

AIRPOWER

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EDITORIAL

It's Time to Put Up or Shut Up

GRIPING HAS long been considered a GI's privilege—if not a constitutionally protected right. You know—criticizing the situation but then going along with whatever comes down from above. In the days of authoritarian military commanders, it was probably a useful outlet for reducing resentment toward unrelenting masters. However, in today's climate of enlightened leadership and team building, such grumbling is probably not necessary and can be counterproductive. Imagine the good we could do by redirecting that energy to provide meaningful, constructive criticism and feedback.

Some folks who see *Airpower Journal* as just another vehicle for promoting Air Force policy would prefer that we print more dissenting views—more articles critical of the way the Air Force does business. Actually, the *Journal* is an open forum for discussing the use of aerospace power at the operational level of war, so opposing views are not only tolerated but encouraged. Current leadership knows that the Air Force would be hard-pressed to expand its thinking without new ideas.

The suggestion that *APJ* should print dissenting opinions is evidence that such opinions exist. Unfortunately, very few people who hold those opinions are willing (or able) to put them on paper, sign their names, and submit them for publication. Consequently, we receive only a small number of manuscripts that take on the establishment or challenge current policy. On occasion we reject some of the critical manuscripts we do receive—not because of their stance but because they

don't meet accepted standards for writing, documentation, or professional courtesy.

Far from promoting the “company line,” we have complete freedom in selecting articles for publication. In fact, no one “up the chain” from the editor even knows what will appear in the next issue. Our only guidance is to use good judgement and to insure that opinions are identified as such and not mistaken for Air Force policy. Although articles by DOD people undergo a security and policy review in accordance with AFR 190-1, *Public Affairs Policies and Procedures*, we have found that censorship or idea management is not a part of that process. The review is simply a safeguard against the inadvertent publication of classified material or misstated policy. By no means is it a vehicle for squelching articles that challenge Air Force policy.

The bottom line is that *Airpower Journal* is a conduit for Air Force people, but we can't print what you don't submit. If you have new or different ideas, it is your professional responsibility to share them with your colleagues rather than just grouse about how bad things are.

We can only surmise that some people are afraid that their opinions will come back to haunt them. That's a shame! Suppressing good ideas that could have improved the Air Force (or perhaps even saved lives) for the sake of protecting one's career is the worst kind of cowardice. Then again, maybe we're just following the GI tradition of griping when we don't really mind current conditions so much after all. RBC



R I C O C H E T S

Letters to the editor are encouraged. All correspondence should be addressed to the Editor, Airpower Journal, 401 Chennault Circle, Maxwell AFB AL 36112-6428. We reserve the right to edit the material for overall length.

FEBA FRICTION

I found Maj John Fawcett's article, "Which Way to the FEBA?" (Fall 1992), compelling; however, I disagree with his belief that there was no hole in doctrine. It is illuminating to study Major Fawcett's article through the doctrinal templates provided by Col Dennis M. Drew's "Desert Storm as a Symbol" and Lt Col Jay L. Baird's letter with Col Phillip S. Meilinger's response in the same issue of *Airpower Journal*.

US Army Field Manual (FM) 100-15, *Corps Operations*, states, "The rear, close, and deep operation of the battle are linked and independent. However, the primacy of close operations must be recognized." Not only is the primacy of the close battle asserted, FM 100-15 goes on to state that if the commander is unable to "win key engagements at the FLOT, he will not benefit from rear or deep operations, no matter how successful." It is this Army "doctrinal" tenet of the relationship between the close and deep battle that created the dilemma Major Fawcett found himself unable to resolve.

The tactical air control system (TACS) is the glue binding individual aircraft sorties to the land component commander's specific needs. The apportionment process divides total air capability among the air tasks to be performed. Rather than addressing missions (the *what* and *when*), the air control process concentrates on *how* and *where*. This entire system is fueled by the Army's belief in the primacy of the close climactic battle.

Herein is the doctrinal problem for airmen. The reason air power zealots emphasized centralized control and decentralized execution was to allow air power's inherent flexibility to mass at the proper location, time, and in sufficient numbers to achieve the commander's

objectives. More simply put, it kept us from frittering away air power in Maj Gen Carl Spaatz's "small packets (divided) among several armies or corps."

Air campaign planning occurs at the operational level of war. The TACS operates at the tactical level. As Major Fawcett found out, there doesn't appear to be a problem with *how* the TACS does its jobs. The problem is using it to determine *what* and *when* missions will be accomplished. This disconnect is more than definitional. Major Fawcett learned a practical lesson in the problem with the Army's AirLand Battle doctrine. As long as air power is regarded by the Army as "flying artillery" instead of "modern cavalry," ALOs like Major Fawcett will find themselves in a doctrinal malaise at the operational level of war.

Maj Edward J. Felker, USAF
Castle AFB, California

Maj John Fawcett's article "Which Way to the FEBA?" (Fall 1992) poses very interesting and timely questions for the close-air-support (CAS) world. As the Air Force and Army work out the future of CAS roles in light of our Desert Storm experience and future shrinking budgets, I will address several of Major Fawcett's points from my perspective as a fighter duty officer (FDO) with the 604th Air Support Operations Center (ASOC) and a planner with the 5th Air Control Group in Korea.

First of all, the classic definition of close air support involving air power attacking hostile targets in close proximity to friendly surface forces is still valid. Major Fawcett's suggestion that CAS has too much "conceptual baggage" to be a useful term is not on target. The definition is not restrictive to any of the services, and everybody in any of the armed forces in our country or those of our close allies understands the basics of the term. Besides, as Major Fawcett also pointed out, if it walks like a duck, quacks like a duck, and looks like a

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THE “STAFF EXPERIENCE” AND LEADERSHIP DEVELOPMENT

GEN JOHN A. SHAUD, USAF, RETIRED



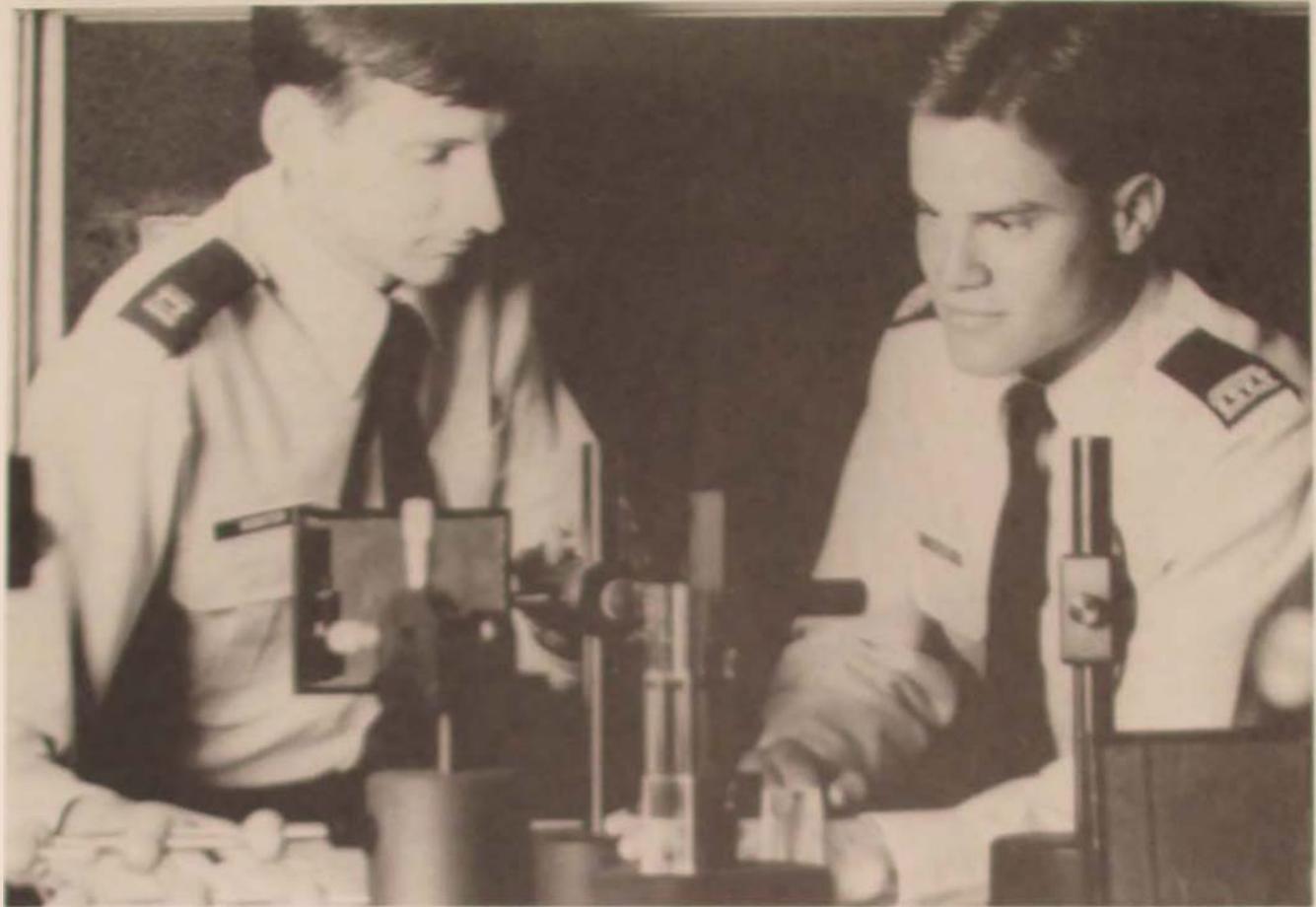
The typical staff officer is a man past middle life, spare, wrinkled, intelligent, cold, noncommittal, with eyes like a codfish, polite in contact, but at the same time unresponsive, cool, calm and as damnably composed as a concrete post or plaster of Paris cast; a human petrification with a heart of feldspar and without charm or the friendly germ; minus bowels, passions or a sense of humor. Happily they never reproduce and all of them finally go to hell.

—Gen George S. Patton, Jr.

GENERAL PATTON'S rather astute observations may reflect some of your own concerns as you prepare to embark on the always challenging and sometimes rewarding path known as the “staff experience.” That path is one well traveled. Those who have trod it include virtually all of the senior leadership of today's Air Force and the vast majority of past leaders who have helped make our Air Force great. Career patterns vary widely, but rare is the officer who avoids staff duty completely. And that is appropriate. Mastering the art of success as a staff officer is very much a part of the process of mastering the art of leadership that will propel you into positions of increasing challenge and responsibility in all aspects of your profession.

This fact is well recognized and accounted for in the process of selecting individuals for promotion to general officer. The key factors in that decision process are that the individual's career provide evidence of weapon (and/or support) system competence, command competence, *and* staff competence. Each type of competence is essential, and all are interrelated by that common denominator for success—effective leadership! The purpose of this article is to share with you a philosophy of leadership that will play a major role in your experience as a staff officer.

Competent and effective leadership is not something you are born with. It is something you hone and develop over time in a wide variety of situations. The



Potential staff officers should cultivate three important attributes of leadership—intelligence, compassion, and energy (ICE). Whether mentoring an Academy cadet or commanding a squadron, the junior officer should be aware of opportunities to put these qualities to work.

philosophy of leadership that I propose for your consideration has been developed from my own experience at the wing, Pentagon, and coalition staff levels and is comprised of three primary attributes: intelligence, compassion, and energy (ICE for the acronym conscious). They apply universally across all of the services. The traits required of an effective leader in the Air Force are the same traits that are necessary to lead effectively in the Army, Navy, or Marine Corps. Taking a flight of fighter-bombers and rolling in on target takes the same "right stuff" that is involved in leading an infantry company in an assault against enemy defenses or challenging an opposing ship on the high

seas. These traits also apply regardless of national allegiance. Fortunately, this helps take some of the mystery out of joint and international duty assignments.

Intelligence for the commander at wing level does not necessarily correspond to scores on the Scholastic Aptitude Test. It is more akin to "street smarts." It is the ability to quickly ascertain exactly what the mission entails and to articulate that understanding to subordinates in a way they will clearly grasp. This means being able to analyze the problem effectively, to synthesize its component parts into a coherent whole, and to communicate strategies for solutions. Throughout history, great military leaders have well appreciated this basic definition of intelligence. Napoleon considered it part of an equilateral triangle supported by courage and character. Clausewitz equated command determination with "intellectual bravery." A competent intellect is the cor-

nerstone of effective leadership. The key task is translating that intellect into something your subordinates can appreciate, grasp, and act upon.

Compassion at the wing level means a sensitive caring for, and understanding of, the people in your command. It means "walking in their moccasins." It means appreciating where they are coming from, what their concerns are, what their families' concerns are, what motivates them, and what fails to motivate them. It means ensuring that they understand not only *what* the mission is but also *why* they are called upon to carry out that mission. As commander of the Strategic Projection Force in the early eighties, I had to direct deployments frequently, often for long periods of time, with little advance notice. There was nothing I could do to change that requirement or to lessen the frequency or duration of such outings. What I *could* do was explain why these sacrifices had to be made. When the troops understand the "why" behind the taskings—and, at least as important, when the families understand—morale across the board improves tremendously. That was important for the people involved. It was also vital to mission success.

Energy, at every level, means "making it happen." It means doing all those things to see that the mission is accomplished. It can mean different tasks at different levels, but the heart of the matter is doing it, being there, being prepared, and making it happen. You can have the intelligence of Einstein and the compassion of Mother Teresa, but if you lack energy, nothing is going to happen. It involves your presence. For the operational commander, that means getting on the flying schedule. For the support commander, that means getting away from your desk and being out where your people are doing the work.

Assignment as a staff officer to the Pentagon or another headquarters staff doesn't mean putting the ICE principles on hold. It means adapting them to the new circumstances in which you find

yourself. Each element continues to apply. The difference as a staff officer is that you have, for the most part, left behind the realm of the flight line and entered the less glamorous realm of the paper chase. However, even though it may appear to you to be less glamorous, it is no less important in the scheme of your professional development.

Intelligence at the staff level still means a clear understanding of the mission. It also means understanding what it will take, on a personal level, to succeed at accomplishing this mission. Your focus is now considerably different since the mission no longer involves sorties. Therefore, you must understand not only a particular issue, but also the structure of the staff organization—how it works. Not to understand the ins and outs of the organizational structure and process means risking nonparticipation by default. New officers on the staff frequently find themselves tasked with only the simplest missions, not because they lack academic acumen, drive, or personal competency but because they first need to become familiar with how the system works. A local-area checkout is always useful, especially in the Pentagon. Likewise, intelligence includes the ability to speak cogently and to write clearly. It means mastering the basic tools of the staff officer trade.

