core Vietcong were not rice farmers and had to be supplied like any other army, with the possible exception of food, which—only if they were in a populous area—they could extort from villagers. CIA sources from November 1967 put communist supply requirements at 211 to 218 tons a day, of which 54 to 57 tons of nonfood items had to be externally provided. What if those 54 to 57 tons of weapons, ammunition, sapper supplies, and so forth couldn't get through because North Vietnamese ports were mined and the rail links cut?

6. In late 1964, Ho Chi Minh knew the Vietcong could not accomplish his objectives, which was why he increased reinforcements going south. At the same time, due to a falloff in Vietcong recruitment, more and more nominally Vietcong units were, in fact, being manned by northerners. Ultimately, Ho wanted to reunite the country under his leadership, and the only way he could do that was with the NVA.

7. At least one critic has read Douglas Pike. He cites Pike on the subject of the change in communist tactics after Tet. What he fails to do is continue Pike's explanation that this phase of "neorevolutionary warfare" (sapper teams) was another segment of Dau Tranh (the complex and original theory of war used by North Vietnam) to buy time and reorganize.

8. Another critic dwells at length on Rolling Thunder (an operation that frustrated those who had to execute it) but doesn't see that the buildup of the NVA was fundamentally tied to the failure of the Johnson administration to strategically interdict North Vietnam's

ports and two vital rail lines. He goes on to dismiss the preferred solution of mining the ports, bombing the rail lines, and putting troops astride the Ho Chi Minh Trail, saying, "But in 1965 these options were neither militarily nor politically viable." Why not? The Gulf of Tonkin Resolution passed by 88 votes to two in the Senate and 416 to zero in the House. In February of 1965, Johnson had a 70 percent approval rating and similar popular support for a bombing campaign. Public opinion was 80 percent in favor of troop commitment to stop communist aggression. Militarily, "in anticipation of such a possibility [cutting the Laotian panhandle], the United States in the early 1960s built a substantial modern complex of logistic bases in Thailand capable of supporting the operations of a large U.S. force in the northeast part of the country" (Gen Bruce Palmer Jr., *The 25-Year War: America's Military Role in Vietnam* [Lexington: University Press of Kentucky, 1984], 215). Also, "B-52s could have attacked North Vietnam in early 1965 without being inhibited by clouds or surface-to-air missiles; B-52 radar could find targets in any weather and North Vietnam had yet to deploy SAMs" (Wayne Thompson, *To Hanoi and Back: The U.S. Air Force and North Vietnam, 1966–1973* [Washington, D.C.: Smithsonian Institution Press, 2000], 281). Diplomatically, neither the Soviet Union nor China would have intervened against us, as is well established in the writings of Stanley Karnow, Douglas Pike, and H. R. McMaster. The "threat" of Red intervention was for internal consumption by the Johnson administration, but that is another story.

9. One writer has assumed that a serious air effort to destroy the insurgency in South Vietnam was undertaken by the United States prior to the bombing of North Vietnam. We did not have the assets in-country for such a mission at that time. Yes, guerrillas hiding in the field present few "strategic assets and infrastructure" targets, which is why experts suggested going after their support at the concentrated end—not the dispersed end. As for the Malayan campaign against the Chinese communist insurgents, that war had so many aspects different from Vietnam that lessons from it were counterproductive (e.g., the failed "strategic hamlets" program). Far from the Vietnam War being lost before the JCS 94-Target List was developed, a concerted effort by air, land, and sea could have bought the time South Vietnam needed to clean up its act—just like South Korea required a decade earlier.

In closing, one thing we teach at Air Command and Staff College is Clausewitzian critical analysis, which points the historian to three steps: (1) determine the salient facts bearing on the situation, (2) establish the cause-and-effect relationships among the various facts, and (3) suggest plausible alternative courses of action based on the knowledge and technology available to the commander at the time. In the last quarter century, the critics have had plenty of time to ponder the "correct" solution to Vietnam—since they don't believe the generals had one. That, my eminent critics, is a challenge to you. Step up to the plate, if you will. Step up to the plate.

Charles Tustin Kamps
Maxwell AFB, Alabama

Reason and judgment are the qualities of a leader.

—Tacitus

After Clausewitz: German Military Thinkers before the Great War by Antulio J. Echevarria II. University Press of Kansas (http://www. kansaspress.ku.edu), 2501 West 15th Street, Lawrence, Kansas 66049-3905, 2001, 360 pages, $39.95.

In this important new work on German military thought in the era between the Franco-Prussian War of 1870–71 and the Great War of 1914–18, Lt Col Antulio Echevarria II, USA, has not only made a major contribution to the historical literature of the period, but also has shed light on the process of preparing for future war, an effort that has significant implications for today's airmen. This review offers comments on the book as a work of historical analysis and then suggests a few reasons why, despite the fact that it addresses an era only marginally concerned with airpower, future air strategists should read it carefully and ponder it deeply. Evaluation of the work's historical quality addresses the comprehensiveness of the research, the development of the argument, and the felicity of the expression.

The research for this work is certainly definitive —one could almost say exhaustive. The fundamental basis of the book is a close, contextually aware reading of the primary literature of the period— the voluminous accumulation of books and articles produced by members of the *Kaiserherr* in the four tumultuous decades between its triumph in the war against France and its initially promising but ultimately disastrous entry into World War I. One must remember that, throughout much of this period, the humiliating defeat suffered by the French at the hands of Field Marshal Helmuth von Moltke's well-directed masses led many to wonder not *whether* there would be a follow-on war but *when* it would take place. This widespread expectation of future war put a premium not only on military readiness, but also on codified military thought. If one adds to this expectation the dizzy-

ing pace of technological and social change that characterized the era, one can easily understand the profusion of military writings. Colonel Echevarria demonstrates a sure grasp of this literature. But he is also quite cognizant of the subsequent historical interpretations of this body of work (many of which he finds wanting); the major intellectual and social trends that put the military writings in context; and, as a distinct bonus to the reader, the major military expressions of the period by officers in the French, British, American, and Russian armies. For just one illustration of research depth, this reviewer was particularly struck by an informative and concise description of the plot of Theodor Fontane's novel *Irrungen, Wirrungen* (*Confessions, Entanglements*), which Echevarria uses to illustrate fading patriotic ardor and disenchantment with the romantic view of war that developed in Germany in the 1890s.

Echevarria's main argument is that German military thinkers of the period were more forward-looking than they have generally been portrayed, that they fully appreciated the severe tactical problems induced by highly lethal weaponry, and that they studied diligently to solve these problems. A subsidiary argument is that these solutions were generally correct but were imperfectly implemented. The main argument is carried almost beyond doubt. Echevarria marshals a broad range of literature showing that German military writers of the period were poignantly aware of the vulnerability of infantry and cavalry to rifle, machine gun, and artillery fire. They also recognized the dilemma posed to the field artillery between the concentration necessary to suppress the defender's fire and the dispersion necessary to avoid the enemy's counterbattery fire. The literature he cites also portrays an acute awareness of the rapidity of technological changes and the need to adjust tactical doctrine almost continuously to these changes. Echevarria also examines the debate between two somewhat distinct, though not mutually exclusive, solutions to these problems: *Normaltaktik* (normal tactics) and *Auftragstaktik* (mission tactics). The former emphasized a "normal" set of prescribed formations, while the latter emphasized the thinking, adaptive small-unit leader. He also illuminates an effort by some analysts to develop a

mixed system that would incorporate the best features of both systems. Some suggestive evidence buttresses the argument that the solutions ultimately developed in the theoretical literature and incorporated into various German drill regulations after the Russo-Japanese War would have produced better results in World War I had the *Kaiserherr* been more effectively trained and had an impetuous group of young officers not disregarded the prudence of a wiser and more experienced older generation. But this argument is not demonstrated with the same level of conclusiveness as is Echevarria's main thesis. Although the material is dense, the reader is pulled along by the author's crisp, clean, effective style. In sum, this is close to a competent model of historical analysis.

But why should an airman read it? As J. F. C. Fuller once noted, the only legitimate function of history for military professionals is to help them think about the future. Echevarria's book makes it crystal clear that the process of thinking about the future is fraught with uncertainty. Rapid technological change is but one contributor to the fog of peace. Social changes engendered by new technologies are equally significant. This reviewer recently had the pleasure of listening to a senior Air Force officer in the flight-training community discourse at length on the difficulties of bringing into the Air Force culture members of "Generation D," who seem much more concerned with individual satisfaction than with group accomplishment. Believe it or not, the rapid urbanization of Germany in the late nineteenth century led members of the General Staff to spend a great deal of energy thinking about how they could overcome what they perceived to be a deterioration of societal compatibility with military service brought on by that phenomenon. This discourse led to a significant emphasis on the moral domain of war in both doctrine and training, an emphasis that had both positive and negative consequences. *After Clausewitz* also underscores three immutable truths articulated by Sir Michael Howard in his article "Military Science in an Age of Peace": first, all peacetime doctrines will inevitably be wrong; second, it is the task of military leaders to ensure that these doctrines are not too badly wrong; and third, it is the even greater task of leadership to fix them quickly at the outset of hostilities (*Journal of the Royal United Services Institute for Defence Studies* 119 [March 1974]: 3–9). In short, airmen who are trying to figure out how to make the Air Force relevant to the needs of the Republic in an environment of perplexing—some would argue transforming—change can do much

worse than examine how the German army wrestled with similar problems over a century ago. It might not lead them directly to the best answers, but it might at least help them scope the problems and perhaps become aware of approaches both to emulate and to avoid. Given the amount of wild speculation that abounds on the subject, this would be no small service.

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The Nazis' March to Chaos: The Hitler Era through the Lenses of Chaos-Complexity Theory by Roger Beaumont. Praeger (http://www.greenwood.com/praeger.htm), 88 Post Road West, Westport, Connecticut 06881-5007, 2000, 213 pages, $59.95 (hardcover).

In *The Nazis' March to Chaos*, Roger Beaumont, the author of several books on military affairs, attempts a new approach to analyzing the history of the Third Reich. This fairly short book takes the form of an extended essay on the "nonlinearity" of German history, using aspects of chaos-complexity theory as a framework for analysis and commentary.

Beaumont gets into trouble from the beginning by putting forward a fairly muddled description of chaos-complexity theory. The author explains chaos theory more as a series of characteristics than as a coherent theory that attempts to account for the unpredictability of historical events and applies this to a study of the Third Reich. It's a very tall order for a short book, and this work does not live up to its intended promise.