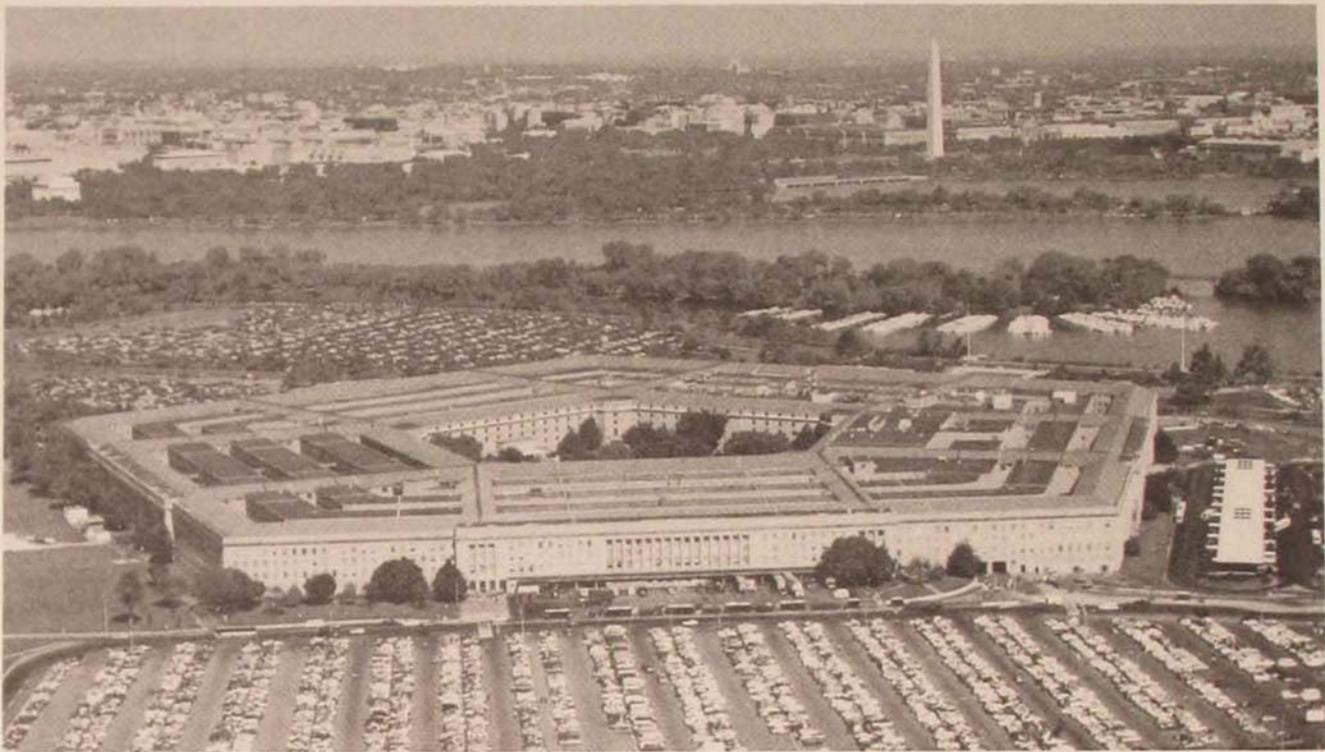
Compassion at the staff level assumes many forms. In today's Air Force, it is particularly important to be sensitive to how people are affected by structural reorganization. The good news is that—with enough qualified people—any organizational structure will work. Some structures, of course, work better than others. But the bad news is that the trauma that accompanies any restructuring affects everyone involved and is inevitable. People who direct reorganizations must be sure that the desired result is worth the inherent trauma. Every level of the staff organization must be sensitive to the effects of restructuring.



The current members of the Joint Chiefs of Staff are quintessential staff officers. They are (left to right) Gen Carl E. Mundy, USMC; Gen Gordon R. Sullivan, USA; Gen Merrill A. McPeak, USAF; Adm Frank B. Kelso II, USN; Gen Colin L. Powell, USA (chairman); and Adm David E. Jeremiah, USN (vice-chairman).

It is important to be well aware of “who’s who” in your particular area of responsibility on the staff. Be sensitive to where your people are on the learning curve in terms of staff competence and ability. The measure of an individual’s competence is much more readily observable in an operational arena. It’s easy to know who is flight-lead qualified and who is still flying with an instructor. Staff competence is less readily apparent. You cannot determine it merely by gauging an individual’s rank, time in service, or background. On the staff, which is something of a meritocracy, competence manifests itself in subtle stages. In year one, the new action officer attends meetings looking every bit the part of the seasoned staff

professional while inwardly praying, “Please, Lord, don’t let them ask me any questions today.” By year two, the action officer is not only eager to answer questions, but stands ready to “build a watch” whenever offered half an opportunity. By year three, the officer is combat ready, crisp, and concise, and can frequently provide answers that are better than the questions asked. Some officers move through these stages faster than others. Some are less adroit at manipulating the staff maze. The challenge for you as the leader on the staff is to know where your people are on the learning curve. If you don’t, you may have a staff “flight lead” working for you and not fully utilize and develop that officer’s talent. That would



be unfair to the officer concerned and to the mission with which you are charged.

Energy at the staff level means just what it meant at the wing level. Understand what must be done and then do it. Make it happen. Learn the organizational structure. Become adept at the drill of staff work. Don't avoid the tough coordination. Don't take the easy way out. Find out what the other players are thinking and doing. Learn what your boss and other key players need and, importantly, when each one needs it. Providing information without allowing sufficient time for your leader to assimilate it is not useful. That would be like briefing new targets after departing the initial point. Work out at the base gym or the Pentagon Officers' Athletic Club. Take care of yourself. No one else will. Crew-rest rules are permanently waived. Make time for your family if you happen to have one. They need you to survive in northern Virginia, *and* you need them for your survival. Unfortunately, Patton's comment about the typical staff officer does have a certain truth to it. Staff work, especially at the Pentagon, can be impersonal. Because

Most officers are intimidated by the journey from the flight line to the Pentagon parking lot and only wish to see this picture in their rearview mirrors. The judicious use of ICE, however, helps ensure that the staff experience is a rewarding one.

you are part of such a large enterprise, it is difficult—but not impossible—to see the results of your labor and thereby derive much feedback and personal satisfaction. Worry about your appearance. Don't look tacky by wearing uniforms you would have discarded years ago if they were part of your civilian attire. Lead from your strengths. Do those things that worked for you when you were a leader on the flight line. Keep your self-confidence up. However, don't be too proud to learn and use new insights you will observe at the Pentagon—a real plus resulting from a tour there. Do your job with enthusiasm, and you will soon be a staff leader—and might even get to go back to the field early. Pentagon bosses also return to the field and remember people who were the most helpful.

By following these principles of successful leadership at the wing and head-

quarters staff levels, you will be rewarded with positions of increasing challenge and responsibility. Although the possibilities are nearly endless, one example of such a challenge might involve assignment to a joint coalition staff. The Supreme Headquarters Allied Powers Europe (SHAPE) is one such staff which has evolved over more than 40 years. In three years as the SHAPE chief of staff, I learned that the principles of ICE continued to apply. And the likelihood of your participation in a joint coalition staff in this post-cold war world has increased by an order of magnitude.

Intelligence on a coalition staff means, as always, a clear understanding of the mission at hand and the ability to convey that understanding to others. On the coalition staff, as is the case with any new leadership situation, new variables enter the equation. My primary mission was to coordinate the activities of the staff to produce the best possible support for the Supreme Allied Commander, Europe (SACEUR). In addition to what you might normally expect that to entail, I found that I also had to be a negotiator, diplomat, taskmaster, and cheerleader. I learned also that on the SHAPE staff (as well as on most coalition staffs), some of the most important factors to be considered were appreciating inherent differences in culture and language and possessing a solid sense of history.

A vital component of international street smarts is realizing the cultural differences among nations. Their officers, like ours, are part of a military hierarchy. They will respond to your leadership the same way they respond to that of their own officers of similar rank. But most nations are much more hierarchically oriented than the United States. You will like this at first and get the impression that you must be a more gifted officer than you realized. But then it will occur to you—hopefully not as the result of a disaster—that one reason you are so comfortable is that your people are not asking you

questions. No one asks the "Why are we doing this?" question of superiors as readily as Americans. You *must* get your people to do this, or they will waste incredible amounts of time doing ineffective work. In addition, for hierarchically minded nations, putting opposing views on a staff summary sheet is a flagrant act of disloyalty. Promote the idea that in a "commander's estimate of the situation," analysis of opposing courses of action is a requirement and is *always* useful. As we say in the game of bridge, one peek is worth two finesses. Convincing your international staff of all this may be the difference between victory or defeat when you debate a major issue.

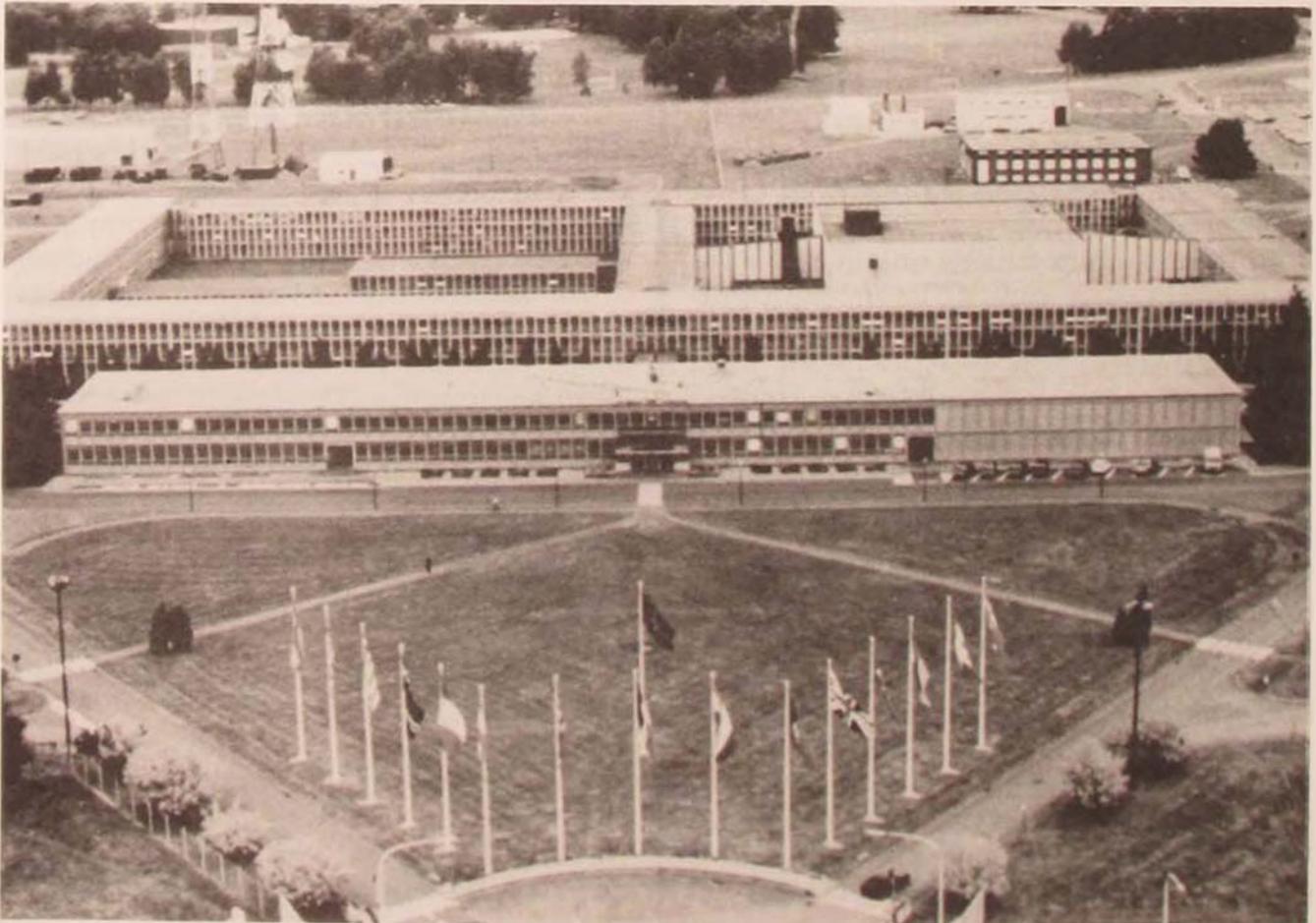
Compassion on the coalition staff includes keeping the factors of language and history in mind. Consideration of others in the staffing process means helping to make sure that everyone operates from a common base. Each member of the staff has to help in this important regard. English is the lingua franca at SHAPE, and all staff members supposedly possess a working knowledge of English. This, incidentally, is very good news for most Americans. But it's important to remember that fluency in any language is relative to each individual. On the coalition staff, a leader must consciously—and sometimes subtly—ensure that real communication takes place as business is transacted. Should the leader not know the language comprehension of immediate subordinates, they may fail under pressure when the time lines get short. No matter how good the command and control system, equipment does not guarantee understanding. At a staff meeting, for example, all heads may be nodding in agreement and all faces smiling. Does that mean that all souls on board fully understand what is transpiring? Not necessarily. The concerned and prudent leader must help ensure that all players are on the same wavelength without condescending to or embarrassing them. I learned that a casual question or request for comment can be

the best way to sample the level of understanding around the table. If you sense that an individual (or individuals) may need some assistance in better grasping the proceedings, do your best to help out *and* make a note for the future.

Compassion also means appreciating the role that history plays in the views of others. Your fellow officers will come to the staff from different nations and will have been molded by significantly different cultures, customs, and traditions. Appreciating those differences goes far beyond learning the social courtesies, such as calling cards and handshakes. A strong military ethic provides a vital and

The flags displayed in front of Supreme Headquarters Allied Powers Europe (SHAPE) symbolize the cultural diversity of that organization. American staff officers at SHAPE must rely heavily on the principles of ICE if they are to be effective team players in such an environment.

cohesive bond—high regard for the chain of command. But the staff leader of the coalition must constantly remember that every issue between nations that the staff addresses has a history that sometimes goes back hundreds or even thousands of years. This history has played a major role in shaping and influencing the officers with whom you will serve. They will always be conscious of the historical significance of issues under discussion, even when the American officer may not. Unfortunately, history is not the average American officer's best suit. Whereas the typical American relies often on sports analogies (e.g., "this task is a six-inch putt"), his allied peer will frequently invoke history to form the analogy. Even when an American is aware of history, he or she may not always be fully conscious of how that history is viewed by people raised in different cultures. The good news is that Americans are almost always



viewed as "honest brokers" because we do not carry a lot of historical baggage, and others will often defer to our judgement. However, the point is that history will *always* play a major role in the ability of the members of the coalition staff to work together harmoniously to carry out the assigned mission. At least once during your experience on an international staff, you will be on the receiving end of a well-rehearsed national speech delivered with incredible emotion and incredibly bad timing. Coalition staffs are the wave of the future. As a member of the staff, you must remember that history is an omnipresent player, and you must appreciate how that history is viewed from the different vantage points of your superiors, peers, and subordinates. If you ignore this basic fact, you do so at your peril—risking, at best, minor embarrassment and, at worst, unnecessary losses on future fields of conflict.

A final element of compassion on the coalition staff is avoiding arrogance, which is rarely a virtue in any culture. Although arrogance can be a less-than-desirable trait of any member of the coalition staff, Americans in particular must be careful to avoid this tendency. At SHAPE, for example, the SACEUR has been an American since the alliance's inception. The United States, with all of its commensurate wealth and resources, is the largest nation represented. American officers on the SHAPE staff may, if they are not careful, unintentionally display a certain arrogance that is not warmly received by their peers on the staff. Arrogance is never helpful. In this regard, compassion means

being sufficiently sensitive to avoid offending someone while you are trying to get your message across. You may lose the debate and never know why. After all, in a coalition, every nation gets a vote. Your effective leadership is expected. Do it, but don't get cocky about it.

Energy in the coalition staff scenario remains essentially the same as for any other scenario. It means doing what it takes—making what must happen, happen. You can understand that a knowledge of English and an appreciation of history are vitally important. But if you then fail to expend the energy to do appropriate study and research, you wind up being ineffective. Intellectually, you can understand why your subordinates should be proficient in the appropriate language, but if you don't find a way to measure that proficiency and act accordingly, the mission will suffer. You will discover that getting anything done on a coalition staff is somehow harder—much harder—than equivalent work, even at the Pentagon. Such staffs are the wave of the future, and they will tax your energy.

Intelligence, compassion, and energy—and all the things each entails—are the keys to developing your professional leadership. They apply to any leadership scenario in which you can be placed. Their careful application at every stepping-stone in your growth better prepares you for the challenges you will face on behalf of our Air Force. Your assignment to staff duty is not a time-out from your leadership development. It is very much an essential part of it. Make the most of the opportunity. □

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The *Journal* focuses on the operational level of war—that broad area between grand strategy and tactics. We are interested in articles that will stimulate thought on how warfare is conducted. This includes not only the actual conduct of war at the operational level, but also the impact of leadership, training, and support functions on operations.

We need two typed, double-spaced draft copies of your work. We encourage you to supply graphics and photos to support your article, but don't let the lack of those keep you from writing! We are looking for articles from 2,500 to 5,000 words in length—about 15 to 25 pages.

As the professional journal of the Air Force, *APJ* strives to expand the horizons and professional knowledge of Air Force personnel. To do this, we seek and encourage challenging articles. We look forward to your submissions. Send them to the Editor, *Airpower Journal*, 401 Chennault Circle, Maxwell AFB AL 36112-6428.