While the author muses over developing a new methodology to look at the history of Nazi Germany, the book itself exposes some of the problems with the methodology of applying chaos theory to historical events. The first major flaw in the work is the emphasis upon dealing with the phenomenon of Nazism and the Third Reich without relating it to the general political conditions in Europe at the time. A traditional historical view, which the author generally ignores, looks upon the rise of Nazi Germany not as an unpredictable and unique event but as a consequence of the general European crisis set off by the carnage and devastation of World War I. The Great War was the immediate cause of the collapse of four great empires (Russian, Ottoman, Austro-Hungarian, and German) and followed by a general lack of confidence in lib-

eralism and democratic institutions throughout Europe. As Italy became a fascist dictatorship and Russia a communist one and as French politics swayed between extremes of left and right (and eventually chose fascism in 1940), only Great Britain seemed relatively immune to the European tendency toward totalitarian government in the 1930s.

While the author emphasizes the uniqueness of the Nazi ideology and system as a "dialog of chaos and order," a look at Nazi Germany through a European context would note the remarkable similarities of Nazi Germany and the other totalitarian states on the Continent. Beaumont argues that the Nazi "Voelkisch" race ideology was unique to Germany, but, in fact, Fascist Italy and Vichy France had their own variations on this theme. Some of the most remarkable similarities of the era include the propaganda themes, methodology, and even art of the totalitarian states. Much of the propaganda and art extolling the Nazi regime or Stalin's regime in the Soviet Union is virtually interchangeable. Similarities abound in the concept of the all-wise leader as the embodiment of the people in Italy, Germany, and the Soviet Union. Even the party's control apparatus in the totalitarian states shared many characteristics. In short, the more traditional view that sees Nazi Germany as the result of a European crisis that fostered a variety of totalitarian states and ideologies still holds up as far more useful than chaos theory for understanding the history of the twentieth century.

However, a far more grievous flaw in the book is the author's fairly weak grasp of modern German history. Beaumont's analysis of the *Reichswehr* and *Wehrmacht* reflects a lack of acquaintance with the last 20 years of scholarship on the German military. He repeats the long-discredited notion that Guderian and the "tank enthusiasts" encountered strong opposition to the creation of a panzer force from the traditionalist generals at the top (pages 79–81). This is totally unsupported outside of Guderian's self-serving memoirs. He repeats the old saws that Hitler delayed economic mobilization, kept civilian production at a high level during the war, and kept German women out of the workforce during most of the war (page 35). Richard Overy's detailed analysis in *War and Economy in the Third Reich* (Oxford, 1994) has very capably demolished these myths. However, it is disconcerting that the author seems unaware of many important, recent works on German history.

Some of the analysis is pure nonsense—for example, the author's description of blitzkrieg tactics as "anti-doctrine" (page 33). The German doctrine of maneuver warfare of the 1930s and 1940s did not have as its primary goal inducing "turbulence and confusion" amongst the enemy, as the author tries to argue, but was an operational method of outmaneuvering and outflanking the enemy with the goal of annihilating his forces. Rather than "anti-doctrine," it was a clear evolution of concepts deeply rooted in the German military tradition going back to Clausewitz, Moltke, Schlieffen, and World War I.

In one case, the author gets it right in his chapter-long analysis of the theory of several prominent Holocaust historians that if the Allies had only bombed the gas chambers at Auschwitz in 1944, the mass murder of Jews could have been halted. Beaumont points out that such an operation at such long range would have been an extremely complex undertaking and that there is no real certainty that the desired result could have been obtained by such a raid. The author understands in this case that the interplay of weather, intelligence, technology, military operations, and the enemy's response is so complex that simplistic "what if" scenarios are usually a historical dead end.

The Nazis' March to Chaos sort of fades out without leaving the reader any clear conclusions. At the end, the author asks, "Can chaos-complexity, then, give us a significantly clearer view of Nazism and the Holocaust, or is it just another conceptual spin around the block?" (page 185). The answer to this is clear—it's a spin around the block.

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Power to Explore: A History of Marshall Space Flight Center, 1960–1990 by Andrew J. Dunar and Stephen P. Waring. National Aeronautics and Space Administration, NASA History Office (http://history.nasa.gov), 300 E Street SW, Washington, D.C. 20546, 1999, 713 pages, $49.00.

Power to Explore, officially sanctioned by the National Aeronautics and Space Administration (NASA), relates the history of the Marshall Space Flight Center, located in Huntsville, Alabama, from 1960 to 1990 and includes the creation of the center as part of the creation of NASA. This complex book was written by the center and, to some extent, for the center itself. Reading chapter 14,

the conclusion, first is recommended for readers with limited time since it may serve as a useful executive summary.

The book begins by describing the origins of NASA and the creation of the Marshall Space Flight Center as a part of NASA from the Huntsville point of view. A team of German V-2 rocket scientists, captured at the end of World War II, was brought to the United States and eventually to Huntsville to continue developing rockets for the United States. In a true-life "reversal of fortunes" story, these defeated Germans became a part of NASA's beginnings, and many rose to high positions at the center as the space race with the Soviets began in earnest. Many young American rocket scientists joined them; together they accomplished things never done before, including multiple trips to the Moon.

Following the Apollo program and the retirement of the original German team, NASA and its dependent field centers began experiencing a political and budgetary roller-coaster ride punctuated by dramatic, continuing achievements that included Spacelab, Skylab, the space shuttle, and the Hubble space telescope. As discussed in the book, this turbulent organizational environment led to increased diversification of the center's roles and missions and inevitably increased competition with other NASA centers. The accomplishments of NASA people in spite of the recurring prospect of reductions in force, the threatened closure of field centers, and other obstacles are a testimony to their dedication and commitment to the dream of spaceflight.

The authors focus on the center's role in several of NASA's major programs from the center's management perspective. These programs include the aforementioned Spacelab, Skylab, space shuttle, and Hubble space telescope, as well as the international space station. In every case, the primary obstacles facing center managers as they attempted to successfully complete these projects were the inseparable parameters of cost and technology. Generally, initial cost estimates were optimistic. As both Air Force and NASA veterans know, though, difficulties normally arise in the myriad of both large and small technical accomplishments needed to bring a major project to reality. Oftentimes, technical breakthroughs were programmed optimistically into overall cost estimates and schedules. Since there is tremendous risk associated with achieving a technical breakthrough at a given time for a given funding level, it is not surprising that, as the authors describe in some detail, center project

managers continually battled cost and schedule overruns and the associated political reverberations for all of these projects.

As a civilian agency, NASA is organized somewhat differently than the Air Force. Its civilian field centers oftentimes remind one of the ancient Greek city-states, in that each has its own culture and competes with other centers at many levels to maintain and increase its share of the NASA budget. The first loyalty of field-center personnel is to their own center. As a general rule, NASA folks are not rotated to a new assignment every two to four years. Rather, it is not unusual to find some people who have spent their entire 30-year careers at NASA, working in the same job in the same office. Most folks spend their entire career working at one center. As the book describes, one of the great fears of the centers is that they will be closed. Thus, for these and other reasons, the cultural differences between NASA and the Air Force are profound.

Reading the book may prove particularly interesting to people involved in the space program in Huntsville who may have known the people mentioned in the book. However, it may prove to be of only limited value to Air Force readers at large. One of the unavoidable reasons for this is that the authors name managers, personalities, and other government officials but give us only superficial background development. They throw out name after name at the general reader, who does not know these people personally, but fail to develop any of these characters. Another problem is that one may quickly get confused with the NASA program's jargon and acronyms. Again, there is insufficient space to develop a comprehensive background for these complexities. The general reader may need additional references to follow the text.

Today, under the direction of the NASA administrator, the Marshall Space Flight Center has gone full cycle and has refocused on space transportation and propulsion. Increased joint-collaboration projects with the Air Force and other government agencies are being encouraged. The center's top priority now is to reduce by an order of magnitude the cost of placing payloads in orbit. Its Advanced Projects Office is developing the technologies to harvest solar power in space and beam it to Earth. In addition, it is advocating the development of laser technology for removing orbital debris and ultimately deflecting asteroids, meteoroids, and comets from colliding with Earth. It is also investigating interstellar spaceflight technologies, including pushing a light sail to Alpha Centauri, our nearest star. The moral of this book is that there is

absolutely no limit to what human beings can accomplish in space if they unite to work together for the common good.

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Escape from Villingen, 1918, C. A. Brannen Series, no. 5, by Dwight R. Messimer. Texas A&M University Press (http://www.tamu.edu/upress), John H. Lindsey Building, Lewis Street, 4354 TAMU, College Station, Texas 77843, October 2000, 214 pages, $29.95 (hardcover).

What strikes one most about the Villingen escape attempt is its uniqueness. As Dwight Messimer notes in the introduction to *Escape from Villingen, 1918,* this was "the only mass escape made by American prisoners of war during World War I." For a war that lasted several years and saw the capture of 4,480 members of the American Expeditionary Force (AEF), the fact that only six (three of whom were involved in the Villingen escape) successfully escaped, eluded capture, and reached Allied lines is remarkable. What Messimer gives us in this book, however, is more than the escape. He also details the capture of each of the men involved and follows the five men who avoid immediate capture after the mass escape of 6 October 1918. Messimer treats his readers to a story of determined men willing to risk much for the slim chance of freedom.

The author first presents details of the capture of each man in brief, two-to-three-page vignettes designed to provide background on the personality of each man. That Lt George Puryear lands his aircraft to accept the surrender of the German pilot he has shot down goes a long way toward explaining the bravado of his eventually successful escape. From the deck of a naval vessel torpedoed by a German U-boat, to the reconnaissance aircraft of the AEF, the captured men fall into captivity either by ill fortune or sheer stupidity, and Messimer allows his readers a window into each capture.

The details surrounding the escape and the different routes each man takes to reach the Rhine River and Switzerland seem as much a product of each one's personality (based on what Messimer has already presented) as it does the winds of fate and terrain. Puryear strides through the center of several towns on his way south to the border—not surprising, based on what we already know about

him. Faced with solitary treks to the Rhine, both Lieutenant Tucker and Lieutenant Battle struggle without the camaraderie of another escapee. It might not be coincidence that the brash Puryear and Lieutenant Isaacs and Sergeant Willis (who find each other and team up to escape to freedom) are the only members of the original team to reach Switzerland safely.

Messimer's account of the only successful mass escape during World War I is instructive in that success in such missions often depends to a large part on the will of the people involved. That only 44 prisoners of war attempted escape is almost as incredible as the fact that only six succeeded. *Escape from Villingen* details a different world (and a different sort of war) than the one we know, and we are richer for the view Messimer affords us.

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Lifting the Fog of War by Adm Bill Owens with Ed Offley. Farrar, Straus, and Giroux (http://fsbassociates.com/fsg), 19 Union Square West, New York, New York 10003, 2000, 280 pages with index, $25.00 (hardcover).

Adm Bill Owens, a retired Navy officer and former vice chairman of the joint chiefs, builds a strong case for the radical restructuring of the US military and the Department of Defense (DOD) to take advantage of the explosive potential of the revolution in information technology. Owens's argument places him in the middle of what Prof. Steve Biddle categorizes as the Contingent Innovation/Revolutionary Transition school in the ever-growing literature on the revolution in military affairs.