THE OPERATIONAL LEVEL OF NUCLEAR WAR FIGHTING

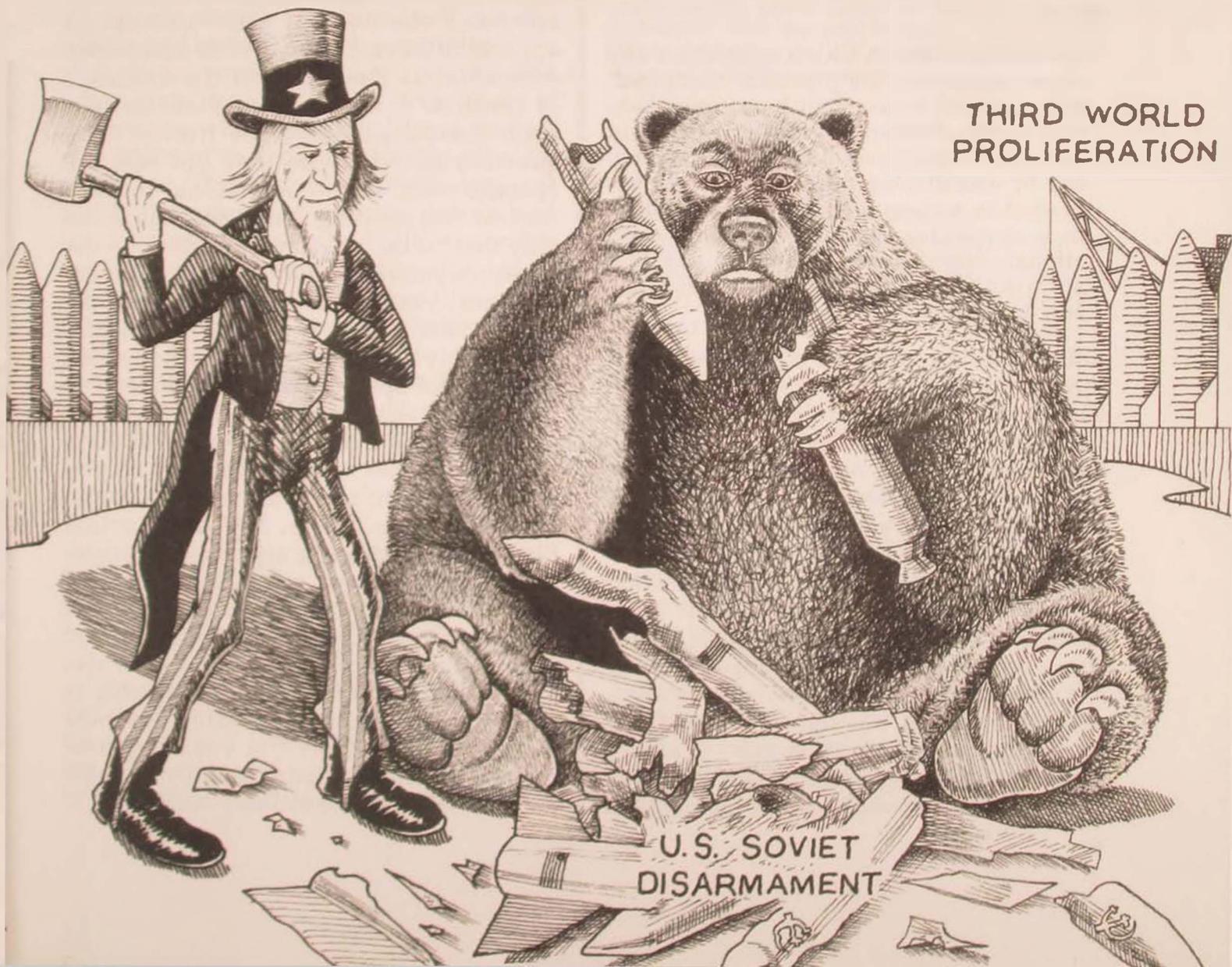
MISSING OR UNNECESSARY?

DR STEVEN METZ

IN THE EARLY 1980s, the American military's rediscovery of the operational level of war prompted a veritable explosion of articles, books, symposia, conferences, and courses at the services' staff and war colleges, all aimed at understanding and mastering theater military operations.¹ On the applied side, doctrine analysts incorporated the opera-

tional level of war in both basic and joint doctrine. Further, military thinkers revived campaign planning, which had lain dormant since World War II, and gave increased emphasis to the central function of the commanders in chief (CINC) of the regional unified commands in operational war fighting.

This attention to the operational level of



war is healthy because it focuses the attention of commanders and planners on a vital dimension of war fighting, thus making this level of war a central component of the continuing renaissance of the American military. In a very real sense, the resurgence in operational art bore fruit in the form of our victory in the Gulf War. Still, a major gap persists in thinking and doctrine on the operational level of war: we have paid almost no attention to the role of nuclear weapons.

A Crucial Gap

Joint Pub 1-02, *Department of Defense Dictionary of Military and Associated Terms*, defines the operational level of war as

the level of war at which campaigns and major operations are planned, conducted, and sustained to accomplish strategic objectives within theaters or areas of operations. Activities at this level link tactics and strategy by establishing operational objectives needed to accomplish the strategic objectives, sequencing events to achieve the operational objectives, initiating actions, and applying resources to bring about and sustain these events.²

This definition indicates both the scope of the operational level of war—between strategy and tactics—and key functions. It also implies certain vital characteristics. For example, in the American military the operational level of war is invariably joint, being the primary responsibility of the regional CINCs and their major subordinates, including service component commanders. Military formations at the operational level include numbered air forces, Army corps, fleets, Marine expeditionary forces, and joint task forces.³ Geographically, operational war fighting takes place in a theater of operations. Falling between the strategic and tactical levels of war, the operational level places more

stress on purely military considerations than does the strategic level but pays more overt attention to political objectives than does the tactical level. In a sense, then, the operational level is the highest point at which purely military factors are clearly paramount (given the overall political objectives).

The general concept of the operational level of war does not exclude nuclear weapons, but neither does it explicitly incorporate them. Where, then, should operational-level commanders and planners look for guidance on nuclear war fighting? Basic national defense doctrine discusses strategic nuclear deterrence but offers little on the operational level of nuclear war fighting. “[M]ilitary commanders,” according to the Joint Staff, “require the freedom to act independently—within the context of their mission and the overall aim—to exploit opportunities and to cope with unforeseen difficulties as they occur in the dynamics of conflict.”⁴ This is sound advice, but such freedom clearly has limits. The question is, Where do they lie? On the specific topic of the operational level of nuclear war fighting, basic doctrine notes only that “if the President decides in favor of employment [of nonstrategic nuclear weapons], commanders must be given the wherewithal to employ these capabilities in a timely fashion.”⁵ This is not much guidance for operational-level planners.

In the absence of general doctrine, most policy on the operational-level deployment of nuclear weapons has developed within specific regional contexts, especially Europe. There, NATO’s Nuclear Planning Group has grappled with operational-level nuclear issues for decades.⁶ The section of the official *National Security Strategy of the United States* that deals with nonstrategic nuclear forces also focuses on Europe.⁷ What is missing is more general doctrine to guide planners who must confront the various non-European conflicts anticipated by the new national defense and military strategy.



Admittedly, one can provide explanations for this gap; doctrine writers, after all, are not stupid. Doctrine itself is a distillation of historic military experience—a shorthand version of what works and what does not—but there is no body of experience with operational-level nuclear war fighting to provide a foundation for doctrine. This alone, however, does not justify the paucity of analysis, debate, and thinking on the subject. Political considerations also account for the absence of operational-level nuclear doctrine—anything dealing with nuclear weapons is a political powder keg. But is this an adequate rationale for an apparently glaring gap in our doctrine? Should we, in fact, have doctrine on the operational level of nuclear war fighting?

Should We Have Operational-Level Nuclear Doctrine?

One can argue both against and for the development of doctrine and analysis on the operational level of nuclear war fighting. One opposing argument, for example, is that detailed guidance for the opera-

Although we may not soon be able to “beat swords into plowshares,” US national policy will continue to emphasize the global control of weapons of mass destruction. With that goal in mind, Soviet president Mikhail Gorbachev and US president Ronald Reagan sign arms limitation agreements.

tional employment of nuclear weapons might diminish the utter horror that is associated with them, erode psychological barriers to their use, help lower the nuclear threshold, and thus make the world a much more dangerous place. According to this line of reasoning, the destructiveness of thermonuclear weapons and the difficulties of controlling escalation, once these weapons are used, combine to make nuclear war—whether strategic or operational—suicidal. Because thinking about the employment of nuclear weapons could encourage us to forget their lethality, it is better to remain blissfully ignorant than to risk nuclear disaster.

Similarly, American doctrine for the operational-level use of nuclear weapons would greatly amplify the insecurity of other nuclear or soon-to-be nuclear states, thereby increasing the likelihood that they

would use nuclear weapons against us preemptively. Although we see our own strategy as benign and defensive, we must realize that as the world's only remaining superpower, we can easily and unwittingly frighten smaller states. The development of extensive analysis and doctrine on the operational level of nuclear war fighting might terrify potential enemies and provoke dangerously irrational responses in a crisis.

One may also argue that the use of nuclear weapons runs counter to national values and policy. For example, a core American value is support for international law, which places specific constraints—including necessity, proportionality, and humanity—on the use of military power.⁸ Critics hold that the operational-level use of nuclear weapons would violate both the rule of humanity and—if such use is not in direct response to the first use of nuclear weapons by an enemy—the rule of proportionality. Simply having a capability, in other words, does not morally or legally justify its use. It follows, then, that we should not plan for actions that are inherently illegal, immoral, or evil.

In addition, national policy continues to stress the global control of weapons of mass destruction.⁹ To support this policy, we have withdrawn all ground-launched and naval tactical nuclear weapons to the continental United States.¹⁰ Planning for the operational use of nuclear weapons by the American military would undermine this policy of attempting to diminish the chances that nuclear weapons will be used in crisis or conflict. Our friends, enemies, and citizens would find it difficult to understand why we would plan for something that our national policy opposes. Such contradictory behavior would create greater dissonance or incoherence in that policy.

Another argument against the development of operational-level nuclear doctrine is not based on moral or political factors. It simply maintains that such doctrine is

unnecessary. Advocates of this position deny that there is any essential difference between small-yield nuclear weapons and large-yield conventional weapons, such as fuel/air explosives.¹¹ From this perspective, we might need tactical-level doctrine to offer guidance on the employment of nuclear weapons but not operational-level doctrine. Existing doctrine, such as Joint Test Pub 3-0, *Doctrine for Unified and Joint Operations* (January 1990), would be adequate. Obviously, the response to this position is that nuclear weapons are fundamentally different than conventional ones—if not in destructiveness, at least in their psychological, moral, and political impact—and for that reason we do in fact need an operational-level nuclear doctrine.

An argument that supports such doctrine and analysis, however, is based on the fact that the proliferation of nuclear weapons and the advances in associated technology such as ballistic missiles make nuclear war increasingly likely. Our post-cold war national security and military strategy call for continued American involvement in all regions of the world.¹² Although we will try to assure that the American military of the future is as good as or better than its cold war predecessor, it will undoubtedly be smaller. Thus, if an operational-level American military force finds itself outnumbered and facing disaster, it might turn to nuclear weapons as its only resort. This could easily have occurred had Iraqi forces struck south during the initial weeks of Operation Desert Shield. Furthermore, a future US force may find itself the victim of a nuclear first strike by a hostile regional power. But by analyzing and developing doctrine on the operational use of nuclear weapons now, the US military will be much better prepared in a crisis to offer carefully reasoned advice to national decision makers. What we desperately want to avoid, according to this line of reasoning, is being forced to "wing it" during a war.

In the 1960s and 1970s—at the height of the cold war—military analysts believed that the intercontinental range and near-instantaneous launch of the Minuteman missile (top) provided an effective deterrent to a nuclear face-off between the US and USSR. With the demise of the cold war, however, US aerospace doctrine may need to include conventional and tactical nuclear roles for weapons systems such as the B-2 (bottom) if these systems are to remain useful.



What Would Operational-Level Nuclear Doctrine Consist Of?

If we do conclude that the United States needs operational-level nuclear doctrine, what would it consist of? Clearly, the full development of such doctrine would require extensive thinking, analysis, and consultation. The goal would be to provide guidelines to the national command authorities (NCA) on whether nuclear weapons should be used at all in an operational context. If the president decides in favor of such use, doctrine should suggest how, when, and where to employ nuclear weapons for maximum military, psychological, and political effect. At a minimum, then, doctrine should help military planners and commanders answer two kinds of questions during a specific war or military crisis.

Ethical/political/strategic questions would shape military advice to the NCA on whether the US should use nuclear weapons at the operational level. For example,

- Under what conditions is the use of nuclear weapons at the operational level congruent with national values? Given



those conditions, are certain aspects of such use (e.g., targets, times, etc.) incongruent with national values?

- Does national will support the use of nuclear weapons?
- Does international law support the use of nuclear weapons?
- How will the use of nuclear weapons affect our global image or the political/moral element of our national power?
- How will the use of nuclear weapons affect our diplomatic relationships and alliances in both the region under conflict and in other parts of the world?
- What will the long-term environmental impact be?
- What will the long-term economic impact be?
- Will the use of nuclear weapons seriously erode psychological barriers to their future use? If so, is this risk acceptable?

Military/operational questions would help planners and commanders actually

The ethical and political aspects of possessing and using nuclear weapons have always been volatile issues. Military planners must consider such issues when they advise the national command authorities about the operational use of these weapons. Here, a group of antiwar, antinuclear, and antitechnology advocates protest at the Pentagon in November 1981.

employ nuclear weapons if the president decides to use them. For example,

- Are nuclear weapons militarily necessary? What advantages do nuclear weapons have over high-yield conventional weapons?
- What are the risks, especially in terms of provoking a nuclear, chemical, or biological counterattack? Are these risks acceptable?
- How will the use of nuclear weapons affect the campaign plan in terms of phasing, tempo, and axes of advance or retrograde?
- What specific strike packages and targets will have the desired effect? Will

demonstrations have the desired effect without actual strikes?

- Can nuclear weapons be used in an offensive mode, or should they be reserved for last-ditch defense?

- If nuclear weapons are used offensively, are friendly forces equipped and trained to consolidate any advantages gained?

- What psychological effect will nuclear weapons have on the enemy? Will they break resistance or stiffen it? What psychological effect will they have on friendly forces?

- What are the provisions for command, control, communications, and intelligence? How much autonomy should the CINC have, once the president approves the use of nuclear weapons? How much autonomy should the CINC's subordinates have? Are conventional techniques for bomb damage assessment adequate?

- What are the combined-force considerations? Should our allies be involved in the decision to use nuclear weapons? Should they be involved in decisions about strike packages and targeting?

- What are the civil-affairs considerations? Are we prepared for emergency services and reconstruction?

- How will the use of nuclear weapons affect options for ending the war?

Conclusions

Sane people hope that no nation will ever use nuclear weapons, be they strategic, operational, or tactical. But hope alone is not enough. By thinking about the unthinkable now, we could forestall the possibility of having to do the unthinkable later, on an ad hoc basis.

The nature of nuclear weapons means that even operational-level doctrine must be totally imbued with what are usually considered strategic-level issues, such as the long-term political impact and the morality of military actions. This complicates the problem, but the foundation for operational-level nuclear doctrine already exists because strategic thinkers are currently considering the role of nuclear weapons in the new security environment.¹³ To augment this process, we need to combine NATO thinking on operational nuclear war fighting with the advice from general literature on the operational level of war, together with strategic-level analysis of nuclear employment options underlying the single integrated operational plan.¹⁴ The result could be coherent and useful doctrine for the operational level of nuclear war fighting and, eventually, the lessening of the nuclear threat. □

Notes

1. Some of the clearest current thinking on the rediscovery of the operational level of war is in Clayton R. Newell, *The Framework of Operational Warfare* (London and New York: Routledge, 1991).

2. Joint Pub 1-02, *Department of Defense Dictionary of Military and Associated Terms*, 1 December 1989, 264.

3. Although Army corps and Marine expeditionary forces are clearly designed as operational-level formations, the Air Force and the Navy are not similarly organized. Thus, numbered air forces and fleets may be operational-level formations if they fight as coherent units in a theater of operations, but—depending on the circumstances—a unit as small as a wing or a carrier battle group may also be on the operational level, particularly if it is part of a joint task force.

4. Joint Pub 0-1, "Basic National Defense Doctrine," final draft, 24 July 1990, II-26.

5. *Ibid.*, IV-34.

6. See William H. Park, "Defense, Deterrence, and the Central Front: Around the Nuclear Threshold," in *NATO after Forty Years*, ed. Lawrence S. Kaplan et al. (Wilmington, Del.: Scholarly Resources, 1990); and Carl H. Amme, *NATO Strategy and Nuclear Defense* (Westport, Conn.: Greenwood Press, 1988).

7. George Bush, *National Security Strategy of the United States* (Washington, D.C.: White House, August 1991), 26.

8. Joint Pub 0-1, II-14. International law is not clear on the specific question of the legality of nuclear weapons, but there have been several attempts to explicitly outlaw these devices. In 1961, for instance, the United Nations General Assembly passed a resolution declaring that since the use of nuclear weapons constituted a breach of the UN charter, it thus violated international law. The failure of nuclear powers to recognize such efforts has led experts such as Gerhard von Glahn to conclude that "production of nuclear weapons,

coupled with fruitless endeavors to secure legal (express) prohibitions of such weapons, implies a present legality for them." *Law among Nations: An Introduction to Public International Law*, 2d ed. (New York: Macmillan, 1970), 591.

For further details on this debate, see Istvan Pogany, ed., *Nuclear Weapons and International Law* (New York: Saint Martin's Press, 1987); Elliott L. Meyrowitz, *The Prohibition of Nuclear Weapons: The Relevance of International Law* (Dobbs Ferry, N.Y.: Transnational Publishers, 1990); Georg Schwarzenberger, *The Legality of Nuclear Weapons* (London: Stevens and Sons, 1958); and Nagendra Singh, *Nuclear Weapons and International Law* (New York: Frederick A. Praeger, 1959).

9. Bush, *National Security Strategy*, 15-16. For a summary of US initiatives in support of this nonproliferation policy, see President Bush, "Non-Proliferation Efforts Bolstered," *US Department of State Dispatch*, 20 July 1992, 569-71.

10. President Bush, "Nuclear Weapons Withdrawal Completed," *US Department of State Dispatch*, 6 July 1992, 543.

11. See, for example, Thomas W. Dowler and Joseph S. Howard II, "Countering the Threat of the Well-Armed Tyrant: A Modest Proposal for Small Nuclear Weapons," *Strategic Review* 19, no. 4 (Fall 1991): 34-40.

12. Bush, *National Security Strategy*, 2; and Gen Colin L. Powell, *National Military Strategy of the United States* (Washington, D.C.: Government Printing Office, January 1992), 2. Key officials of the Bush administration reempha-

size this notion in all their major statements about our national security strategy and foreign policy. See, for example, George Bush, "United States Defenses: Reshaping Our Forces," *Vital Speeches*, 1 September 1990, 676-79; idem, "State of the Union Address," *US Department of State Dispatch*, 4 February 1991, 65-67; idem, "Security Strategy for the 1990s," *Department of State Bulletin*, July 1989, 19-21; and James Baker, "Power for Good: American Foreign Policy in the New Era," *Department of State Bulletin*, June 1989, 9. For good analyses of the new national security strategy, see James J. Tritton, "America Promises to Come Back: A New National Strategy," *Security Studies* 1 (Winter 1991): 173-234; and Patrick J. Garrity and Sharon K. Weiner, "U.S. Defense Strategy after the Cold War," *Washington Quarterly* 15 (Spring 1992): 57-76.

13. See, for example, Thomas F. Ramos, "The Future of Theater Nuclear Weapons," *Strategic Review* 19, no. 4 (Fall 1991): 41-47.

14. On concepts of strategic nuclear employment, see Desmond Ball and Jeffrey Richelson, eds., *Strategic Nuclear Targeting* (Ithaca, N.Y.: Cornell University Press, 1986); William C. Martel and Paul L. Savage, *Strategic Nuclear War: What the Superpowers Target and Why* (New York: Greenwood Press, 1986); Desmond Ball and Robert C. Toth, "Revising the SIOOP [strategic integrated operational plan]—Taking War-fighting to Dangerous Extremes," *International Security* 14, no. 4 (Spring 1990): 65-92; and Richard Lee Walker, *Strategic Target Planning: Bridging the Gap between Theory and Practice* (Washington, D.C.: National Defense University Press, 1983).

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THE DOUHET SOCIETY

A RECIPE FOR YOUR PROFESSIONAL DEVELOPMENT PROGRAM?

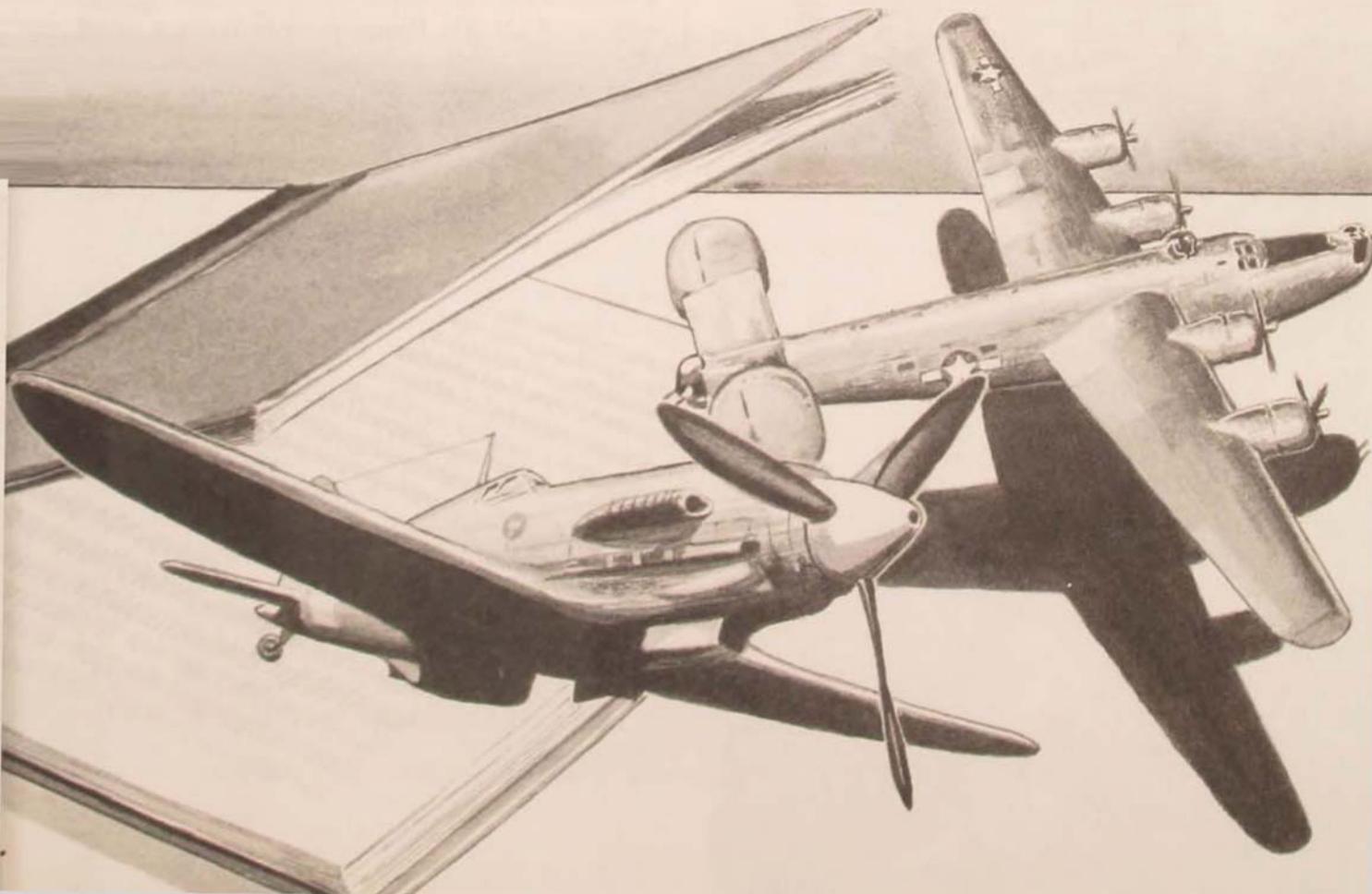
LT COL KIMBLE D. STOHRY, USAF

*Who are the leading thinkers in today's Air Force?
Name an Air Force officer with a national
reputation based on [operational expertise or]
published works. Can you think of an officer who
has established an Air Force-wide reputation as an
air power theorist?*

—Lt Col Donald R. Baucom

WHERE ARE today's Mitchells? This question haunted me as I flipped through some issues of *Air University Review* in preparation for a seminar. The standard fare for most staff officers is definitely *not* reading theory, debating military doctrine, and poring over campaign

studies. Occasionally over coffee, folks might discuss contemporary issues like the new uniform or the drawdown, but rarely do we conduct the "hangar flying" that is necessary for us to bond as professionals. At Headquarters Fifth Allied Tactical Air Force (FIVEATAF)—a NATO headquarters in Vicenza, Italy—approxi-



mately 20 US military officers have been experimenting for over a year with a professional development program: the Douhet Society.¹ Our experience, though not a well-worn cookbook, could prove useful to officers who are interested in stirring up a voluntary program of self-study or group study as they prepare for higher command and more responsibility.² This article explains our vision for the Douhet Society, the planning and organizing required to create such a society, the conduct of meetings, the prepara-

Learning from history can involve the study of geography. For example, Italy offers a varied terrain and a rich cultural history, both of which contribute to interesting military studies for the Douhet Society. Here, one member calls on his personal interests and expertise to lead a seminar.



tions for a staff ride (an educational field trip),³ and methods for forming such groups at the composite-wing level.⁴ As is the case with any recipe, you may either follow or ignore these instructions, depending on the ingredients available in your wing kitchen and the particular tastes of the people you will be serving.⁵

Headquarters FIVEATAF includes a cross section of US staff officers in various career disciplines—fighter pilots, navigators, airlifters, missileers, radar officers, air defenders, and so forth. Our officers, on the average, have 12 years in combat zones,⁶ thousands of hours of flying time, and a substantial amount of time in overseas service. Recognizing that we could learn a great deal from each other, we conducted a survey to check the feasibility of forming a society for professional development at headquarters.⁷ Since many officers were interested, we took steps to organize the society. More than likely, many officers in USAF units worldwide have similar opportunities to learn from each other and would enjoy sharing their experiences. Though our society at FIVEATAF includes mostly field-grade officers,⁸ all Air Force people have a need for professional development.

In his foreword to Air Force Pamphlet (AFP) 36-13, *Officer Professional Development Guide*, Gen Larry D. Welch, former Air Force chief of staff, writes that “professional development is a daily business.”⁹ As the Air Force makes itself leaner and meaner in accordance with the changes in force structure proposed by Secretary of the Air Force Donald B. Rice and Gen Merrill A. McPeak, current Air Force chief of staff, perhaps some of the changes that affect the “human dimension” could put more emphasis on professional development.¹⁰ Air Force Manual (AFM) 1-1, *Basic Aerospace Doctrine of the United States Air Force*, gives officers the “vector” to develop themselves and their subordinates professionally.¹¹ An organization such as the Douhet Society is a tool that commanders, units, or groups

of interested officers can use to achieve that end, and the better organized the tool, the better it will serve its users. One of the first steps in organizing a society for professional development is writing a mission statement.

The statement that we came up with is, *Develop a voluntary society that helps US officers at FIVEATAF further their professional development.* The objectives of the society are to provide a forum for field-grade officers to

1. develop a concept of air power that is based on theory, history, and contemporary developments;¹²
2. have adequate access to the means (i.e., free books and study materials) necessary to accomplish number 1;
3. develop a concept of the operational art;
4. challenge the status quo by participating in seminars and staff rides that are structured to generate well-reasoned, independent thought based on a study of assigned lessons;¹³ and
5. have some fun and bond as a team when you do numbers 1-4.

No program of professional development will be successful merely on the strength of its mission statement and some published objectives; rather, it will need support from the organization's command element and its key senior leaders. Indeed, sharing ideas and experiences across ranks is one of the most attractive features of this program. Giving the more mature (read "older") officers a forum to share their experiences can lead to informal mentoring, which—metaphorically— involves lighting a flame of inquiry in others and returning periodically to trim the wick. Such informal mentoring flourishes in a society for professional development.¹⁴

But is mentoring necessary in professional development? Certainly, junior officers would profit from having mentors bridge the inevitable gaps in knowledge or experience that become apparent during a study of military history or theory.¹⁵ But

Seminars allow Douhet Society members of various ranks to discuss contemporary issues along with historical lessons learned from campaign studies.



it takes time to develop the process by which senior officers guide and support their younger colleagues,¹⁶ so initially, at least, you may have to encourage the mentors to mentor! After a few good seminars, though, this process should be running smoothly.¹⁷ The truly difficult part of organizing your society will be planning your lessons.

At this stage in the organization of the Douhet Society, I presented a model of a three-year seminar lesson plan to our mentors to elicit their constructive criticism. Strategically, this was a key meeting for the society because, although I already had the support of the command element, I did not want the mentors to think I was using this support to pressure them to participate. Therefore, soliciting critiques from senior leaders in the headquarters gave them the chance to aid in the birthing of the society. I used their comments as a basis for making minor changes to the topics we would cover and then began ordering books and writing actual lesson plans.

Compiling a reading list is a critical step in creating a program of professional development. Undoubtedly, every officer from every service has valid opinions about which books are best. The most practical task, though, may be selecting the best *available* books. For example, table 1 is a list of books recommended to me in February 1991 by Gen Charles L. Donnelly, Jr., USAF, Retired.¹⁸

Additionally, each service publishes lists of recommended books, many of which can be found in Europe at Stars and Stripes Bookstores (for reduced prices). The merchandising manager for Stars and Stripes even furnished us copies of each service's current professional reading list (table 2). Further, Gen Colin L. Powell, chairman of the Joint Chiefs of Staff, recently approved Joint Pub 1, *Joint Warfare of the US Armed Forces*, which includes a useful reading list (table 2).¹⁹

Many officers are avid students of military history and have extensive personal

Table 1
General Donnelly's Reading List

-
- Bradley, Omar N. *A Soldier's Story*. London: Eyre & Spottiswoode, 1951.
- Bradley, Omar N., and Clay Blair. *A General's Life*. New York: Simon and Schuster, 1983.
- Copp, DeWitt S. *A Few Great Captains*. New York: Doubleday & Company, Inc., 1980.
- _____. *Forged in Fire*. New York: Doubleday & Company, Inc., 1982.
- Crevelde, Martin van. *Command in War*. London: Harvard University Press, 1985.
- Gaston, James C. *Planning the American Air War*. Washington, D.C.: National Defense University Press, 1982.
- Hallion, Richard P. *Strike from the Sky*. Washington, D.C.: Smithsonian Institute Press, 1989.
- Hemingway, Ernest. *Men at War*. New York: Bramhall House, 1979.
- Keegan, John. *The Mask of Command*. New York: Viking Penguin, 1987.
- Mrozek, Donald J. *Air Power and the Ground War in Vietnam: Ideas and Actions*. Maxwell AFB, Ala.: Air University Press, January 1988.
- Puryear, Edgar F., Jr. *George S. Brown*. Novato, Calif.: Presidio Press, 1983.
- _____. *Nineteen Stars*. Orange, Va.: Green Publishers, Inc., 1971.
- Warden, John A., III. *The Air Campaign*. Washington, D.C.: National Defense University Press, 1988.
-

libraries; some of my favorite titles are listed in table 3. Rather than spend a great deal of money purchasing the books on our reading lists,²⁰ though, we decided to request them from US government agencies that offer free books (table 4) to interested military officers (some agencies also have free videos and films for the asking).²¹ Usually, these agencies only require that you make your request on a valid military letterhead. Ordering a large reference library of these books gave our society members the flexibility to pursue independent research as well as study for seminar lessons.