Owens's crisp and readable style enhances his argument as he describes the current state of the US military that is the result of budget shortfalls, force-structure diminishment, and increased operations tempo. He also ably describes the culture of the four military services and demonstrates why they would be reluctant, from an organizational perspective, to embrace the radical changes that he proposes.

Some parts of his argument are problematic, however. The keystone of Owens's case for the radical transformation of the military is built on the analogy that he draws between the other "revolutions" in military affairs and today's. Using Martin van Creveld's categorization of the different eras of military history from *Technology and War,* Owens as-

serts that for a new technology to be truly revolutionary, it must be accompanied by changes in military culture and doctrine in order to maximize the opportunity. In other words, new technologies did not really become revolutionary until changes in culture and doctrine also occurred. From this, he concludes that a radical transformation of military doctrine and DOD acquisition policies is necessary to take full advantage of the information-technology revolution. However, this reviewer is not completely convinced that this analogy holds in this particular instance.

There is another problem with Owens's argument. In outlining how his proposed "system of systems" might operate, he describes a conception of attack against an adversary that is, coincidentally, quite similar to the late John Boyd's conception of strategic paralysis. As Col David Fadok succinctly described Boyd's theory in *The Paths of Heaven: The Evolution of Airpower Theory* (Air University Press, 1997), warfare's aim is to "render the enemy powerless *by denying him the time to cope mentally* with the rapidly unfolding—and naturally uncertain—circumstances of war" (emphasis added, page 364). The goal is to "overload the adversary's capacity to properly identify and address those events that appear most threatening. By steadily reducing an opponent's physical and mental capability to resist, one ultimately crushes his moral will to resist as well" (page 365).

Such unwitting similarity to Boyd's conception of strategic paralysis suggests that Owens's variant possesses the same weaknesses. First, strategic paralysis seems to work best against an industrialized adversary. What happens if the adversary happens to possess only agrarian technology? Or, more realistically in today's world, what if the adversary's weapon is relatively primitive, as in humanitarian disasters such as Rwanda, where the primary weapon was a machete? Moreover, what happens if the adversary doesn't care if the United States operates within his decision cycle? As the tenets of Maoist insurgency theory suggest, in a "protracted war" the insurgent will simply outlast his adversary. As such, if an insurgent is faced with a tactical or even an operational defeat, he will simply fade into the population until the time is again ripe to recommence activities.

Despite these flaws, I recommend Owens's book to anyone with an interest in what the ongoing debate about the revolution in military affairs is about and what, if anything, this country should do as a result. Owens is perhaps the most eloquent spokesman for the radical-transformation school

of this literature. One should read and understand this argument because Owens will continue to be the leading advocate for the radical transformation of the US military and DOD.

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Anglo-American Strategic Relations and the French Problem, 1960–1963: A Troubled Partnership by Constantine A. Pagedas. Frank Cass Publishers (http://www.frankcass.com), 5824 N.E. Hassalo Street, Portland, Oregon 97213-3644, 2000, 308 pages, $59.50.

A great deal has been written about the so-called special relationship that characterized twentieth-century relations between Great Britain and the United States. The dynamic of this relationship—indeed, the very concept of power itself—changed considerably with the advent of nuclear weapons in 1945. In the post–World War II era, Britain's influence waned, and her leaders struggled to retain Great Power status. US politicians, on the other hand, grappled with their newfound strength and endeavored to define the role of the United States in world affairs. Through much of the 1950s, both countries clung to the familiar Atlantic partnership.

Author Constantine Pagedas suggests that the complex history of Anglo-American strategic relations, particularly from 1960 to 1963, must be considered within the context of France's emergence as a nuclear power and the challenge this posed to the North Atlantic Treaty Organization (NATO). In contrast to most contemporary accounts, he opines that the Anglo-American relationship in many ways became a troubled partnership. Pagedas develops his assertion by following Gen Charles de Gaulle's rise to power in France and the problems this created for the policies of Britain and the United States.

Emboldened by economic and military ascendancy, the United States played a substantial role in post–World War II European affairs. Britain and France, in an effort to buoy their absolute and comparative power, set their sights on an independent nuclear capability. Britain sought to leverage the Anglo-American relationship into a free exchange of militarily useful US nuclear information. Prime Minister Harold Macmillan's efforts resulted in the selective repeal in 1958 of the McMahon Act, by which the US legislature limited

release of such information to foreign powers. Signaling US intent to perpetuate the special relationship, this legislation was repealed for Britain alone. Understandably, other NATO allies, including France, expected similar treatment and became frustrated when such impartiality did not materialize. Combined with the fall of the Fourth Republic and General de Gaulle's rise to the French presidency, this situation created great diplomatic challenges for the erstwhile allies.

Despite the selective repeal, the early 1960s were characterized by some diplomatic friction between the United States and Britain. The simple explanation is that they occupied significantly different strategic positions and sought varied national objectives. US policy makers, clearly in the most economically and militarily powerful position, were divided broadly between a desire for a multilateral agenda in Europe and continuing cozy ties to Britain. The British sought to maintain the special relationship so as to acquire nuclear information from the United States. This, in turn, would create a favorable position vis-à-vis France, enabling Britain to exchange such technology for French sponsorship into the European Economic Community (EEC). Adding complexity, France developed a strong sense of nationalism under President de Gaulle, who maintained a firm skepticism about US intentions, NATO, and British foreign policy. He stymied British efforts to enter the EEC and scared the United States and Britain by courting West Germany, all the while continuing to invest in the French nuclear *force de frappe*.

Throughout his research, Pagedas probes for the real story, whether already public or previously veiled by diplomatic necessity. He describes the internal divisions that existed between pro-British presidents Eisenhower and Kennedy and a US Department of State increasingly staffed with "Europeanists" who sought an end to the special relationship. The author explains the tenuous political position in which Macmillan found himself when, after cancellation of the indigenous Blue Streak missile program, the fallback US Skybolt missile failed, leaving Britain with little hope of an independent nuclear force or EEC entry. Pagedas exposes the secret deals a desperate Macmillan advocated with France—deals not entirely in concert with previous Anglo-American agreements. He describes the British diplomatic coup in Nassau when Kennedy agreed to swap Skybolt promises for Polaris and gave tacit consent that these nuclear forces could be pulled out of NATO and used independently, if Britain faced a significant threat.

Ultimately, this book is about diplomacy and power. Not surprisingly, what on the surface often seemed a special Anglo-American relationship was very much affected by the ebb and flow of politics in a dynamic period dominated by forceful personalities. Despite the common public perception, the relationship at times was strained as each nation worked to achieve its own strategic ends, sometimes at the other's expense. Commonplace to diplomacy writ large, in this regard Pagedas's conclusions are reasonable, if unremarkable.

This is an impressively researched book that synthesizes a great deal of information into a very cogent analysis. It is recommended reading for students of international relations and history. Pagedas uses eyewitness accounts, diplomatic communiqués, memoranda, and biographical sources to make a strong case that what appeared to be a special relationship built on a strong foundation forged in war was actually realist diplomacy consistent with balance-of-power politics.

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Korean Atrocity! Forgotten War Crimes, 1950–1953 by Philip D. Chinnery. Naval Institute Press (http://www.usni.org), 2062 Generals Highway, Annapolis, Maryland 21401, 2001, 296 pages, $34.95.

Korean Atrocity! by British aviation writer Philip Chinnery focuses on communist murder and mistreatment of captured United Nations (UN) troops (and some civilians) during the Korean War. Using recently declassified materials collected for war-crimes purposes and numerous memoirs, he details the topic in gory detail, complete with photos. Much of the story is well known. Early in the war, UN forces found bodies of bound and frequently mutilated American and Korean prisoners. More were killed in marches to the prison camps, where others were murdered, and many more died from maltreatment. Approximately 38 percent of all US prisoners died in the Korean War, compared to about 1 percent held by the Germans and about 50 percent by the Japanese during World War II. Certainly, a number of the 8,000 Americans listed as missing in action in Korea suffered the same fate.

Does Chinnery uncover anything new? From the war-crimes materials, he found that cases involving North Korean troops outnumbered those

involving Chinese troops by a ratio of more than two to one. This discovery reinforces the conventional view of the crueler Korean and more calculated Chinese treatment of prisoners. He states that captured communists (418) suspected of war crimes were included in the general prisoner-of-war (POW) exchange at the conclusion of the war because decision makers believed that to hold them might jeopardize the POW swap. Chinnery deals with some little-known information on a related subject—the misconduct of American prisoners. Seldom discussed for obvious reasons, this situation involved 13 percent of Army prisoners. (He does not deal with the other services, each of which had a different definition of collaboration.) Of the 425 serious cases considered by the Army, 22 went to trial, resulting in 11 convictions. In addition, 21 American prisoners stayed with the communists, and another 75 prisoners who were returned agreed to spy for them. The performance of US prisoners shocked the nation, led to the "code of conduct," and produced fears made vivid by films such as *The Manchurian Candidate.* Chinnery also mentions the numerous escape attempts by POWs, including those of British captain Farrar-Hockley, who made six such efforts.

While Chinnery and the Naval Institute Press are to be commended for bringing these graphic charges to light just as our interest in North Korea and China is coming to the fore, the execution is flawed. *Korean Atrocity!* reads like a series of research notes, vignette by vignette, with many long quotations. There are names and graphic details but little analysis or organization. There are no citations, and the bibliography lists but 14 secondary and four primary sources. The author repeats allegations that UN prisoners were taken to the Soviet Union and never returned after the war. The evidence presented here (and elsewhere) to support these charges is tenuous at best. No mention is made of UN atrocities although the better treatment of communist prisoners is mentioned in passing. In sum, this is a book only for readers with strong stomachs or a special purpose—or for those who prefer journalistic (read sensationalistic) literature. The subjects of atrocities and POWs in Korea deserve further work but with a more systematic, better organized, and broader-researched study than this one.

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Viper-7: Forward Air Controlling in South Vietnam in 1966 by Charles L. Pocock. Butterfly and Viper Publishers, 910 Forest View Road, Monument, Colorado 80132, 2000, 414 pages, $23.50.

George Orwell said, "We sleep safe in our beds because rough men stand ready in the night to visit violence on those who would do us harm." In 1965 Charlie Pocock was one of those rough men although he probably didn't realize it when he arrived in Vietnam as a forward air controller (FAC).

Self-published and softbound, *Viper-7* is for warriors, leaders, and historians. The author took the call sign Viper-7 as chief FAC at Song Be, north of Saigon in III Corps. An Air Force captain and transport pilot with four weeks of training in the O-1, he brought traditional American values and high expectations to the challenge of combat.

Pocock's rough-hewn memoir takes the reader through wild adventures in the air and on the ground. He becomes a brother to the special forces and their Montagnard soldiers, smashing Vietcong units to bits with airpower. On the ground, fate brings him in regular, face-to-face contact with the enemy, whom he must kill before he himself is killed. Readers will quickly discover that *Viper-7* is an evening around a campfire listening to original and captivating war stories.

The book provides vivid history of the early years of American involvement—the good war days—when cooperation and teamwork flourished. Pocock trusted the system to provide a reasonable boss to follow and able troops to lead. The system obliged. At first, missions are clear-cut and doable. During a year of having to subsist on marginal food (saved by peanut butter) and bad water (he lost 40 pounds because of diarrhea), Pocock takes the war aggressively to the enemy. He is shot up and shot down.

Meanwhile, the American presence in Vietnam grows substantially. Pocock shares his view of offensive airpower and his intense dedication to the Green Berets' mission with the other FAC at Song Be, Lt Howard Walker Kaiser, to whom the book is dedicated. A synergistic bond develops between them—deeper than the ones found among the usual brotherhood of warriors.

Kaiser is killed, and, eventually, Pocock brooks the worst of the human condition in some of the people around him. Strategic questions grow like black clouds on the horizon. On Pocock's final day at Song Be, a midair collision kills his replacement.

As a Vietnam veteran, I empathized with Pocock's confrontation with civilization when he

returns to the United States. A flight attendant on his Freedom Bird asks him if flying in Vietnam frightened him. He says to himself, "I wonder what she'd say if I told her I was the meanest [SOB] in this valley or any other valley."

Viper-7 is more than a war memoir. It's a study of leadership and character. If you don't believe the "leaders are born" theory or if you can't relate military core values to mission accomplishment, read this book. If you're looking for a polished manuscript with all the i's dotted and t's crossed, don't bother. An editing trip through the book could make *Viper-7* an airpower classic.

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Integrity First: Reflections of a Military Philosopher by Malham M. Wakin. Lexington Books (http://www.lexingtonbooks.com/home.shtml), 4720 Boston Way, Lanham, Maryland 20706, August 2000, 208 pages, $60.00.

The profession of arms must have moral, thinking leaders. Just as step one in campaign planning involves assessing the situation, so too must leaders examine themselves in their environment. Leaders —all soldiers, for that matter—cannot simply march blindly along, following and giving orders, without constantly engaging the brain. Despite the pressures of danger and temptation, their integrity must carry the day.

Stating these matters much more eloquently and convincingly in his book *Integrity First*, Brig Gen Malham Wakin trumpets vitally important philosophical arguments that military leaders must be technically competent and of sound ethical character. This book is a collection of what might be called Wakin classics—previously published articles and speeches from the past four decades, during which time Wakin established himself as perhaps *the* military philosopher of our time. He has attained legendary stature at the Air Force Academy, where he has profoundly influenced generations of future Air Force leaders.

For those who have heard Wakin teach and have read his publications, there is nothing new in this book—yet the ideas are still profound and important for our awareness of and approach to "core values" and "core competencies." His undertone throughout is a normative stand that people who wear the uniform ought to be moral.

Reading philosophy can make one's head hurt—but in a good way. Like a hard workout at the fitness center, the study of human nature in this book provides healthy mental gymnastics. It relates back to the old truism "a sound mind and a sound body." In such exercises of thought, the various essays can leave the reader pondering as many questions as answers. But that is appropriate. After all, people truly are an ill-defined problem.

In addition to the "integrity first" theme of the book, there is another thread of philosophical continuity around the harmony between discipline and thinking. The profession of arms needs both; according to Wakin, they are not mutually exclusive but supportive. Discipline is not some rote, by-the-numbers substitute for judgement. At the same time, it takes a disciplined mind to think under the pressure of combat and not collapse mentally or go berserk. Just as discipline is learned, so too is being able to think critically and effectively. This is fundamental to the ethics of leadership. It is learned, and that learning comes largely by example.

Wakin's book is timely reading for Air Force members engaged in the Developing Aerospace Leaders (DAL) project. It reminds us that although DAL is new, the ideas behind it are not. Indeed, as Wakin points out, Gen John D. Ryan, former chief of staff of the Air Force, emphasized integrity in leadership—in the 1960s. Wakin is right on target in observing that even though the Air Force has tended to create stovepipe specialties in the institution, all members wear the uniform and must universally exemplify moral character.

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Death Traps: The Survival of an American Armored Division in World War II by Belton Y. Cooper. Presidio Press (http://www.presidiopress.com), P.O. Box 1764, Novato, California 94948, 1998, 352 pages, $28.95 (hardcover).

In early 1944, the US Army faced a critical decision regarding its armored forces: should it retain the M4 Sherman as its primary tank or accelerate production of the new M26 Pershing heavy tank? Although many armored commanders favored the Pershing, the tank debate continued until Lt Gen George S. Patton, the Army's leading tank "expert," entered the fray. Patton favored the smaller (and supposedly more mobile) Sherman, noting

that "tanks were not supposed to fight other tanks, but bypass them if possible, and attack enemy objectives in the rear." Ultimately, senior Allied commanders—including Gen Dwight Eisenhower—backed Patton and decided to increase production of the Sherman. It remains one of the most disastrous choices of World War II—arguably, a decision that lengthened the war and became a literal death sentence for thousands of tank-crew members.

The consequences of the Sherman decision are brutally detailed in Belton Cooper's vivid memoir *Death Traps*. A maintenance officer who served in the legendary Third Armored Division ("Spearhead"), Cooper was charged with the critical task of locating damaged Shermans, directing their recovery, and ensuring the flow of new or repaired tanks to frontline units. From the Normandy invasion to V-E day, Cooper witnessed the folly of Patton's logic firsthand. The author calculates (with only a touch of irony) that he "has seen more knocked out tanks than any other living American." His eyewitness observations confirmed what American tank crews discovered in combat: the Sherman was badly outclassed by German medium and heavy tanks, most notably the Mark V Panther and the Mark VI Tiger. With their heavier armor, the Panther and Tiger were almost impervious to rounds fired from the Sherman's 75 or 76 mm main gun; conversely, the 88 mm gun on the German tanks usually made short work of their American opponents.

Tabulating the results of this mismatch, Cooper highlights the staggering cost of the Army's flawed choice for its main battle tank. Over the next 11 months, the Third Armored Division, which began the Normandy campaign with 232 M4 tanks, would see 648 of its Shermans destroyed in combat, with another 700 knocked out of commission before being repaired and returned to service—*a cumulative loss rate of 580 percent.* Casualties among tank crews also skyrocketed, producing an acute shortage of qualified personnel. By late 1944, Cooper recalls, the Army was sending newly arrived infantrymen into combat as replacement tank crews. Some of these recruits received only one day of armor training before being dispatched to the front in their M4s.

But *Death Traps* is more than a statistical analysis or a collection of wartime remembrances. The author effectively recounts the years of prewar neglect and underfunding that sometimes resulted in poor acquisition decisions. In 1939, the year that German armored columns streaked across

Poland, the US Army budget for tank research and development was only $85,000. Such parsimony, Cooper observes, forced hard choices that often degraded combat capabilities. The Sherman's low-velocity 75 or 76 mm gun, for example, was chosen because the Army's artillery branch wanted a cheap, reliable weapon for fire support. In another cost-cutting move, many M4s were equipped with a radial engine originally designed for aircraft. On the battlefield, this engine produced a loud backfire when starting, instantly drawing enemy fire.

Cooper also succeeds in depicting the valiant tankers and resourceful maintenance crews who battled long odds and kept American tank units in combat. Realizing that the Sherman's main gun couldn't penetrate the frontal armor of a Panther or Tiger, US crews gamely tried to outmaneuver their foes, attempting to disable the German tanks with a shot against their sides or rear, where the armor was thinner. Meanwhile, repair crews labored around-the-clock to salvage damaged M4s and return them to service, developing such battlefield innovations as add-on armored "patches" (to improve crew survivability) and the famous hedge "chopper," which allowed US tanks to punch through the thick hedgerows of Normandy. As Cooper reminds us, the ultimate victory of US armored units against the German army was a direct result of the courage, pluck, and determination of American tankers and their maintenance counterparts.

Death Traps is well worth reading, but the work is not without its faults. The book contains only a couple of maps and virtually no photographs. Racing along the front lines to ensure the delivery of tanks to frontline units, the author was clearly too busy to snap pictures during his service in World War II. However, the editors at Presidio Press easily could have incorporated more maps and combat photographs into the book, making it more useful to the reader. They also might have paid a bit more attention to the prose; Cooper is sometimes a plodding writer, and he occasionally rehashes statistics presented in earlier chapters.

Fortunately, these flaws are relatively few and should not deter any serious student of World War II from reading *Death Traps*. Cooper has revealed a relatively underpublicized (and underappreciated) element of the American victory against Hitler's armored legions. Although historians often claim that the Shermans overcame their German adversaries through the sheer weight of Allied war production and air superiority, Cooper re-

minds us that it was the tank crews and maintainers who ultimately turned the tide of battle.

One final note: on the surface, a book on American armored operations and logistics during World War II would seem to have little relevance for today's Air Force audience. But it's worth remembering that the same mentality that produced the Sherman tank also gave us inferior aircraft like the P-39 and P-40, which put American pilots at a disadvantage in aerial combat during the early days of World War II. More importantly, as present-day leaders wrestle with critical decisions on force modernization—including the growing debate over "skipping" the next generation of weapons systems—Belton Cooper's book provides a cautionary tale. As technology marches forward, efforts to save money or defer weapons purchases often have grave consequences on future battlefields. Senior officials contemplating the cancellation or delay of critical weapons systems would be well advised to read *Death Traps* before making a final decision.

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Eastward to Tartary: Travels in the Middle East, and the Caucasus by Robert D. Kaplan. Random House (http://www.randomhouse.com), 201 East 50th Street, New York, New York 10022, 2000, 364 pages, $26.95 (hardcover).

Like Fitzroy Maclean's *Eastern Approaches,* an account of his travels as a British diplomat in the Caucasus and Central Asia in the 1930s, Robert Kaplan's new book *Eastward to Tartary* can leave the reader uncertain as to how true and accurate it is. This is a critical question for military readers since Kaplan enjoys a certain vogue amongst senior officers, from his earlier writings on the Balkans and on political instabilities that followed the end of the Cold War. He writes about places where conflict involving the American military seems likely.

One can argue that in the early 1990s, Samuel Huntington's *Foreign Affairs* article "The Clash of Civilizations" and Robert Kaplan's *Atlantic Monthly* article "The Coming Anarchy" shaped the perception of future conflict for a generation of American military leaders. Despite the later criticism of these two pieces, the simplistic but persuasive arguments about cultural determinism and the inherent belligerence of tribal nationalism provided

a conceptual framework for senior officers who tried to explain the necessity of military operations throughout the world in the absence of a global Communist threat.