This phase of the preparation process, however, could take more time than you think. For example, typing the book orders can be laborious if you are not an accomplished typist.²² Also, because books will not miraculously appear in

Table 2
Service Reading Lists

Army	Goulden, Joseph C. <i>Korea: The Untold Story of the War.</i> Grant, Ulysses S. <i>Personal Memoirs.</i> MacDonald, Charles Brown. <i>Company Commander.</i> Marshall, S. L. A. <i>Men against Fire.</i> Myrer, Anton. <i>Once an Eagle.</i> Pogue, Forrest C. <i>George C. Marshall.</i> Swinton, E. D. <i>The Defence of Duffers Drift.</i>
Navy	Eisenhower, David. <i>Eisenhower at War.</i> Keegan, John. <i>The Mask of Command.</i> Lehman, John F. <i>Command of the Seas.</i> Potter, Elmer B., and Chester W. Nimitz. <i>Sea Power.</i> Prange, Gordon W. <i>At Dawn We Slept.</i> Sharp, U. S. Grant. <i>Strategy for Defeat.</i> Smith, Perry M. <i>Assignment Pentagon.</i>
Marine Corps	Chandler, David G. <i>Campaigns of Napoleon.</i> Clausewitz, Carl von. <i>On War.</i> Futrell, Robert Frank. <i>Ideas, Concepts, Doctrine.</i> Herzog, Chaim. <i>The Arab-Israeli Wars.</i> Horne, Alistaire. <i>To Lose a Battle.</i> Mahan, Alfred Thayer. <i>The Influence of Sea Power upon History.</i> Slim, William. <i>Defeat into Victory.</i>
Air Force	Brodie, Bernard. <i>From Crossbow to H-Bomb.</i> Creveld, Martin van. <i>Command in War.</i> Keegan, John. <i>The Face of Battle.</i> Liddell Hart, Basil Henry. <i>Strategy.</i> Paret, Peter. <i>Makers of Modern Strategy.</i> _____. <i>Supplying War.</i> Weigley, Russell Frank. <i>The American Way of War.</i>
Joint Pub 1	Douhet, Giulio. <i>The Command of the Air.</i> Handel, Michael I. <i>Strategic and Operational Deception in the Second World War.</i> Hastings, Max. <i>The Korean War.</i> Howard, Michael Eliot. <i>The Theory and Practice of War.</i> Keegan, John. <i>The Face of Battle.</i> Moorehead, Alan. <i>Gallipoli.</i> Summers, Harry G. <i>On Strategy: A Critical Analysis of the Vietnam War.</i> Tedder, Arthur William. <i>With Prejudice.</i>

Table 3
Author's Suggested Titles

Bolger, Daniel P. *Americans at War.*
D'Este, Carlo. *Bitter Victory.*
Doolittle, James H., and Carroll V. Glines. *I Could Never Be So Lucky Again.*
Epstein, Joshua M. *Conventional Force Reductions.*
Henderson, George Francis. *Stonewall Jackson and the American Civil War.*
Holley, I. B. *General John M. Palmer, Citizen Soldiers, and the Army of a Democracy.*
Holy Bible.

Table 4
Free Books from Government Agencies

Bergquist, Maj Ronald E. *The Role of Airpower in the Iran-Iraq War.*
Cardwell, Thomas A. *Command Structure for Theater Warfare.*
Kenney, George C. *General Kenney Reports.*
Meyer, John G. *Company Command.*
Murray, Williamson. *Strategy for Defeat: The Luftwaffe, 1933-1945.*
Office of Air Force History. *The Harmon Memorial Lectures in Military History, 1959-1987.*
Warden, John A., III. *The Air Campaign.*

your unit mailroom the day after you send the order, you should consider spending six to nine months on preparations before seminars begin.²³ If necessary, you can hold seminars before your books arrive by relying on articles in military periodicals.

After ordering books and films, you should begin developing lesson plans. If you are the only cook in your wing kitchen, you may have to do all the work yourself. Ideally, though, several people will be involved, thereby reducing the amount of time spent on this task. Since your source books have not yet arrived, you will probably do your research at the base library, where a good selection of sources is available.²⁴ Again, accessibility of material to society members should be a

principal concern. For that reason, the model for the Douhet Society's three-year lesson plan (table 5)²⁵ draws on material available in a large reference library and emphasizes military theory, history, and contemporary developments, as well as the careers of selected air leaders. Naturally, if you order fewer books than we did, you could treat some subjects in greater depth.²⁶

You may wonder why we didn't spend less time on theory and more on studying contemporary events such as Operation Desert Storm. Our reasoning was that we wanted to encourage our members to think for themselves, avoid simple, spoon-fed ideas,²⁷ and challenge the military status quo, if they did so for valid reasons.²⁸

Table 5
Douhet Society Lessons

	1991	1992	1993
Jan	Preparation Phase	Battle of Britain Campaign Study (CS)	Interdiction
Feb	Preparation Phase	AFM 1-1	Ploesti Raid
Mar	Preparation Phase	FM 100-5	Drive to the Alps CS
Apr	Preparation Phase	Son Tay Raid/POWs	Gen George Kenney
May	Preparation Phase	The Air Campaign	Normandy/St. Lo Breakout CS
Jun	Preparation Phase	Gen Pete Quesada	Battle of the Bulge CS
Jul	Preparation Phase	North Africa CS	Implications of Conventional Forces in Europe Treaty
Aug	Desert Storm Air Campaign: Lessons Learned	Sicily CS	Mahan/Sea Power
Sep	Giulio Douhet and <i>The Command of the Air</i>	Changes in NATO	Strategic Bombing Theory/Stealth
Oct	Staff Ride to Northeast Italy	Clausewitz	Gen William Tunner/ <i>Over The Hump</i>
Nov	Air Doctrine Overview	Salerno CS	Campaign Planning
Dec	Low-Intensity Conflict (LIC)	Anzio/Cassino CS	Nagasaki/Hiroshima and Nuclear War Theory

According to Clausewitz,

theory exists so that one need not start afresh each time sorting out the material and plowing though it, but will find it ready to hand and in good order. It is meant to educate the mind of the future commander, or, more accurately, to guide him in his self-education, not to accompany him to the battlefield; just as a wise teacher guides and stimulates a young man's intellectual development, but is careful not to lead him by the hand for the rest of his life.²⁹

Theory, therefore, gives us the foundations we need for further study.

Clausewitz also validates our emphasis on the study of historical examples by pointing out that one can use them to

- explain ideas,
- show the application of ideas,
- support statements, and
- deduce doctrine.

He cautions us, however, to use these examples truthfully because the military, as it downsizes its forces, will ask for more from fewer people and therefore will require those people to be of rigorous intellectual and moral integrity.³⁰

As for our study of military leaders, we try to determine what these great captains learned from their martial sacrifices. J.F.C. Fuller comments that

because generalship is so largely built on character and personality, and because human nature remains constant, or practically so, there is no war in history from which we cannot learn something about leadership and command. Weapons, however destructive they may be, do not cancel out the need for courage, endurance, resolution, cool-headedness, audacity, and all the other moral virtues which go to build up generalship, if only because, in the words of old Marshall Saxe: "The human heart is the starting point in all matters pertaining to war."³¹

Learning from history also involves the study of geography. We take advantage of FIVEATAF's location and the source materials available by doing sequential studies of World War II campaigns (table 6), beginning with those that occurred in our area of responsibility (AOR).³² This helps us learn about terrain, climatology,

Table 6
Example of a Seminar Lesson Plan

Title: Campaign Study—North Africa

Theme: Military History

Education Mode: Seminar

Introduction: *(From your preliminary research, give a paragraph summary of the scope of the lesson, as well as any personal observations about it.)*

The campaign in North Africa is not the standard-fare campaign study. Operation Torch did not have a clearly defined military objective that would achieve a political end. The American forces made numerous mistakes at all levels of leadership. . . .

Lesson Objectives: *(Be specific in listing what you want each participant to gain from the seminar.)*

1. From memory, describe the Mediterranean Theater of Operations in terms of terrain, strategic choke points, and time/distance relationships for modern aircraft, land vehicles, and naval vessels.
2. Develop a working knowledge of the campaign from the perspective of air, land, and sea.
3. And so forth. . . .

Requirements: *(List the lesson's required reading.)*

Each officer will read

1. the attached handout.
2. "The Decision to Invade North Africa (Torch)," in *Command Decisions* (Washington, D.C.: US Army Center of Military History, 1987), 173–98.
3. and so forth. . . .

Discussion Agenda: *(Ask some searching questions that will require some thought about operational issues rather than learning by rote.)*

1. Why did the Allies land at Morocco? Was it necessary?
2. What might have happened if the Nazis had used Spanish airfields? Did the Allied plan have a branch for this?
3. Where did the Allies take the most risk during Torch?

Film: DF26149, *North Africa—November 1942 to November 1943*, may be shown.



The expertise of local military personnel is an asset to staff rides. These Italian army officers escorted Douhet Society members through antitank fortifications in northeastern Italy.

and factors of time and distance, as well as any limitations involved in the operational-level moves of military forces in the AOR. Additionally, we think that studying the campaigns sequentially helps us assess whether belligerents improved or regressed in their conduct of the war.

The *Air University Review Index* is a valuable reference at this stage of preparation.³³ Because the book indexes articles by author, title, and subject, you can quickly see if anyone has previously published on your seminar topic and can eas-

ily compile additional reading lists for your participants.³⁴ You should also begin to gather maps because members find it helpful to associate names of battle sites with actual locations in the AOR. Further, if your videotapes have arrived, you may review them to supplement your lesson plans.³⁵

Much of your work on the first lesson plan will entail discovery procedures, so the rest of the plans should take less time—a quantity that is also important to seminar participants because they have their own interests to pursue. For that reason, Douhet Society seminars are held only once a month (for no more than two hours),³⁶ and assigned readings require no more than one hour's preparation time per week.

Deciding on the best time to conduct seminars can be tricky; certainly, you should avoid scheduling them when key leaders have their weekly staff or division meetings. Consider holding the seminars during normal duty hours. After all, professional development is not just an "after hours" activity. And if senior mentors attend such meetings, their presence validates this point.

Your meeting room should accommodate seminar-type seating and be equipped with a chalkboard or dry-marker board, a viewgraph machine, a set of maps, a television set, and a videocassette recorder. Moreover, instructors may bring their own teaching aids. All of these items are quite helpful, but the instructors themselves are the proof of the pudding.

Because instructors need at least three months to prepare adequately for their seminars, you should give them a draft lesson plan, a set of videotapes, and an additional packet of readings well in advance of their scheduled session. Although you may have to teach the first few seminars, as interest picks up, others will volunteer to help. For example, a colonel in our group gave a superb lesson on low-intensity conflict (LIC) in El Salvador. Our senior mentor delivered a

moving lecture on the raid on Son Tay, North Vietnam, and his experiences as a prisoner of war. A major is a trained archaeologist who tours ancient battlefields in Greece and Turkey during his leave time. We've booked him for a seminar later this summer. More than likely, your wing has talent in abundance, and the more people involved in teaching, the more interest there is in the program. In fact, your participants may have so much fun that meeting once a month won't be often enough.

Without a doubt, the success of your seminars depends on the people who lead them. If the instructors are prepared, flexible, motivated, and patient, everyone will learn something and have fun in the bargain. As a courtesy, our seminar leaders give the senior mentor a talking paper on the lesson about a week beforehand. This gives the mentor a chance to review the material and prepare any remarks he may wish to make during the session.

A few procedural suggestions. We begin the seminar (and be sure you begin on time) by showing a 15-30 minute videotape on some aspect of military history. Not only is this informative, but it allows latecomers to stay in step with the seminar discussion. After the tape, the instructor briefly covers the lesson objectives and leads discussion on the questions in the lesson plan. Although participation varies, depending on the subject, most people will take part in the discussion if you choose and order your questions wisely. On the rare occasions when discussion lags, you can have a "hip pocket" role-playing exercise ready (e.g., "Okay General _____ [fill in with a participant's name], if you were chief of staff, what would you do in this situation?"³⁷). More than likely, the allotted time will expire before discussion does. Before dismissing, pass out the lesson plan and handouts for the next session and thank everyone for attending.

Another worthwhile entree in the professional-development cookbook is the

staff ride or historical field trip.³⁸ More specifically, a staff ride is a "systematic preliminary study of a selected campaign, an extensive visit to the actual sites associated with that campaign, and an opportunity to integrate the lessons derived from each."³⁹ The Douhet Society conducted an enjoyable three-day ride in northeastern Italy—a section of our AOR—in September 1991.⁴⁰ Be forewarned, though, that staff rides are akin to planning a major flying deployment insofar as they require considerable preparation.⁴¹

Prior to the trip, we assembled a study packet that included highlights of the area, copies of pertinent historical articles, and selected maps for calculations of time and distance. After clearing the concept for the ride with the senior mentor, we began detailed preparations.⁴² A lengthy discussion of tips for planning staff rides is beyond the scope of this article, but take our word that it's worth the effort.

Our staff ride would not have gone as smoothly as it did without the assistance of an Italian army officer in our headquarters. He conducted all preliminary site reconnaissance, booked hotels and restaurants, negotiated group rates at museums, and arranged for English-speaking tour guides in many locations. To reward him, we chipped in to pay for his hotel and meal expenses (since he was on leave).

Our ride included visits to the Brenta, Tagliamento, Piave, and Isonzo rivers, all of which are critical to the NATO land defense of the area; tours to the Gorizia Gap and the World War I battle site at Redipuglia/Colle S. Elia; a stop at the ancient, star-shaped fortress city of Palmanova; a visit to an Italian army Alpini brigade at Tarvisio; and a guided tour of the triborder area of Austria-Italy-Yugoslavia (now Slovenia). Other highlights included brief map/situation exercises at Monte S. Simone, Vittorio Veneto, and Nervessa di Battaglia (along the Piave River). Interspersed between the hectic schedule of mental push-ups, hiking, and

window gazing were some thought-provoking discussions over mouth-watering Italian meals. After returning, each participant wrote a formal analysis of "The Defense of Northeast Italy" for the senior mentor. Needless to say, if time and money permit, we would like to conduct a staff ride every year.⁴³

Despite all that's been said, your reaction still may be, "So what? I'm a captain in a composite wing, and I hate reading books. How does this article apply to me?" Well, it may not! But tactical pilots usually check with the intelligence section before they plan their flying missions, and this article represents fresh "intel" from a year-long campaign of professional-development missions. Even if you hate reading books, I imagine I could get your attention if I brought together some key planners of the Persian Gulf air cam-

paign to talk shop. Only foolish people refuse to learn from the experiences of others. Let's not wait until the start of the next war to get ready professionally!

All USAF officers could stand to learn more about different missions and specialties. Whether it's visiting the engine shop, hopping a ride in a KC-135 tanker that is refueling your squadron, or driving out to the air-to-ground gunnery range to watch A-10s practice weapons delivery, there is much we can learn from each other. When people with whom you'll go to war are across the flight line instead of across the country, you would miss a great opportunity by not taking the time to pick their brains. Will a "Horner Huddle," a "Mitchell Meeting," a "Quesada Quorum," or a "Schwarzkopf Society" work at your composite wing kitchen? Why not? You tell us. You're the chef.⁴⁴ □

Notes

1. Headquarters FIVEATAF (NATO) is subordinate to Headquarters Allied Air Forces Southern Europe (AFSOUTH) and is responsible for the air defense of Italy in peace and war and for planning a full range of conventional and nuclear operations. It ensures readiness in the Southern Region through tactical evaluations and exercises. In wartime, it commands Italian air units, two tactical air control centers, and NATO-assigned reinforcements. Headquarters FIVEATAF Public Information Office flyer, "V FIVEATAF," November 1991, 1-2.