Kaplan's appeal, as evidenced in *Eastward to Tartary,* is easy to understand. He writes beautifully, having a gift for clear prose and a journalist's eye for exact detail—clothing, smells, tastes, and colors—to make the exotic feel familiar to the reader. Eating a lunch of goat cheese and olives in the Syrian Desert near Qala'at Samaan, Kaplan describes the ruins of a Roman cemetery: "The carved faces of the dead emerged from the canyon's soft volcanic rock in all the earthen tones of a rich palette."

He reinforces these distinguishing elements of the story by drawing comparisons between different places. A reader is left not only with an intimate feel for Bucharest's cafes, but also with the sense of how the author tries to make deeper points by contrasting Romanian coffee with the more traditional coffee services he finds in Syria or Georgia. Kaplan is a master of the inductive narrative.

He leavens his own observations as a traveler with summary regional histories as communicated through his conversations with locals and as referenced to classical and scholarly accounts of the region. Such names as Toynbee, Gibbon, Strabo, and Herodotus are invoked to give a certain gravity to the prose, while other names, such as Daniel Pipes, Olivier Roy, and Ronald Suny, are meant to assure the reader of the academic rigor and policy relevance of the analytical interpretations. Kaplan reinforces these narrative devices by interviews with senior officials and influential thinkers in each of the countries he visits.

Notions about the relative rates of political and economic transition in the Balkans and Middle East, the interplay of ethnic and religious hatreds, the merits of secular authoritarianism versus Islamic democracy, energy politics in the Caucasus, and the modern consequences of differing imperial legacies all intertwine into an enjoyable and accessible book. As a travel writer, Robert Kaplan is near the top in current American literature, yet for the reader who wishes to extract more than entertainment from *Eastward to Tartary,* a note of caution is in order.

A travelogue can be truthful without being accurate. Inductive reasoning is correct only if the specific truth of the part is applicable to the whole. Local anecdotes are instructive when balanced or placed in context by the author. Yet, *Eastward to Tartary* fails to pass these tests in too many places.

For example, Kaplan contrasts the impact of organized crime on the political and economic development of Bulgaria with that on other Soviet-bloc states. Relying on information given in a discussion with Bulgarian president Zhelyu Zhelev, Kaplan claims that "Bulgarian crime has no centuries-old tradition like Italy's, or even of heroic thieves and warrior clans as in Russia, Serbia, or Albania. Nor are there the colorful ethnic ingredients here that distinguish criminal circles in the Caucasus, particularly Georgia and Chechnya, with their family mafias and highwaymen. The Bulgarian [criminal] groupings are the result of the transition from Communism to parliamentary democracy. Because such a transition is unique to history, so are the groups" (page 71). Thus, Kaplan casually sweeps away a fine tradition of premodern criminality as captured in local poetry and song, erasing the figure of the mountain bandit—the famed *hayduk*—as a central element in Bulgaria's nationalist identity.

The comparison between time's legacy in the southern Balkans and in the Caucasus is also indicative of Kaplan's theoretical inconsistencies. Some modern events appear inextricably rooted in the hoary past of tribal identities and imperial politics while others are not. One is never sure when or why Kaplan believes history is relevant.

Factual errors are also a distraction for the informed reader. For example, Kaplan claims that in 1996 Islamist Welfare Party leader Necmettin Erbakan formed a "minority government" that was subsequently pushed from power by the Turkish military in defense of Turkey's secular, republican values. Erbakan's government was, in fact, a majority coalition government—in partnership with center-right, former prime minister, and Washington favorite Tansu Çiller. By simplifying his description of Turkish politics to highlight the tension between a religious minority and a Western-oriented military, Kaplan offers a caricature in place of analysis.

Similarly, the author misuses words and language in places in an attempt to enhance the authenticity of the observations about the enduring nature of historic patterns. In describing the different neighborhoods of Jerusalem, for example, Kaplan writes, "The Old City's various ethnic and religious groups coexisted thanks to the Ottoman *wilayet* system of communal self-government, which the Israeli authorities had only modestly tampered with. I was sure that the *wilayet* system would survive longer than Israeli rule in the parts of Jerusalem where Jews did not live, and rarely visited" (page 206). *Wilayet* (*vilayet* in Ottoman), however, means a province or a country. The word Kaplan is searching for is *millet*, meaning a religious community or a group defined by religion and language. More importantly, the origin and scope of the Ottoman government's famed *millet* system for self-governance of minority religious communities within the empire are themselves matters of scholarly debate among historians.

In *To End a War* (Random House, 1998), Richard Holbrooke notes that comparable shortcomings in Kaplan's earlier *Balkan Ghosts: A Journey through History* (Saint Martin's, 1993) left readers "with the sense that nothing could be done by outsiders in a region so steeped in ancient hatreds" (page 22). Bad history written into an easily accessible book read by many senior Washington policy makers contributed to false perceptions about America's ability to influence events in the Balkans. Similar effects would be tragic were readers to look to *Eastward to Tartary* for a quick overview of the dynamics at work in the Middle East or the Caucasus.

In *Eastward to Tartary*, Kaplan himself offers such a caution when he remarks on the work of Freya Stark, a midcentury travel writer commenting on the same region: "She was a gifted writer, but a poor political observer. . . . This is why I have never been comfortable with her books" (page 139). As a longtime resident and historian of the regions of which Kaplan writes, my reservations about exceptional travel writers mirror his own.

None of these flaws should detract from the appeal of *Eastward to Tartary*. Instead, Kaplan's writings underscore the point that a story can be true without being accurate and that a book can be entertaining and intellectually stimulating without always being right. For fans of Kaplan and of the debate his work always provokes, his latest book is worth reading. But for military officers and policy makers looking for a quick take on a complicated part of the world, the author's stories often obscure what they are meant to illuminate.

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To Hanoi and Back: The U.S. Air Force and North Vietnam, 1966–1973 by Wayne Thompson. Smithsonian Institution Press (http://www.si.edu/sipress), 470 L'Enfant Plaza, Suite 7100, Washington, D.C. 20560, 2000, 416 pages, $31.95.

The Transformation of American Airpower by Benjamin S. Lambeth. Cornell University Press (http://www.cornellpress.cornell.edu), 512 East State Street, Ithaca, New York 14850, 2000, 352 pages, $29.95.

After German troops blitzed through France in 1940, achieving a near-record-breaking victory over Western Europe, Franklin Delano Roosevelt committed the United States to a path of industrial rearmament that put a strong air force at the top of the nation's priority list. In May 1940, he addressed both houses of Congress and called for an increase in aircraft production capacity to at least 50,000 aircraft per year. Although the actual numbers never quite approached that figure, the role of airpower in achieving America's military objectives was solidified into national policy. During the 61 years that have elapsed since that speech, the debate over airpower's effectiveness in achieving the nation's objectives continues unabated.

Two recent books illuminate important elements of the airpower debate that have occurred within most of our lifetimes: Wayne Thompson's *To Hanoi and Back* and Benjamin Lambeth's *The Transformation of American Airpower*. Dr. Thompson examines the history of the use of airpower in Vietnam from 1966 to 1973, giving us detailed and well-researched insights not only into the tactical and operational factors affecting the employment of airpower, but also the strategic and political constraints that were a reality in that war. Dr. Lambeth picks up the narrative from the end of 1973 to the present day. After summarizing the situation in which the United States found itself after the Vietnam War, he leads us through the next 25 years of airpower's development, concentrating on the improvements made since the 1991 Gulf War. Each book was written for a different audience, and each offers airpower strategists different levels of analysis of both the history and effectiveness of airpower on the battlefield.

Dr. Wayne Thompson is an analyst at the Air Force History Support Office, an organization responsible for writing books, monographs, studies, and reports on the history of the Air Force. In 1990 he served in the Air Staff's Checkmate Division as an analyst and remained there throughout the Gulf War and later as a historical advisor on the Gulf War Airpower Survey team. His studies have also included duty in Italy examining the effects of bombing operations during Operation Deliberate Force in 1995 and again during Operation Allied Force in 1999.

To Hanoi and Back is a sequel to a previously classified book by Jacob Van Staaveren, *Gradual Failure: The Air War over North Vietnam, 1965–1966*, which the Air Force History Office has recently declassified. Dr. Thompson draws extensively not only from the unit histories and records available at the Air Force Historical Research Agency at Maxwell Air Force Base, Alabama, but also from many personal interviews; collections from the presidential libraries; congressional records and testimonies; and, in some cases, Vietnamese, Chinese, and Soviet sources as well.

As its title suggests, the book is a history of the United States Air Force in Vietnam during these years, but it offers the reader much more than an operational narrative. It is written chronologically during the seven years that encompassed Operations Rolling Thunder, Linebacker I, and Linebacker II, as well as the many other minor operations during and between the larger ones. The real value of the book, though, for the airpower strategist is the skill with which Dr. Thompson weaves the contextual elements that ultimately decided how effective airpower could be during that period. As each operation unfolds, we are given both the details of the air campaign itself and the personalities and relationships among the various three- and four-star flag officers charged with planning and implementing the strategies. The political considerations and the lenses through which the president and key Cabinet members viewed the conflict are important factors that affected operations down to the tactical employment of individual units and aircraft. Dr. Thompson smoothly moves between the macro- and microview of how these pieces related.

In 1966 the major threat to the United States was the Soviet Union and the spread of Communism around the rest of the globe. The US military had armed itself to fight off this threat, primarily in Western Europe, as well as attack the Soviet Union with long-range bombers carrying nuclear weapons. Tactical aircraft were designed to carry nuclear weapons that could be used against the rolling Communist hordes as they swept through the Fulda Gap. Naval strategy concentrated on power projection ashore from both carrier-based aviation and nuclear submarines. The Korean War notwithstanding, no service had predicted or was well equipped with a force structure to fight a guerilla insurgency in a war of limited objectives, especially one in which the political leadership demanded restraint out of fear that an escalating conflict could cause an intervention by either China or the

Soviet Union. These fears weighed heavily on President Lyndon Johnson. Dr. Thompson paints a vivid picture of Johnson's being haunted by the twin images of President Harry Truman letting his generals (especially MacArthur) embroil him in a larger Korean War with the entry of China across the Yalu River—and again of Truman being branded as too soft on Communism after having "lost" China to the Communists in the first place. In light of his ambitious domestic agenda, which required robust economic and political support across the spectrum, Johnson would not relinquish control of the situation in Southeast Asia to the extent that it could derail his domestic plans in the press and in the public eye.

The result was the now-infamous Tuesday-afternoon targeting lunches in which the president, Secretary of State Dean Rusk, and Secretary of Defense Robert McNamara would decide upon specific objectives for the next week's air campaign. As reviled as these meetings have become in our collective military memory, Dr. Thompson gives us a balanced and objective view of the reasoning behind the administration's decisions to exercise such tight, centralized control over the air war. First and foremost, the president had made a decision and a promise that the war would not seek an overthrow of the North Vietnamese regime. In order to guarantee this promise, Johnson and his Cabinet kept final approval for bombing targets in North Vietnam to themselves. Seventh Air Force, Military Assistance Command Vietnam, Pacific Air Forces, Strategic Air Command, and Pacific Command could only request that targets be considered for approval. Prohibited and restricted zones were placed around Hanoi and Haiphong Harbor, severely restricting and even eliminating the possibility of bombing within the confines of the capital and North Vietnam's major port. Underlying all of these considerations was Johnson's fervent hope that by fine-tuning the degree of force exerted upon the North Vietnamese, they would eventually seek to negotiate a settlement with the United States and South Vietnam. As Johnson deferred targets from the lists submitted by his field commanders, he hoped to offer carrots to the North Vietnamese in the form of bombing reprieves if they would only agree to sit down and negotiate—even over such minor concessions as promising not to increase their rate of infiltration into the south. Needless to say, these considerations were often invisible to the armed forces deployed in the theater.

Much to his credit, Dr. Thompson doesn't once quote Carl von Clausewitz in his book. Most military professionals, however, are habituated to old dead Carl's famous dictum that "war is merely the continuation of policy by other means." But the military's view of Vietnam, perhaps more than any other war in recent memory, indicates that we might have paid only lip service to the true meaning of the idea behind this quotation. What seemed at the tactical level a bewildering array of restrictions and prohibitions was in fact an attempt by the leadership of this country to resolve the political problem of the spread of Communism without escalating into a larger war. Perhaps the technology at the time did not permit the sharing of relevant information by means of rapid dissemination across the various agencies. On page 89 of *To Hanoi and Back*, Dr. Thompson points out the example of President Johnson's finally approving the bombing of the MiG base at Phuc Yen airfield and then placing it back on the disapproved list the next day. The State Department had informed Johnson that the Rumanian prime minister was to land at that base. The prime minister, a third-party negotiator on behalf of the United States, had been promised a bomb-free visit. Often, changes in the target list were tied to specific visits by US leaders to foreign capitals in order to strengthen negotiating positions.

The hope of airpower advocates and theorists has always been that airpower, properly employed, could yield such an economy of force that it could have strategic effects against an enemy state. By picking the right targets, one could force a major power to submit. Gen Muir Fairchild wrote a letter to Gen Hap Arnold in June 1940 stating that 100 well-placed bombs could effectively destroy the industrial capacity of the United States. This same idea so fired President Roosevelt's imagination in 1940 that he promised to build that large air force. But perhaps this same belief in the strategic effectiveness of unrestrained airpower also compels leaders to carefully control its proper use. If airpower can indeed bring another country to its knees—the ultimate political act—then perhaps it is also in airpower's nature to be more careful under the watchful eye of political leaders who want to ensure its proper application.

After the election of Richard Nixon, the context of the war changed radically. North Vietnam's relationship with China had cooled while the United States had improved relations with both China and the Soviet Union. Détente and successful strategic arms limitation talks between the

United States and the Soviet Union isolated the North Vietnamese from their key supporters. As North Vietnam became more desperate and launched more conventional and mechanized offensives against South Vietnam, Nixon began a much larger buildup of air forces, displaying much less restraint than his predecessor. Even so, the use of force could never be totally divorced from other political considerations. Dr. Thompson closely ties the increased bombing of Linebacker II in December of 1972 not only to the secret negotiations of Henry Kissinger, but also to the domestic considerations Nixon faced when a newly elected, opposition Congress raised his fears that it would force him to withdraw from the war without concessions from North Vietnam.

In addition to the personal and political realities that affected airpower employment, Dr. Thompson also amply illustrates the technological and geographical constraints whose effect upon airpower employment is often underestimated. The goal of precision engagement of ground targets from aircraft has a long history. Billy Mitchell described it in his *Provisional Manual of Operations* of 1918. Army Air Forces planners in World War II hoped to achieve unprecedented bombing accuracy with the Norden bombsight. In Vietnam, as today, accurately bombing the desired target was a goal highly sought after, but the right technology had not yet emerged. Thompson traces the parallel development of Navy and Air Force weapons systems, from the Navy's TV-guided Walleye bomb, to the use of LORAN to guide aircraft to their bomb-release points, to the final employment of laser-guided bombs with warheads large enough to take down the bridges that helped supply Hanoi with materials from the north. But perhaps more than any other factor, Dr. Thompson clearly shows us the enormous effect that weather had on the effectiveness of the air campaign over North Vietnam. Planners on both sides understood the effects of the large blocks of time lost during the monsoon season. Thompson even states that "the most effective North Vietnamese air defense had always been weather" (page 244). This operational reality can easily derail even the most elegant air strategy and can preclude political leaders from effectively controlling the application of force to achieve their stated objectives.

Overall, *To Hanoi and Back* is a very well researched and documented history, composed in a very readable style. It is written with the operator in mind, giving future air strategists, planners, and users a very comprehensive view not only of the re-

straints under which one must operate in a war of limited objectives, but also of an environment where airpower is still the main instrument (though perhaps not the optimal one) that our nation's leaders have chosen to deliver the message they wish to send our adversary. The only possible improvement to the book would be the inclusion of more maps and charts so that average operators can visualize the many battlefields and data and thus appreciate the area of operations. Even so, this is an excellent book that every airpower professional should add to his or her personal library.

Benjamin Lambeth offers us a different book about airpower. The author is a senior staff member at the RAND Corporation, an organization chartered to assist policy makers and decision makers by giving practical guidance, formulating and clarifying issues, and addressing barriers to effective policy implementation. He is a civil-rated pilot and has flown a wide variety of US and foreign military aircraft. A specialist in the study of the Soviet air force, he has significantly contributed to the understanding of that nation's military structure.

The Transformation of American Airpower picks up the trail where Dr. Thompson left it in 1973 and continues the discussion of the development and evolution of airpower as a military instrument. But the focus of Dr. Lambeth's book is quite different than Dr. Thompson's. In a sense, it is more of a technical history of the development of airpower and the ways in which technological improvements since Vietnam—especially stealth, precision targeting, and command and control of air forces—have exponentially improved airpower's contribution to winning the next major theater war. Although Dr. Thompson addressed his book to an audience primarily interested in military history and the interplay of different levels of government in the execution of strategy, Dr. Lambeth writes for the policy maker who requires a greater appreciation of the technical and doctrinal issues involved in airpower's effective application. *The Transformation of American Airpower* is a good period piece that helps to explain how we have arrived at our present thinking about airpower. In a style consistent with the mission of RAND, the book clarifies many of the technical, doctrinal, and effectiveness issues associated with airpower thinking over the last 25 years. By presenting all of the relevant debates and the various issues involved in airpower employment, Dr. Lambeth's inductive method of analysis attempts to synthesize a future vision of airpower as exponentially more effective and decisive than any vision of the past.

His method of getting there, however, is not wholly satisfactory. Whereas the level of detailed research by Dr. Thompson involved extensive archival work, much of Dr. Lambeth's book is based on secondary sources, and an inordinate number of them are periodicals and newspaper accounts of events—sources not always privy to the intricate details of an issue. He quotes a number of respected airpower theorists but often misunderstands the author's message. In discussing Robert Pape's theme in *Bombing to Win,* for example, Lambeth takes Pape to mean that airpower is best used against an enemy's ground forces (page 7). He then uses this idea as a starting point to advocate airpower's effectiveness against mechanized and armored formations. Unfortunately, this misses a crucial nuance of Pape's argument. Pape discusses the use of airpower to deny an enemy the means to implement his *military strategy* in order to coerce him to do our will. Although fielded military forces are one way to achieve this coercion, it is not always the primary means of doing so, and it is an important consideration for a campaign planner when implementing an air strategy.

In describing the major technological and doctrinal issues that have played important roles in the evolution of airpower employment, Dr. Lambeth gives the reader a good look at operational issues that planners have faced. The book attempts to give a fair hearing to other issues that have affected the success or failure of particular operations; indeed, the text includes arguments against many of the issues that Dr. Lambeth raises. However, by attempting to include such opposing elements, the book leaves one with the strong impression that these are minor considerations for Dr. Lambeth, compared to the importance of airpower. In describing the success of the North Atlantic Treaty Organization's (NATO) air strikes during Operation Deliberate Force in 1995, the narrative clearly favors the decisive element of airpower in the Serbs' accession to NATO demands. Embedded in a single sentence at the bottom of page 177 are three other considerations in the Serbs' decision: "increased allied artillery fire, the credible threat of a Croatian ground attack, and mounting diplomatic pressure and other sanctions." Col Robert C. Owen's *Deliberate Force: A Case Study in Effective Air Campaigning* (Air University Press, 2000), however, describes the air campaign as unintentionally aiding the offensive operations of the Croatian army, noting that the Serbs' rapid capitulation occurred more in response to the threat of further territorial losses to the Croats (page 195).

In other areas, the use of airpower to halt enemy ground offensives is taken as a novel and decisive application of force—most notably, the success of airpower against Iraqi forces at Al Khafji. Although the success of coalition air efforts against those forces was unquestionably decisive, the employment of airpower against enemy columns has a long and distinguished history—one requiring little transformation. In 1944 IX Tactical Air Command halted a German counteroffensive that threatened to cut off American lines of communications (see Benjamin F. Cooling's *Case Studies in the Development of Close Air Support* [Office of Air Force History, 1990], 274). In June 1950, F-80s were able to destroy a North Korean column backed up behind a blown bridge, destroying upwards of 150 vehicles and tanks (see Eduard Mark's *Aerial Interdiction in Three Wars* [Office of Air Force History, 1994], 273). To speak of airpower transformed without digging deeper into its history leaves the reader wondering at the author's intention. In fact, *The Transformation of American Airpower* walks a fine line between analysis and advocacy. As evenhandedly as the author claims to approach his subject, the result is a book that clearly favors and defends the Air Force's current policy and approach to employing airpower. Indeed, Dr. Lambeth often uses *airpower* and *Air Force* interchangeably, notwithstanding his claims to apply the former term to the totality of air assets used in a campaign.

On its own, his advocacy does not negate any of his claims; however, agreeing with his conclusions becomes more difficult since the bias is so evident. His characterizations of Army thought and leadership leave the reader with a picture of traditionally minded ground officers once again trying to hold back the advancement of the air arm—airpower is misunderstood and misapplied by dinosaurs. In fact, the book probably will not change many minds on either side of the debate. Ground-power advocates will look at it as another unfulfillable promise by airmen, while airpower advocates will look at it as a concise vision of what airpower can deliver tomorrow—if properly funded today.