2. Obviously, not everyone will be interested in professional development. Responses will range from "I don't have time" to "The only history I need to know is the history of a Maverick missile from the pickle button to impact." Note also the observation of Maj Price T. Bingham in his article "Professionalism in the Air Force," *Air University Review* 32, no. 4 (May-June 1981):

The Air Force is a demanding profession that requires tremendous dedication. In the past, it has attracted many highly capable individuals, often motivated by a well-developed sense of idealism and service. Yet in a few years, these same individuals have left the service, often due to their disappointment with the realities of the Air Force. This accumulating evidence of a weakened officership, combined with an increasing international threat, demands that the Air Force move immediately to encourage the development of true professionalism. The idealism and integrity of the officer corps must not be allowed to be choked out by the weeds of ignorance and careerism. (Page 100)

I feel strongly that professional development should be voluntary—not mandatory. With good leadership, others will become interested and remain so.

3. American students of the operational art have conducted staff rides for years. In 1910 students at the US Army Staff College at Fort Leavenworth, Kansas, conducted a "voluntary" (no mileage reimbursement) historical ride of Sherman's campaign through Georgia. I.B. Holley, *General John M. Palmer, Citizen Soldiers, and the Army of a Democracy* (Westport, Conn.: Greenwood Press, 1982), 192.

4. We chose "Douhet Society" in honor of Giulio Douhet, who wrote *The Command of the Air*. General Douhet, an Italian artillery officer, first articulated a theory of air power and influenced air power advocates around the world. Although we do not agree with everything Douhet zealously wrote or did, we thought it appropriate that the society honor him since we are guests in his native land and are still indebted to him for some of air power's current doctrine. Also keep in mind that choosing a name that has lineage with your unit or location could generate interest in your program.

5. Our purpose is not to sell food, but to get a working recipe from our cookbook out to the troops. Don't fool yourself, though. It can get hot in a professional-development kitchen. If you're going to be the only cook, get ready for some hard, thankless work. Conversely, don't be afraid to eat your own cooking or listen to the gut-level criticism you receive.

In the early stages of organizing the society, more than one mentor warned that this effort would take up too much of my time. *They were right*. Nevertheless, it was well worth the trouble, personally and professionally. My peers have been very supportive.

6. Our senior mentor was a prisoner of war in North Vietnam.

7. One of our objectives was to provide free books to members. Limiting our membership to officers only, we rea-

soned that if noncommissioned officers were later interested (our initial survey showed no such interest), we could welcome them at that time.

The books that we ordered were to be used for professional development. Most participants will be very happy to receive the fine books that are available. Indeed, I have seen interest increase dramatically after distribution of the USAF "Blue Book" series on World War II.

When you order books, allow for the normal turnover of seminar participants. Anticipating newcomers, we ordered 20 percent more books than we would have. Also make arrangements for storing books that arrive while you (the one who distributes the books) are on temporary duty. Good administration is necessary because partial and late shipments could occur overseas.

8. Lt Col Bruce L. Ullman offers the following goals for professional development on page 24 of his article "Officer Professional Development for Lieutenants," *Airpower Journal* 4, no. 3 (Fall 1990):

Rank	Need
Newly commissioned	Solid grounding in officership
Company grade	Leadership qualities geared towards one's job
Field grade	Knowledge and perspective to add breadth
Colonels and above	Preparation for strategic scope in planning/execution

See also Lt Col Stephen C. Hall, "Shortchanging Our Young Officers: Military Traditions Denied," *Airpower Journal* 1, no. 2 (Fall 1987): 48-57.

9. AFP 36-13, *Officer Professional Development Guide*, March 1989, 5.

10. "Sleeper, Cheaper Air Force Duds Tailored for the 'Trim, Tough' Image," *Stars & Stripes*, 2 November 1991, 1-2. See also *Tomorrow's Air Force: Reshaping the Future*, videotape, ca. November 1991.

11. AFM 1-1, *Basic Aerospace Doctrine of the United States Air Force*, 2 vols., March 1992. Note the following comments on professional development:

I expect every airman and, in particular, every noncommissioned and commissioned officer to read, study, and understand volume I and to become fully conversant with volume II. The contents of these two volumes are at the heart of the profession of arms for airmen [emphasis added]. (Vol. 1, page v)

Every officer (commissioned and noncommissioned) should make the professional development of subordinates a high-priority task. Painstaking preparation is required to sustain the quality of Air Force leadership in peace and war. All officers should be accountable for the professional development of their subordinates. (Vol. 1, page 19)

12. This advice came from a former instructor and mentor of mine, Dr Harold Winton.

13. "If the staff had to bow to superior rank merely because it was superior without an opportunity to weigh objections on their merits, then the army could never hope to formulate an objective military policy to present to the nation." Holley, 206.

Note also Gen David M. Schlatter's comment about Air University's mission in 1946: "AU must orient all instruction on the future, pursue forward thinking, and resist conservatism. Officers must be molded with the 'ability and capability for fundamental, original thought' [emphasis added]." Lt Col Richard L. Davis and Lt Col Frank P.

Donnini, eds., *Professional Military Education for Air Force Officers: Comments and Criticisms* (Maxwell AFB, Ala.: Air University Press, June 1991), 18.

14. The senior mentor should be the commander of the USAF unit that hosts a program of professional development. People who voluntarily plan and organize such programs can do so as part of their additional duty.

Maj Gen Fox Conner's mentoring had a lasting effect on General Eisenhower. The fact that Conner was interested in Eisenhower motivated the future president to study and think. Lt Col Cole C. Kingseed, "Mentoring General Ike," *Military Review*, October 1990, 26-30.

Gen George C. Marshall encouraged his young officers to read and analyze books; he also hardened them by generating "friction" in their tactical exercises. See also Omar N. Bradley and Clay Blair, *A General's Life: An Autobiography* (New York: Simon and Schuster, 1983), 63-73; and Forrest C. Pogue, *Education of a General, 1880-1939* (New York: Viking Press, 1963), 250-53.

15. Interestingly, in the near future, those few officers who return to flying jobs from staff positions might well find that their captains have more combat experience than they.

16. Some of our supporters do not attend seminars. One USAF colonel in the headquarters has never attended a meeting, yet he constantly feeds me thought-provoking articles that he has read. Many of them find their way into handouts that I prepare to complement the lesson plans.

17. Asking the right questions in the lesson plan and in class is helpful. If you know the general span of experience of seminar participants, you can ask questions that draw on those experiences.

18. General Donnelly, former commander of Allied Forces Central Europe and commander in chief, US Air Forces in Europe, has lectured and written on air campaign planning.

19. Joint Pub 1, *Joint Warfare of the US Armed Forces*, 11 November 1991. See also Soldier Training Pub 25-II-MQS, 21 January 1987 (Army); and Commandant's Reading List, 21 March 1990 (Marine Corps).

20. A number of good references can give you an idea of what you should be reading.

AFM 1-1. *Basic Aerospace Doctrine of the United States Air Force*. 16 March 1984. If you have access to a library copy, annex B contains a selected bibliography and reading list.

Air University Suggested Professional Reading Guide. Maxwell AFB, Ala.: Air University, 1989. This is the "official" professional reading guide, according to Air University.

Berlin, Robert H. *Military Classics*. Historical Bibliography no. 8. Fort Leavenworth, Kans.: US Army Command and General Staff College, Combat Studies Institute, January 1988. Dr Berlin answers his students' questions about what to read "to further explore the history of war and the military profession" (page v). (Free)

Eiserman, Maj Frederick A. *War on Film: Military History Education*. Fort Leavenworth, Kans.: US Army Command and General Staff College, Combat Studies Institute, 1988. A one-stop look at how and where to get good films and videos on war. Though primarily geared towards an Army audience, this bibliography could help you select films/videos for your seminars. (Free)

Hallion, Richard P. *The Literature of Aeronautics, Astronautics, and Air Power*. Washington, D.C.: Office of Air Force History, 1985. Written for Project Warrior, this bibliographic essay is of particular interest to scientists and engineers. Airmen should also find it useful. (Free)

Jessup, John E., Jr., and Robert W. Coakley. *A Guide to the Study and Use of Military History*. Washington, D.C.: US

Army Center of Military History, 1979. This excellent guide is a useful tool for young officers embarking on a study of their profession. It has information on what to look for and where to find it. (Free)

Miller, Samuel Duncan. *An Aerospace Bibliography*. 1971. New Imprint. Washington, D.C.: Office of Air Force History, 1986. Primarily for researchers, this reference includes information about books, periodical literature, and authors. (Free)

Nye, Roger H. *The Challenge of Command: Reading for Military Excellence*. Wayne, N.J.: Avery Publishing Group, Inc., 1986. Colonel Nye wrote this book to answer the question, Sir, what should I read? He answers that question nicely.

Paszek, Lawrence J. *A Guide to Documentary Sources*. 1973. New Imprint. Washington, D.C.: Office of Air Force History, 1986. Primarily a research guide, this book helps you locate "primary and secondary documents on the Air Force." (Free)

United States Military Academy. *Professional Officers Reading Guide*. West Point, N.Y.: USMA Department of History, 1990. Written from the soldier's perspective, this guide encourages reading on war. Includes a good selected bibliography. (Free)

Westenhoff, Lt Col Charles M., comp. *Military Air Power: The CADRE Digest of Air Power Opinions and Thoughts*. Maxwell AFB, Ala.: Air University Press, October 1990. This collection of quotes, comments, and bombast presents readers a mosaic of thought on air power. Includes an excellent annotated bibliography. (Free)

In addition, Stars and Stripes Bookstores overseas provide a professional military reading program to their customers, as well as discounts on bulk orders. Another good reference is *Project Warrior—A Recommended Professional Reading List*. Ask your base librarian for a copy. Finally, good military periodicals like *Airpower Journal*, *Air Force Magazine*, *Military Review*, US Naval Institute *Proceedings*, and so forth, publish useful book reviews in each issue.

21. Write or call the following agencies to request a list of their publications. All of these agencies have generously sent us free material.

AUCADRE/PTPB
401 Chennault Circle
Maxwell AFB, AL 36112-6428
DSN 493-6452

(*Air University Review Index*, Air University Press books, CADRE papers, Airpower Research Institute papers, etc.)

Commander, US Distribution Publications Center
2800 Eastern Blvd.
Baltimore, MD 21220
DSN 335-7800

(US Army Green Book series and other good books on land forces)

Director, Marine Corps Historical Center
Headquarters USMC
Washington Naval Yard
Washington, D.C. 20374-0580
DSN 288-3840

(Official Marine Corps histories)

Headquarters USAF/CHO
Bolling AFB
Washington, D.C. 20332-6098
DSN 297-5794

(Official USAF Blue Book series and other good books on air power)

National Defense University Press
Fort Lesley J. McNair
Washington, D.C. 20139-6000
(202) 475-0948

(Contemporary books on military topics by defense authors)

USACGSC/CSI
Fort Leavenworth, KS 66027-6900
DSN 552-3897

(Leavenworth papers, bibliographies, research studies, and some reprints of military classics)

Department of the Army
United States Military Academy
Department of History
West Point, NY 10996

(*Professional Officers Reading Guide*)

Department of the Air Force
United States Air Force Academy
Department of History
USAF Academy, CO 80840-5701

(*Modern Warfare and Society*, vol. 1)

Department of the Army
United States Army War College
Strategic Studies Institute
Carlisle Barracks, PA 17013-5050
DSN 242-4205/4402

(*Campaign Planning*)

A few more suggestions: (1) Give your local Property Disposal Office an official letter that includes your unit DODIC supply number and the name of an individual authorized to pick up books. This could give you first cut at some good military history books that your base/post library may be disposing of as salvage. (2) Visit your base/post library to see what source books and films are available. (3) Check AFP 700-34, *Air Force Catalog of Visual Information Materials*, June 1989, for visual aids to supplement your seminars.

22. We spent about 50 hours typing the package proposal, the initial survey, and letters to different agencies; three hours telephoning overseas book agencies; 24 hours distributing books; and four hours developing each lesson plan. Obviously, you should be sure that your boss and senior mentor will give you the time and support that you need.

23. If you are overseas, you may have to wait six to 10 months for your books to arrive, but don't let this keep you from getting started. In the meantime, you could be developing your entire portfolio of lesson plans. Remember that books are an "extra"; you can still develop professionally by discussing articles or listening to briefings. A credible campaign study, though, requires good reference books.

24. While you are waiting, you can compile a list of references from the information you requested from various agencies (see note 21). For example, for the campaign study of North Africa, you can select titles from the US Army Green Books, the USAF Blue Books, and the *History of the United States Naval Operations in World War II* series and add the appropriate page numbers to the lesson plans after the books arrive.

25. Note that we did not cover military captains from antiquity, Pacific campaigns of World War II, the Korean War, the Vietnam War, or recent Arab/Israeli wars. These

are worthy topics, and the latter four would be well suited for officers in those geographic areas. However, one-third of our participants will turn over each year, so any in-depth study we do must rely on basic theory and doctrine. But we did order books on topics we wouldn't cover so that participants could study them on their own.

26. For example, you could devote a series of lessons to preparation for a staff ride.

27. I. B. Holley, Jr., *The Use of Military History in the U.S. Armed Forces*, Contract no. MDA903-86-C-0326 (Washington, D.C.: Toborg Associates, Inc., 1987).

28. In an article on "The Military Professional" in the *Air University Review* of January-February 1975, Gen Ira C. Eaker exhorted readers to "examine continually all traditions, customs, and procedures of the past to see if they meet today's needs and conditions. Hold on stubbornly to the good but eliminate promptly those not pertinent to these times and requirements" (page 10).

29. Carl von Clausewitz, *On War*, ed. and trans. Michael Howard and Peter Paret (Princeton, N.J.: Princeton University Press, 1976), 141.

30. *Ibid.*, 141, 170-74.

31. J.F.C. Fuller, *Grant and Lee: A Study in Personality and Generalship* (Bloomington, Ind.: Indiana University Press, 1957), 6.

32. Look beyond Air Force—only accounts when you design and research campaign studies; that's why we ordered both Army and Air Force official histories. Remember too that these readings will give you a good foundation for writing a military strategy analysis and assessment paper on US strategic air operations in Europe during World War II, as is required at Air War College.

33. Maj Michael A. Kirtland, *Air University Review Index* (Maxwell AFB, Ala.: Air University Press, October 1990). You can request copies of articles from back issues of both *Air University Review* and *Airpower Journal* from AUCADRE/PTPB (see note 21).

34. If certain journals aren't available at your library, ask a librarian to request them through interlibrary loan.

35. We have ordered videotapes through Detachment 3, 1367th Audiovisual Squadron at Rhein Main Air Base, Germany, with excellent results.

36. We did this to ensure that supervisors would allow their people to participate—not to avoid complaints from participants. Support from the command element has been good.

37. Role playing is best conducted with the understanding that the principle of nonattribution is in effect and that all statements, regardless of who makes them, are subject to intense scrutiny.

38. Lt Gen F. Michael Rogers noted that "the military art cannot be mastered either solely in the classroom, as within the graduate or precommission training, or solely by experience, as with participation in warfare or on-the-job training." "Why Professional Military Education?" *Air University Review*, July-August 1975, 5.

39. William G. Robertson, *The Staff Ride* (Washington, D.C.: US Army Center of Military History, 1987), 5. See appendix B for addresses and phone numbers of agencies that assist in the planning of staff rides.

40. A purist might not call our journey a staff ride because we did not limit ourselves to one battle or campaign and because we were not led by an expert historian. Rather, our focus was on the operational defense of the area.

41. I spent about 150 hours researching and preparing for a staff ride to Sicily. Although a real-world mission forced us to cancel the trip, I learned lessons that will be useful in planning other rides.

42. Some practical questions to consider: Who is paying? Do you rent a bus, drive a government bus, or take private vehicles? Can wives/family members attend at their own expense? How many seminar participants have a valid government driver's license?