The book lacks a deeper analysis of the political implications of employing airpower, such as the one Dr. Thompson gave us. As good an edge as technology provides us, no halt-phase strategy can work if the political will and decision to use force are not forthcoming. A useful, counterfactual argument that Dr. Lambeth could have made ponders how different our air strategy in Vietnam would have been if we had had the technological

edge he says has now transformed airpower. The planners and operators in Vietnam were no less ingenious than we in applying technology and airpower. But if our options are constrained, no amount of technology will force a solution over a political problem.

If nothing else, *The Transformation of American Airpower* will be a useful book for historians down the road who wish to research the thoughts and debates that surrounded the question of airpower at the dawn of the twenty-first century. For today's readers, the book gives almost any second lieutenant, first-term airman, or government official with no background in airpower history, theory, or doctrine a succinct description of how US Air Force technology and doctrine have developed to bring us to where we are now.

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Black Cross/Red Star: The Air War over the Eastern Front, vol. 1, **Operation Barbarossa** by Christer Bergström and Andrey Mikhailov. Pacifica Military History (http://www.pacificamilitary.com), 1149 Grand Teton Drive, Pacifica, California 94044, 2000, 336 pages, $39.95 (hardcover).

Operation Barbarossa, the German invasion of the Soviet Union in 1941, was not only one of the greatest land operations in history, but also one of the largest air operations. Over 3,000 Luftwaffe aircraft and aircraft of nations allied with Germany faced over 10,000 Soviet aircraft across an enormous front. While there have been numerous books about the ground operations in the Soviet Union in 1941, relatively little attention has been devoted to the air operations. *Black Cross/Red Star* is a useful addition to the literature of airpower history on what was arguably the most decisive front of World War II.

The history of the air war over the Soviet Union from June 1941 can be summed up as an initial German victory with the Luftwaffe gaining air superiority over the obsolete and poorly trained Red Air Force, the battle for survival by the Red Air Force, the exhaustion of the Luftwaffe by late fall, and the resurgence of Soviet airpower in support of the Soviet counterattack in December 1941. The authors provide a good general history of the air action on the Eastern Front for this period of the war.

The book emphasizes the unit actions on the Eastern Front and is written to give the reader a "feel" for typical operations of 1941. It is heavy on wing and group operations and contains plenty of pilot anecdotes. One strength of the book is the inclusion of Soviet accounts of the air operations and plenty of Red Air Force photographs. Indeed, the book is well balanced in this regard, quickly moving from German operations to Red Air Force operations over the same sectors. This book is one of the benefits of the opening of the Soviet archives to historians in the last decade.

By including brief accounts of air forces allied with Germany, such as those of the Slovaks and Romanians, *Black Cross/Red Star* makes an important contribution to understanding the air war over the Eastern Front. It is often forgotten that Germany's allies, usually operating under German direction, made a major contribution to the Luftwaffe's campaign in the east. The 500 Romanian air force aircraft played an important role in defending the vital Ploesti oil fields and in supporting the German/Romanian advance in the south. Surprisingly, the book barely mentions the very important role played by the 500-plus aircraft of the Finnish air force on the northern part of the front.

The book is a good start as a general history of the air war in the east, but there are several drawbacks. It focuses almost exclusively on the operational and tactical side of the air war, failing to tie air operations into the context of the ground operations. The strategic issues of the air war get pretty short shrift. There is little mention of the planning of the campaign or of logistical operations of opposing air forces. The maps included in the book are pretty basic and the tables of organization and equipment of the opposing air fleets could have been given in better detail. On the tactical side, when the authors write about the Luftwaffe, they tend to concentrate on the fighter units rather than the bombers. Yet, for the Luftwaffe in 1941, the bombers and the interdiction campaign were the focus of the air effort, with the fighters as a supporting force.

I recommend this book as a useful general history of the 1941 air campaign. There is some solid research behind the book. It is readable and has some excellent photographs, many from Soviet archives that have not been published before. Previously, there has been far too little available on the subject of the air war over the Eastern Front. However, I hope this book is not the last word on the subject. The 255 pages of *Black Cross/Red Star*

are really not enough to cover the subject adequately. The 1941 air campaign deserves a detailed, scholarly treatment similar to the one that Joel Hayward gave to the 1942 air campaign in his outstanding work *Stopped at Stalingrad: The Luftwaffe and Hitler's Defeat in the East, 1942–1943* (University Press of Kansas, 1998). In that book, Hayward was able to put the air campaign in the context of the grand strategy and the ground operations, in addition to detailing the operations at the tactical level. The air war in the east in World War II remains largely uncharted territory for the airpower historian.

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This Kind of War: The Classic Korean War History by T. R. Fehrenbach. Brassey's (http://www. brasseysinc.com/index.htm), 22841 Quicksilver Drive, Dulles, Virginia 20166, 1998, 483 pages.

Many people consider T. R. Fehrenbach's *This Kind of War* a—if not *the*—standard history of the Korean War. The book under review is a large-format, paperback reprint of that 1963 study. Getting this book back into print is clearly a contribution; however, Brassey's effort is marred by sins of omission and commission. Deletion of the photos may be only regrettable, but exclusion of the maps is criminal, justifying retention of earlier editions of the book. The only other change to the original is the substitution of a new subtitle—the grander "The Classic Korean War History"—for the humbler and more descriptive "A Study in Unpreparedness." There is no introductory essay, no indication of why this is a "classic," and no indication of how more recent scholarship has changed or modified what Fehrenbach wrote over a third of a century ago. But enough of the publisher.

This Kind of War is a long study of US involvement in the Korean War, notable for its anecdotal approach. It centers on US ground forces and gives readers an excellent feel for the troops. As the original subtitle indicated, one of the major themes of the book is the unpreparedness of the US military and what that cost. The book makes a number of other points as well. For example, unlike most American authors on the subject, Fehrenbach is sympathetic to the performance of the South Korean army. At the same time, he is

blunt in his criticism of US military performance and gives good coverage of the prisoner of war issue—both US and communist. Fehrenbach also delves into other areas of current interest. One is the problem of "friendly fire," which clearly occurred more frequently than we would like to believe. Perhaps most relevant for today (and tomorrow) is the author's assertion that citizen armies can best fight in defense of their homeland or on crusades but not (very well) in limited wars. In Fehrenbach's energetic words, "citizens, unless they hear the clarion call, or the angel's trumpet, are apt to be a rabble in arms" (page 61).

Overall, then, how does *This Kind of War* stack up? Clearly, it is dated in its presentation of the political context and the MacArthur firing. From today's perspective, the author's language and views of the Cold War are almost quaint. While the emphasis on individuals stands up well, despite the book's length, Fehrenbach's coverage of the war is narrow. There is very little on the air portion of the war. The lack of either citations or a bibliography also limits the usefulness of this effort. Finally, this is a long book written in a flamboyant, journalistic style that some readers will find refreshing and others will find annoying. A number of books have appeared since 1963 that are as detailed, anecdotal, and readable as this effort but broader and more up to date. Therefore, while I am happy to see *This Kind of War* back in print and will refer it to students, I will do so with both caveats and caution.

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U-Boats at War: Landings on Hostile Shores by Jak P. Mallmann-Showell. Naval Institute Press (http://www.usni.org/cgi-bin/SoftCart.exe/ press/press.html?E+scstore), 2062 Generals Highway, Annapolis, Maryland 21401, 2000, 160 pages, $36.95.

British publisher Ian Allen Limited has produced a series of slim books entitled "At War." The US Naval Institute makes available these overseas titles, which involve maritime warfare. Readers interested in World War II will find this book fascinating. It looks into declassified documents detailing how German U-boats landed agents and conducted operations in many parts of the globe. These agents involved themselves in committing

sabotage, signaling, organizing resistance groups, gathering intelligence, and participating in a myriad of clandestine activities.

Few people realize that submarines U-37, U-35, and U-38 made several landings in Ireland in an effort to stir up resistance among members of the Irish Republican Army, which actively engaged British forces on the island. This is discussed in the chapter entitled "Irish Fiascos"; although the Germans were unsuccessful in their attempts, it nevertheless gives us some indication of the *Abwehr's* (German military intelligence) level of sophistication.

The United States was not immune to such infiltration. Plans were drawn up by the Germans to place agitators off the coasts of New York, New Jersey, Maine, and Florida. They were to organize internal strife among German-American immigrants and identify people sympathetic to the Nazi cause. One submarine, U-202, disgorged four agents, all of whom were captured by Americans guarding the coastline. Plans to agitate German-Americans were a dismal failure because many of them had become too loyal and too integrated into the American way of life and too accustomed to the democratic freedoms and opportunities the nation provided. Many German-Americans would serve alongside US forces fighting the Axis war machine in World War II.

The book is filled with photos. One that is particularly fascinating involves U-255 refueling a Blohm and Voss reconnaissance seaplane off the Russian coast. Another chapter details efforts by Nazi subs to keep the German Afrika Korps supplied along the North African coast. Readers interested in submarines, clandestine operations, and World War II will find this book compelling.

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Revolution until Victory: The Politics and History of the PLO by Barry Rubin. Harvard University Press (http://www.hup.harvard.edu), 79 Garden Street, Cambridge, Massachusetts 02138, 271 pages, 1994, $24.95 (hardcover), $17.00 (softcover).

Revolution until Victory, first published in 1994, is now in its second printing. Distinguished Middle East scholar Barry Rubin has written several books on the subject, three of which focus on aspects of the Arab-Israeli conflict. This book is an excellent start toward understanding the Palestine Liberation Organization (PLO).

Created in Egypt under the shadow of Egyptian strongman Gamal Abd-Al-Nasser, the PLO was supposed to be a controlled organization representing Palestinians but chiefly expounded Nasser's vision of Arab nationalism. Ahmed Shuqayri, its original leader, would not last as Syria, Iraq, and Jordan all wanted a Palestinian group to advance their political agendas in the region. Yasser Arafat would found a group called *Al-Fatah*, which is the reverse acronym of *Harikat al Tahrir al Filesteeneah* (the Palestinian Freedom Movement). Arafat was unknown until the Six-Day War of 1967 propelled his organization to the forefront as the only Palestinian group that marketed its participation in the war and swept aside Shuqayri.

The author masterfully traces decades of the PLO's going from one Arab state to another and even playing off rival states for political and financial gain. Readers will be introduced to the kaleidoscope of personalities both inside and outside the PLO who have at one time supported, antagonized, and even betrayed Arafat. Rubin does a marvelous job of separating the different Palestinian groups and delineating which are under the PLO and which are not.

Today, some of these splinter groups form part of the Palestinian National Council—the quasi-parliament for the former Occupied Territories of Gaza and the West Bank. These groups include the Marxist Popular Front for the Liberation of Palestine (PFLP), headed by George Habbash; the Democratic Front for the Liberation of Palestine, headed by Naif Hawatmeh; Abu Abass's PFLP General Council; or more radical groups that splintered from Habbash's organization. There are also groups founded and supported by other Arab governments—for example, Al-Saiqa (the Thunderbolt), which is sponsored by Syria.

Organizations controlled by the PLO include Force-17, *Al-Fatah's* internal police and special-forces units. The PLO's Palestinian Liberation Army was at one time controlled by various Arab states. The PLO's executive committee is the real power governing the organization, and in many ways the structure of this organization has been superimposed on the territories controlled by Arafat. Rubin's work is a must read for Middle East specialists or anyone with an interest in the region.

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How Effective Is Strategic Bombing? Lessons Learned from World War II to Kosovo by Gian P. Gentile. New York University Press (http://www.nyupress.nyu.edu), 838 Broadway, 3d Floor, New York, New York 10003-4812, 2001, 280 pages, $29.00.

Perhaps some readers might categorize *How Effective Is Strategic Bombing?* as a book written by an Army author promoting a conspiracy theory against the Air Force by hunting for airpower Rasputins who manipulated the historical picture of strategic bombing in order to promote Air Force independence. But there is certainly something to be said for a book that makes an argument—and this is a good one.

Today, we hear much about "effects-based targeting" and so forth. Effects are important, and sometimes the effects of surveys like the United States Strategic Bombing Survey (USSBS) are as significant as or perhaps have even greater impact strategically than that of bombs themselves. Gian P. Gentile tells this story in compelling form.

His scholarly work analyzes the processes and outcome of the USSBS and the more recent Gulf War Airpower Survey (GWAPS) to show that preconceived theories and agendas manipulated the results of the USSBS and attempted to influence the GWAPS, despite sincere attempts on the part of survey participants and initiators to create balanced and objective reports. The major issue on the table following World War II, of course, was an independent air force with a raison d'être of strategic bombing; hence, a supportive USSBS would clearly help promote the cause. Indeed, huge programmatic issues at stake would continue with significant interservice rivalry, as seen in subsequent episodes like the Revolt of the Admirals in 1949. Some of the historical issues raised in this book come to light today in the confusing and delayed release of the Kosovo strategic-bombing report, which has led to speculation and ambiguity.

Through meticulous analysis of primary sources, especially the USSBS and GWAPS, Gentile has contributed an important piece to the historiography of aerial bombardment. His book complements the excellent work of David MacIsaac, which for years has stood alone on the shelf as a historical interpretation of the USSBS. Gentile's superbly written chronicle of the survey process of American bombing and subsequent results is particularly helpful in discussing the effects of bombing on morale and the complex interaction of political and military factors at play in national decisions concerning war termination or defeat. It also provides a perceptive comparison of the USSBS and the GWAPS to suggest that the survey process has matured.

If this book has a shortcoming—and most books aren't perfect—it would be the title, which is slightly misleading. This is not really a history of strategic bombing and lessons learned, but a historical analysis of some important and highly influential American surveys of certain bombing campaigns. In that regard, the history of strategic bombing is international—unless one takes such an ethnocentric perspective that only the United States and its allies have done it. Limited primarily to an American perspective in terms of thinkers and campaigns, the book could benefit from an initial definitional development of strategic bombing compared to other concepts of aerial bombing.

As Gentile makes clear, the USSBS and the GWAPS were exhaustive studies—the former intended to be scientifically based and to take a broad, systemic approach in analyzing bombing effects on national economic, command, and industrial systems. The latter would take a similar approach but would benefit from academic rigor and scholarly interpretation of facts. Yet, no surveys can or should take on biblical importance.

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National Security: The Israeli Experience by Israel Tal; translated by Martin Kett. Praeger Publishers (http://www.greenwood.com/praeger.htm), 88 Post Road West, Westport, Connecticut 06881, 2000, 216 pages, $55.00.

Gen Israel Tal, Israeli assistant defense minister, draws on his more than 50 years of military experience to write about the evolution of his country's national security policy. This book ought to be a delight for war-college graduates since it takes them into the strategic thinking of a senior Israeli officer and shows them his application of Western military theories to the Arab-Israeli wars. *National Security* includes not only lessons from the American Civil War, the Prussian model, and total-war theories, but also the guerilla tactics of Chinese leader Mao Tse-tung.

The first two parts of the book take readers into general military theories; definitions of national security; and the Israeli views of military organiza-

tion, investments, and deterrence. The third part tests these doctrines against several Arab-Israeli wars and skirmishes. It looks at how Israeli national security doctrine changed from the 1948 War of Independence, which stressed infantry and hit-and-run guerilla tactics. The 1956 Suez crisis saw the introduction of rapid mobile armor coupled with air support as a means to counter the Arabs' numerical advantage in weapons and infantry.

Israel Tal's *National Security* is an excellent read. He analyzes opponents such as Egypt, Syria, Iraq, and Lebanon, classifying each one according to ca-

pability and threat to his nation. However, it was disappointing not to see an exploration of how the Israeli Defense Forces are coping with internal strife among the Palestinian population. This has required another evolution in military doctrine as the Israelis try to balance their masterful offensive capability with the job of peacekeeping and patrolling the former occupied territories.

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Touch and Go

In this section of "Net Assessment," you will find additional reviews of aviation-related books and CD-ROMs but in a considerably briefer format than our usual offerings. We certainly don't mean to imply that these items are less worthy of your attention. On the contrary, our intention is to give you as many reviews of notable books and electronic publications as possible in a limited amount of space. Unless otherwise indicated, the reviews have been written by an APJ staff member.

All Possible Wars? Toward a Consensus View of the Future Security Environment, 2001–2025, McNair Paper no. 63 by Sam J. Tangredi. Institute for National Strategic Studies, National Defense University (http://www.ndu.edu/inss/press/nduphp.html), Building 62, 300 5th Avenue, Fort McNair, Washington, D.C. 20319-5066, 2000, 212 pages, $16.00.

Tangredi's is an ambitious effort, not to provide yet another book on forecasting the future but to review 36 studies written independently by a variety of analysts between 1996 and 2000. This tasking is in support of the congressionally mandated Quadrennial Defense Review concerning military strategy, policy, and force structure. The time period covered is from 2001 to 2025. The impossibility of predicting the future is a basic assumption, but it is reasoned that an objective, comparative study should reveal interesting similarities and contrasts. In the end, 16 points of consensus and nine points of divergence are identified.

Despite the fluid nature of the topic and the effort, such "future-revealing" analytic exercises are mandatory, as no military can prepare for its responsibility without articulating its future threat assessment. The final chapter presents a synthesis in the form of a future as it might be designed by consensus of the points of agreement.

Dr. Karl P. Magyar
Maxwell AFB, Alabama

The New Biological Weapons: Threat, Proliferation, and Control by Malcolm Dando. Lynne Rienner Publishers, Inc. (http://www.rienner.com), 1800 30th Street, Suite 314, Boulder, Colorado 80301, 2001, 181 pages, $49.95.

Humanity has always been both captivated and petrified by the potentially dark side of technology. Classic novels like *Frankenstein* and *Dr. Strangelove* are popular expressions of a collective anxiety that

somehow science run amok will eventually lead to humankind's demise. The current fascination with biological warfare is the latest example of this fear. In *The New Biological Weapons*, Malcolm Dando offers an advanced overview of the biological-weapons arena, including currently operational weapons, advances in biotechnology, types of bioweapons and the ways they affect living organisms, challenges of bioagent delivery, potential biowarfare targets, and the current and future states of bioweapon arms control. This book is a good reference of the major types of toxin and biological weapons and their effects; it also provides a good overview of the current status of proliferation and arms control with regard to these potentially devastating weapons. It is a quite technically descriptive book, which may make it a tough read for people not enamored with the intricacies of chemistry and biology. Those who brave it, however, will have a greater understanding of one of the most important topics of twenty-first-century warfare.

After the Liberators: A Father's Last Mission, A Son's Lifelong Journey by William C. McGuire II. Parkway Publishers, Inc. (http://www.parkway publishers.com/Pages/parkwaypublishers. html), P.O. Box 3678, Boone, North Carolina 28607, 1999, 200 pages, $16.95.

There are better accounts of American strategic-bomber operations in World War II, but finding out how his dad served was one of the tasks undertaken by William McGuire. He also admirably fulfills his two other purposes for this study.

The first is kind of a celebration for all the children who lost their fathers in the war. Young, single men made up a good share of the 88,000 airmen who died in World War II, but many were married, with young children and babies at home. The survivors are mostly forgotten, and McGuire's effort serves to remind us of the pain suffered by many one-parent families. These children, now at retirement age, have carried that pain of their fathers' death. Few have understood how it happened—how terrible the war was for their fathers' generation. It has been a "son's lifelong journey" for all those people who felt little joy when the great victory arrived in 1945 because their fathers were not there to celebrate the occasion.

The second attribute of this little book is the description of how families can search official collections; seek out surviving compatriots who flew B-24s and other planes; and find places, cemeteries, and memorials in Europe that recorded events that occurred nearly 60 years ago. The suffering never goes away, but understanding and knowledge help feed a soul wounded by war.

Dr. Daniel Mortensen
Maxwell AFB, Alabama

An army cannot be administered. It must be led.

—Franz-Joseph Strauss

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The Editor

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Who's on the Cover?

1. General of the Air Force Henry H. "Hap" Arnold, commander of the Army Air Forces in World War II
2. Gen Curtis E. LeMay, commander in chief of Strategic Air Command; fifth chief of staff of the Air Force
3. Maj Gen Haywood S. "Possum" Hansell Jr., Air Corps Tactical School instructor; senior member of the Military Studies and Evaluation Division, Office of the Secretary of Defense
4. Gen John D. Ryan, seventh chief of staff of the Air Force
5. Gen George C. Kenney, commander of Fifth Air Force in World War II; commander of Air University
6. Gen Nathan F. Twining, first Air Force chairman of the Joint Chiefs of Staff
7. Gen Daniel "Chappie" James Jr., commander of North American Air Defense Command
8. Mrs. Nancy H. Love, director of the Women's Auxiliary Ferrying Squadron
9. Mrs. Jacqueline "Jackie" Cochran, director of the Women's Air Force Service Pilots; aviation record holder

10. Gen Lauris Norstad, supreme allied commander, Europe; commander in chief of US European Command
11. Gen Bernard A. "Bernie" Schriever, commander of Air Force Systems Command
12. Lt Gen Elwood R. "Pete" Quesada, commander of 9th Tactical Air Command in World War II; commander of Tactical Air Command
13. Lt Gen James H. "Jimmy" Doolittle, mission commander of the raid against Tokyo in World War II; commander of Eighth, Twelfth, and Fifteenth Air Forces in World War II
14. Gen Carl A. "Tooey" Spaatz, first chief of staff of the Air Force

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