43. Salerno, Anzio, Monte Cassino, and Gran Sasso are some of the places we have in mind.

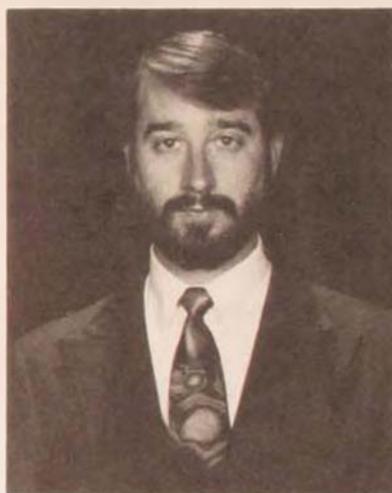
44. Professional development societies are tailor-made for composite wings because such programs tend to enhance the same bonding process that the wings are trying to achieve.

If you would like to have copies of our lesson plans, send a blank 5 1/4" or 3 1/2" diskette in a self-addressed stamped envelope to Headquarters FIVEATAF/FACDGC, APO AE, 09630.



Winter 1992

IRA C. EAKER AWARD WINNER



Mr Christopher M. Centner

for his article

Ignorance Is Risk: The Big Lesson from Desert Storm Air Base Attacks

Congratulations to Mr Christopher M. Centner on his selection as the Ira C. Eaker Award winner for the best eligible article from the Winter 1992 issue of the *Airpower Journal*. Mr Centner receives a \$500 cash award for his contribution to the Air Force's professional dialogue. The award honors Gen Ira C. Eaker and is made possible through the support of the Arthur G. B. Metcalf Foundation of Winchester, Massachusetts.

If you would like to compete for the Ira C. Eaker Award, submit an article of feature length to the *Airpower Journal*, 401 Chennault Circle, Maxwell AFB AL 36112-6428. The award is for the best eligible article in each issue and is open to all US military personnel below the rank of colonel or equivalent and all US government civilian employees below GS-15 or equivalent.

ONE TARGET, ONE BOMB IS THE PRINCIPLE OF MASS DEAD?

LT COL EDWARD MANN, USAF

lever (n) *bar pivoted on a fixed point to lift something . . . means of power or influence.*

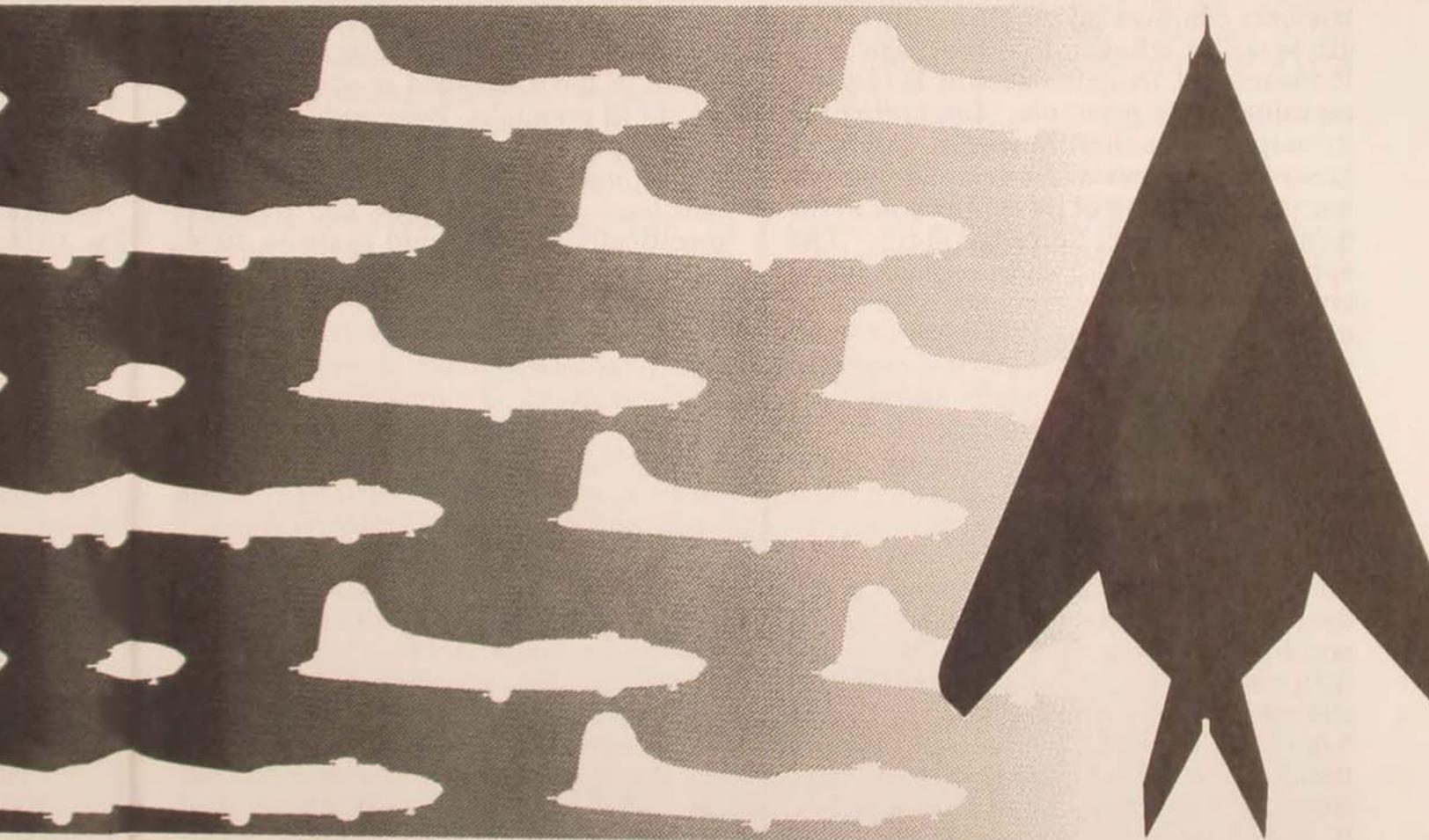
leverage (n) *action or power of a lever.*

—*The Oxford Minidictionary*

A LEVER EXERTS real power—leverage—only when it pivots on a fixed support point or fulcrum. Without the fulcrum, a lever is just a stick. Warriors know that, under the right circumstances, a stick is not a bad

weapon—especially if the enemy is unarmed. Sometime in the ancient past, warriors probably achieved a great deal of leverage by using sticks against other warriors who hadn't yet figured them out. This was probably the original technological solution to the neverending problem of warfare: How do you gain sufficient leverage over an enemy to defeat him and achieve your political purposes?

Actually, the stick remains a pretty good choice for hand-to-hand combat—no doubt the reason why police officers carry billy clubs. Nonetheless, you won't gain



much by bashing people at random with your stick. You need leverage to get the most out of it, and this kind of leverage requires a fulcrum forged from ideas—principles, concepts, and strategies of employment.

Technology and ideas have a dynamic relationship. Sometimes concepts of employment lead to new technologies; sometimes new technologies require different concepts of employment. Still, we hold some principles of warfare to be nearly—if not entirely—immutable. Concepts and strategies of employment should not only be responsive to technological change, but should also be governed by sound, enduring principles.

In light of the effectiveness of air operations during Operation Desert Storm, some people have challenged one of the supposedly immutable principles of warfare—the concentration of combat power (i.e., mass). Certainly, the fact that stealthy bombers can now accomplish with a single weapon what not so long ago took thousands of weapons should lead us to reevaluate this principle. Discarding the principle altogether, however, would be going too far. Instead, we should upgrade our understanding of its application in the new technological environment. The application of stealth and precision delivery technologies in accordance with a new understanding of the principle of mass will provide tremendous leverage in future combat environments and will be critical to a successful military resolution. To correctly evaluate this dynamic between technology and mass, we must begin at the beginning.

For centuries, warriors have understood that “concentrat[ing] combat power at the decisive time and place”¹ is a sine qua non for victory on the battlefield. In the fifth century B.C., Chinese general and strategist Sun Tzu wrote, “If I am able to use many to strike few at the selected point, those I deal with will be in dire straits.”² But possession of greater power, in and of itself, does not decide the battle;

rather, concentration of sufficient power at the proper time and place is the critical factor. Flavius Vegetius Renatus recognized this principle in the fourth century A.D.: “An army too numerous is subject to many dangers and inconveniences [but since] victory in general is gained by a small number of men,” one must concentrate the best soldiers at critical points.³

No less an authority than Napoléon himself said, “To keep your forces united, to be vulnerable at no point, to bear down with rapidity upon important points—these are the principles which *insure* victory” (emphasis added).⁴ Although technology had progressed considerably by Napoléon’s time, the principle of concentrating combat power hadn’t changed much. That is, the massing of bows and arrows and men with swords in 400 B.C. had much the same impact as the massing of cannons and muzzle-loading rifles 22 centuries later.

During the next 150 years, technology advanced quite rapidly, while the concentration of force changed in application—but not in principle. Because of their failure to fully understand the new application of mass, soldiers on two continents paid huge prices in blood and treasure. Specifically, in 1861 and again in 1914, vastly improved but essentially immobile firepower gave defensive forces preeminence over offensive forces, so that massed offensives failed miserably against concentrations of rapid-fire defensive weapons. The failure to recognize this defensive advantage cost almost an entire generation of young men their lives in the American Civil War and in World War I.

In World War II, however, the addition of heavy-duty firepower to mobile, mechanized forces restored the advantage to the offense. A properly executed offensive could break the enemy’s will so rapidly that defensive forces were reduced to rabble collected by the infantry that followed in the wake of the awesome mechanized force which achieved breakthrough and victory. Again, the efficacy of the princi-

ple of concentration of force had not changed, but people who applied it properly in the light of new technologies won easy victories over adherents of the old concept of mass. One of the technologies that became dominant in this new environment was air power. The massing of air power at the tactical level—a dream of World War I airmen—became a reality in the latter years of World War II.

During World War I, Col (later Brig Gen) William (“Billy”) Mitchell became a strong advocate of the concentrated application of air power. His crowning achievement in that war was the accumulation of a “strategic reserve” air force of over 1,000 airplanes for the assault on the salient at Saint-Mihiel, France, in September 1918. This force was “to be put into a central mass and hurled at the enemy’s aviation, no matter where he might be found, until complete ascendancy had been obtained over him in the air.”⁵ The tactic was stunningly successful.

After the war, Mitchell and others called for an independent air force, arguing that central control of air forces by an experienced airman would exploit the strengths of concentrated air power, while the continued subordination of air power to ground forces would vitiate any such advantage. Mitchell’s ardor cost him a

court-martial and removal from the armed services. Nonetheless, during the 1920s and 1930s, airmen began to view massed air power as a shortcut to defeating an enemy.

In 1921 Giulio Douhet argued that “modern aviation” was capable of winning wars independently of surface forces if an *independent air force* could meet two conditions: (1) win command of the air and (2) exploit that advantage “with forces capable of crushing the material and moral resistance of the enemy.”⁶ According to Douhet, this could be done by massing “battleplanes”—large bombers equipped to defend themselves from pursuit planes. The concentrated firepower of a formation of battleplanes would easily destroy the pursuit planes, which sacrificed heavy armament in favor of speed and maneuverability. Further, the battleplanes would choose the time and place of engagement (insofar as they could fly routes of their own choosing) and thereby make the interceptors’ task that much more difficult. To use the phrase of a later

In past wars, air forces had to use large numbers of aircraft to gain leverage over enemy air defense systems and achieve military objectives. Here, B-17s fill the skies over war-torn Europe, providing a classic example of the principle of mass.



time, the bombers would always get through. Thus, it would be important not to dissipate strength in residual efforts such as pursuit, but to carefully observe the ancient principle of mass.⁷ Indeed, the fledgling US Army Air Corps used its B-17s and B-24s in just such a manner in World War II.⁸



During the Vietnam War, the massing of aircraft was still important. However, thanks to technological improvements, we could inflict the necessary amount of damage with fewer aircraft. B-52s such as this one above, provided a powerful lever of force during the Linebacker campaign.

Because Allied air planners were aware of the value of massed attacks, the size of bomber raids grew as fast as resources allowed. For example, in 1942 and early 1943 when the mighty Eighth Air Force was in its infancy and resources were strained, only 20–80 bombers conducted raids on enemy targets. These numbers gradually rose, first to the low hundreds, then to 600 or 700, and finally to over 1,000. Even then, Allied air raids targeted only one or two main enemy complexes, for two reasons.⁹ First, given the current state of technology, the planes had to drop

literally thousands of bombs in order to hit their target. Second, it took huge numbers of bombers to overload or gain leverage over well-established air defense systems.

However, the belief that bombers could successfully defend themselves proved to be a serious error. Even though the massing of bombers meant that fighters paid a price for their attacks, the exchanges were not favorable for the larger aircraft (certainly not nearly as favorable as Douhet predicted).¹⁰ Not until large numbers of long-range escort fighters began protecting the bombers could the latter successfully conduct deep raids against heavily defended targets.¹¹ In other words, the achievement of satisfactory target damage called for the heavy massing of both bombers and escort aircraft at the tactical level. On a day-to-day basis, then, the Allied air forces could achieve only tactical-level objectives. Operational- and strategic-level objectives were realized only through the *cumulative* destruction of targets.

As late as the Vietnam conflict, this conception of the principle of mass was still operative, although “force packages” were somewhat smaller due to the increased carrying capacities and accuracy of bombers and fighter-bombers. In early 1965 a typical Rolling Thunder force package contained just over 100 aircraft—as did the Bolo counterair operation of December 1966—and Linebacker I missions over North Vietnam in late 1972 typically included 50–60 aircraft. (One may at least partially account for the relatively small size of these packages by noting that they carried a mix of conventional and laser guided munitions, the latter presaging Operation Desert Storm.) Linebacker II missions were conducted by nine-ship “waves” of B-52 bombers (usually three waves totalling 27 aircraft) supported by various protection systems (i.e., internal electronic countermeasures [ECM], jamming aircraft, and Wild Weasel aircraft) and were preceded by airfield strikes con-

ducted by solo F-111s (again presaging Desert Storm).¹²

Although the Air Force addressed the problem of survivability in Vietnam somewhat differently than it had in other conflicts, combat air patrols (CAP) protected defenseless aircraft such as the F-4 fighter-bomber, just as fighter escorts had protected bombers in World War II. Eventually, however, electronic support equipment and aircraft augmented CAP. For instance, detection equipment warned of enemy radar observation and tracking, both airborne and ground based (the addition of radar-directed anti-aircraft fire control and surface-to-air missiles increased the lethality of the ground-based threat). Further, raid packages now included electronic jamming aircraft such as the EB-66, as well as F-105 and, later, F-4 Wild Weasel aircraft equipped with radar-detection equipment and antiradiation missiles. Finally, B-52s and a few other large aircraft relied on internal radar-jamming equipment—just as fighter-bombers depended on speed and maneuverability—to survive in the target area. Thus, with the exception of the F-111, 50–60 aircraft were still necessary to achieve sufficient mass at the tactical level.

With the advent of Desert Storm, however, dramatic video images made clear that it no longer took hundreds of bombers dropping thousands of bombs or even tens of bombers dropping scores of bombs to destroy a single target. Now one aircraft, often delivering only one weapon, could destroy one target (or at least one “aiming point”). Bombing has become so precise that weapon systems can routinely identify not just the building or the room, but the *corner* of the room that will bring everything down—even the vent shaft that will put the bomb *inside* the shelter. This extraordinary development must surely change our thinking about the employment of air power. We can now view the venerable military principle of mass from a different perspective—one which allows us at last to fulfill many of the once-

extravagant dreams of early air power theorists.

Precision guided munitions (PGM) now make it possible to “mass” against a target with only a handful of airplanes (often-times, just one plane is sufficient, especially if it is stealthy). Although this development should change our view of the application of mass, it does not alter that ancient principle. Rather, it allows us to shift our emphasis from the tactical to the operational level, the effects of which were amply demonstrated in Desert Storm.

This shift in emphasis to the operational and/or strategic level merits close scrutiny. At the tactical level, planners are interested in specific outcomes: Who won the engagement? Was the target destroyed? On the other hand, the operational level is concerned with campaigns—achieving higher military goals through the combined effect of winning many battles (e.g., How have we affected operation of the enemy’s command and control?). The strategic level, of course, is our ultimate objective: Will the enemy do what we want him to do? Until we achieve strategic-level objectives, we must keep working at the tactical and operational levels.

Two key advances from the Vietnam era effectively combined in Desert Storm to elevate the use of mass from the tactical to the operational level. First, PGMs were used routinely by aircraft that could penetrate enemy defenses either alone or in small numbers. Second, speed, stealth, advanced electronics, and the systematic destruction of air defenses ensured the survivability of those aircraft (although we must remember that an aggressive enemy with an active air defense system could make survivability much less certain than it was in Desert Storm).

Still evident in the Gulf War were large strike packages of 50–60 nonstealthy fighter-bombers which lacked precision targeting systems and/or PGMs. But solo F-117s daily attacked the most heavily

defended target sets (often in Baghdad itself), receiving no battle damage yet consistently placing bombs within inches or feet of their precise aiming points. The F-15E, F/A-18, and venerable F-111 and A-6E achieved similar results in only slightly less demanding environments, although they usually required ECM and CAP.¹³ Thus, technical advances have allowed us to overcome, at least for the present, the twin reasons for massing aircraft against an enemy target—to achieve the desired level of destruction and to defeat target-area defenses.

Now that solo stealthy aircraft can penetrate defenses and destroy most targets or individual aiming points in a single strike, the massing of strike packages against targets is probably counterproductive since it exposes aircraft and crews to enemy defenses without increasing mission effectiveness. However, three factors argue against becoming overly reliant on stealth and PGMs: (1) future enemies may be more aggressive than the Iraqis, (2) not all air defense systems are as easily dismantled as those in Iraq and Kuwait, and (3) someone will eventually perfect an anti-stealth defense system.

Even so, as long as we are able to operate as we did in Desert Storm, we can now achieve tremendous leverage by massing more productively at the operational and strategic levels. Previously, the necessity of massing at the tactical level produced operational and strategic effects that were cumulative in nature. That is, hundreds of airplanes attacked only one or two major targets each day, allowing the enemy to begin repairs between attacks. Bombers had to revisit targets after a few weeks, and planners could only hope that the attacks were outstripping the enemy's repair efforts. Thus, concentration on a key target set would gradually dismantle that set and have an operational- or strategic-level effect over time.

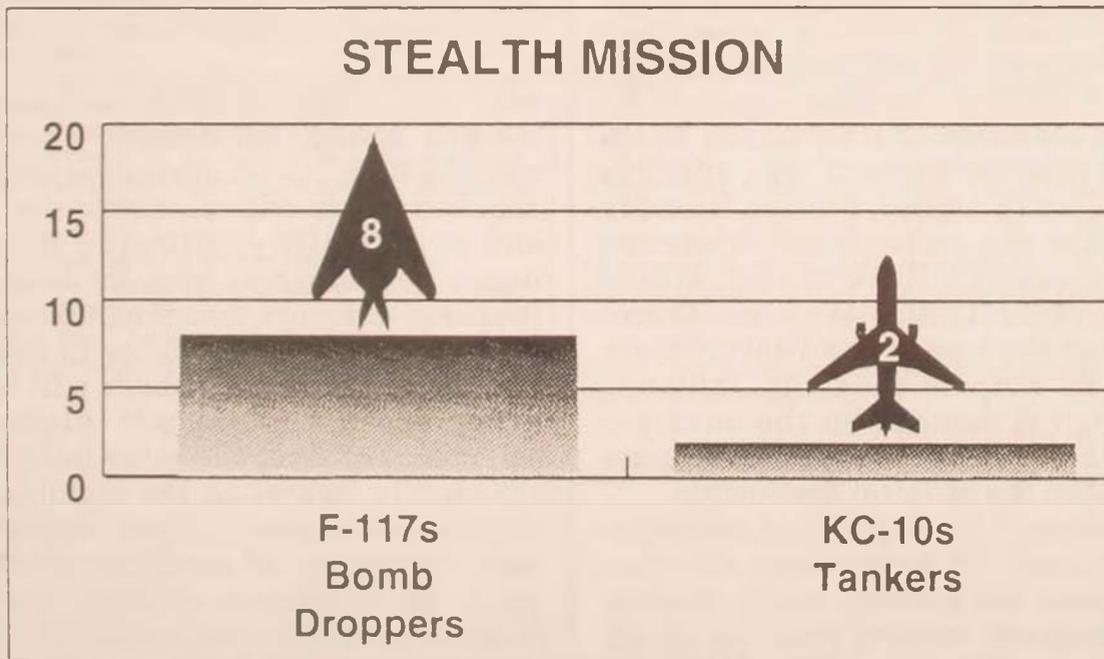
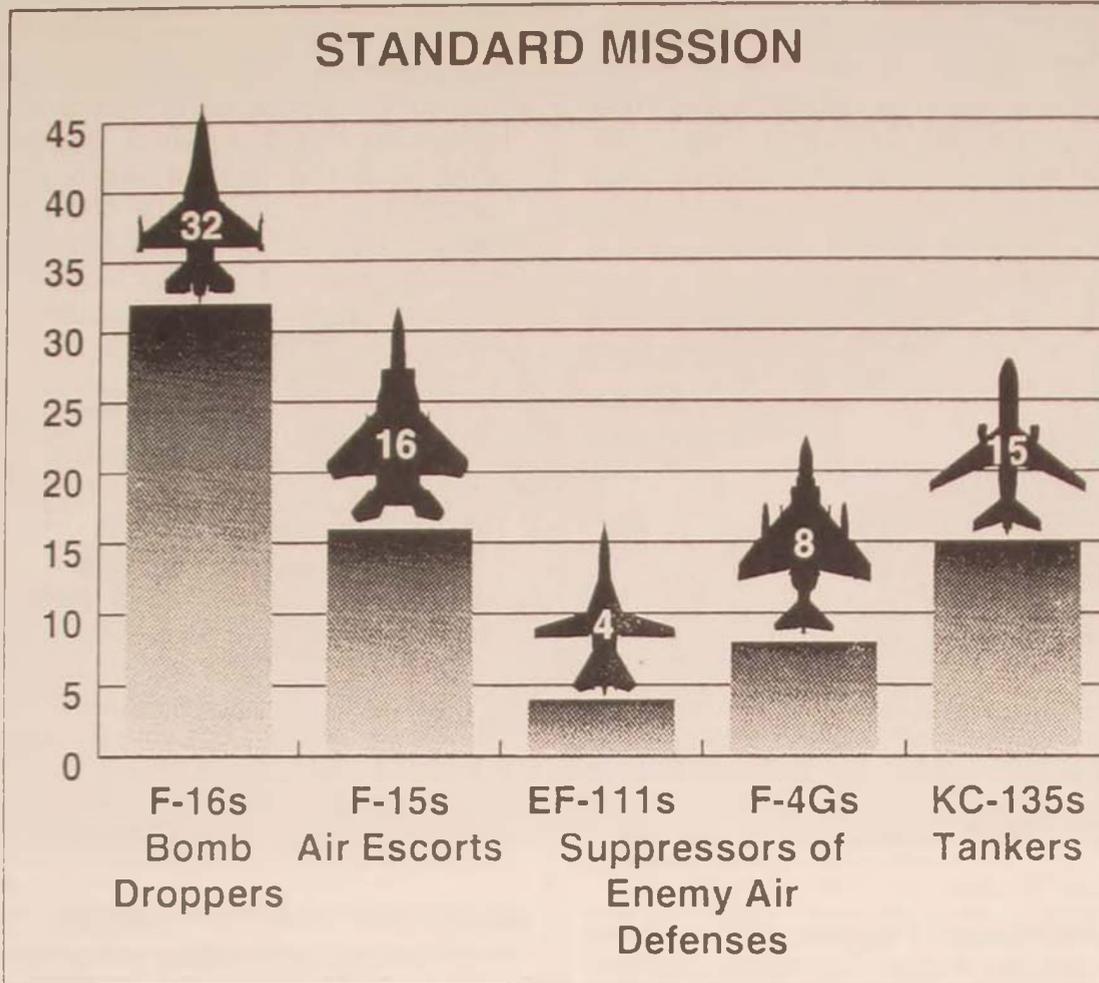
Now, by applying new technology to the principle of mass, a given force can effectively attack many targets simultane-

ously. Massing at the operational level instead of the tactical level allows the attacker to overwhelm an entire target set or even several target sets in one attack. Accordingly, Desert Storm planners designed missions not only to inflict physical destruction, but to demoralize an entire nation. Specifically, coalition air forces overwhelmed the entire Iraqi integrated air defense system and electrical power grid in a matter of days (perhaps even minutes) and then neutralized the Iraqi system of command, control, and communications (C³), as well as the Iraqi air force. After dismantling the Iraqi air defenses, coalition aircraft began interdicting supplies to fielded forces and finally attacked those forces directly.¹⁴

The surprise and violence of such an attack stuns the defender, and the level of destruction across a large target set destroys any hope of recovery through repair—especially when the enemy realizes that the next day's attacks will be just as devastating and that he can do nothing about it. This represents a revolution both in warfare and in the application of the principle of mass—but not in the principle itself.

Air power thinkers have long stressed the necessity of assigning priorities to target sets. Of first importance is the attainment of air superiority: it was Colonel Mitchell's aim at Saint-Mihiel and (then) Lt Gen Charles Horner's in Desert Storm. Control of the air allows air forces to concentrate on other strategic target sets (e.g., electrical power, C³, etc., in the case of Desert Storm), interdiction, close air support, or whatever is critical to the military and political goals of the campaign. In short, with air superiority, the commander can do whatever is most in keeping with the purpose of the campaign. Although air forces formerly achieved their campaign objectives laboriously over time, Desert Storm has shown us that we can attain our goals by attacking targets directly, efficiently, and often simultaneously.¹⁵

This employment of air power leaves an



One aircraft, one bomb, one target. Clearly, stealthy missions require dramatically fewer resources than do nonstealthy missions.



enemy prostrate and helpless, although he may not realize it until he perceives the systematic destruction of his fielded forces. Indeed, the enemy cannot see what you are up to and therefore cannot discern a logical recourse (even if he could, he is unable to relay orders to his forces in time for them to take effective action). As in Desert Storm, friendly forces in the air, on land, and at sea can attack the enemy's flank or rear, killing him before he knows they are there. Applied at the operational level, mass achieves its purpose suddenly, inflicting psychological damage on the enemy—damage that may constitute even greater leverage than the physical destruction.

Nonetheless, a word or two of caution is necessary here. Despite recent advances in air power technology (e.g., stealth, PGMs, electronic warfare, etc.), our ability to mass at the operational level remains limited. Navigation, target acquisition and tracking, precision guidance in bad

Although the F-111 is nonstealthy, electronic countermeasures and combat air patrol made it almost as effective as the F-117 during Desert Storm. Here, an F-111 proudly waits while it is groomed for its next combat mission.

weather, munition size, and range of weapon systems all demand our careful consideration. Good navigation and target acquisition are critical, both to accuracy and survivability, allowing for quick ingress to and egress from the target area. Precision guidance and munition size are directly related to the ability to destroy a given target, some of which will require heavy, penetrating bombs.¹⁶ Electro-optical, radar, infrared, and other technologies are rapidly improving the nighttime and weather capabilities of our aircraft, but true all-weather, all-condition targeting is yet to be developed. Finally, the infrastructure of the forward basing that is necessary to conduct operations at a given level remains dependent upon the range of our weapon systems.

These limitations notwithstanding, exploitation of precision targeting and stealth to apply mass at the operational and strategic levels offers tremendous leverage in future battles. We must understand that the principle of mass is still necessary and that we can now apply it directly and decisively at the operational level. Although our air forces can still achieve strategic objectives cumulatively (though much more quickly than before), current technology gives them the option of realizing many operational-level objec-

tives almost instantaneously. This kind of thinking made us the victor in the Gulf War. Anticipating the next confrontation, we must continue to develop such thinking if we are to avoid falling victim to an enemy who is thinking along the same lines. Desert Storm not only demonstrated the tremendous leverage available to war planners who apply new technologies under ancient principles, but also revealed the phenomenal cost of failing to do so. □

Notes

1. Air Force Manual (AFM) 1-1, *Basic Aerospace Doctrine of the United States Air Force*, vol. 1, March 1992, 1.
2. Sun Tzu, *The Art of War*, trans. Samuel B. Griffith (London: Oxford University Press, 1963), 98.
3. Flavius Vegetius Renuatus, "The Military Institutions of the Romans," trans. Lt John Clarke, in *Roots of Strategy: The 5 Greatest Military Classics of All Time*, ed. Brig Gen Thomas R. Phillips (Harrisburg, Pa.: Stackpole Books, 1985), 125, 163-64.
4. "Military Maxims of Napoleon," in *Roots of Strategy*, 431-32.
5. Brig Gen William Mitchell, "The Air Service at St. Mihiel," *The World's Work* 38 (May-October 1919): 365.
6. Giulio Douhet, *The Command of the Air*, trans. Dino Ferrari (1942; new imprint, Washington, D.C.: Office of Air Force History, 1983), 98.
7. *Ibid.*, 116-20. In book 4 of *The Command of the Air*, Douhet develops this concept fully. The eventual victor sends waves of battleplanes against his enemy. Although early losses are heavy, by the time all waves have arrived, enemy pursuit aviation is heavily damaged and eventually destroyed. The battleplanes can then do whatever they please over the enemy homeland, and following just two days of terror, capitulation is assured (pages 291-394).
8. Robert Frank Futrell, *Ideas, Concepts, Doctrine: Basic Thinking in the United States Air Force*, vol. 1, 1907-1960 (Maxwell AFB, Ala.: Air University Press, December 1989), 78-83. Whether or not the massing of World War II bombers

was due to Douhet's influence is a debatable point. Douhet, iii-iv.

9. See *The Army Air Forces in World War II: Combat Chronology, 1941-1945*, comp. Kit C. Carter and Robert Mueller (Washington, D.C.: Center for Air Force History, 1991).

10. See Douhet, 381, where he posits an exchange of 100 battleplanes for 200 pursuit planes.

11. Wesley Frank Craven and James Lea Cate, eds., *The Army Air Forces in World War II*, vol. 2, *Europe: Torch to Pointblank, August 1942 to December 1943* (1949; new imprint, Washington, D.C.: Office of Air Force History, 1983), 682-83, 704-6.

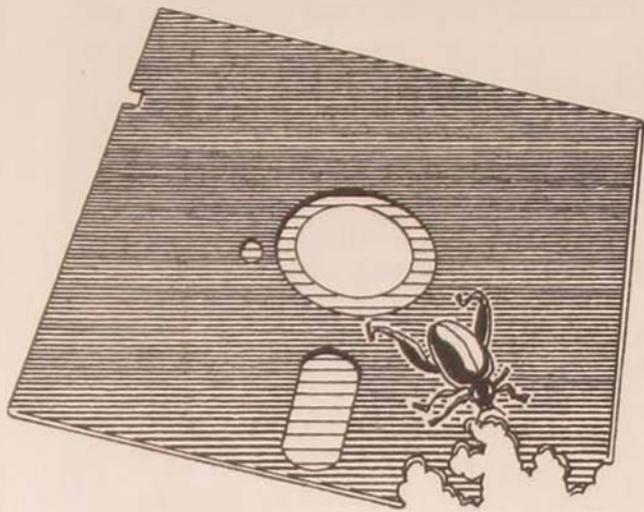
12. *Air War—Vietnam* (New York: Bobbs-Merrill, 1978), 227, 244, 254-55, 285.

13. *Conduct of the Persian Gulf War: Final Report to Congress*, vol. 3 (Washington, D.C.: Department of Defense, 1991), T-74, T-182.

14. *Ibid.*, vol. 1, 100, 118, 121, 200-201, 203, 204-6.

15. *Ibid.*, 99. Initially, Desert Storm comprised four slightly overlapping yet sequential phases: strategic bombing, establishment of air supremacy in the Kuwaiti theater of operations, battlefield preparation, and ground campaign. Later, when forces allowed, planners decided to execute the first three phases almost simultaneously. How could any enemy hope to recover from such an assault?

16. Some hard and/or deeply buried targets call for bombs larger than 2,000 pounds, the maximum size carried by many US fighter-bombers.



DISABLING SYSTEMS

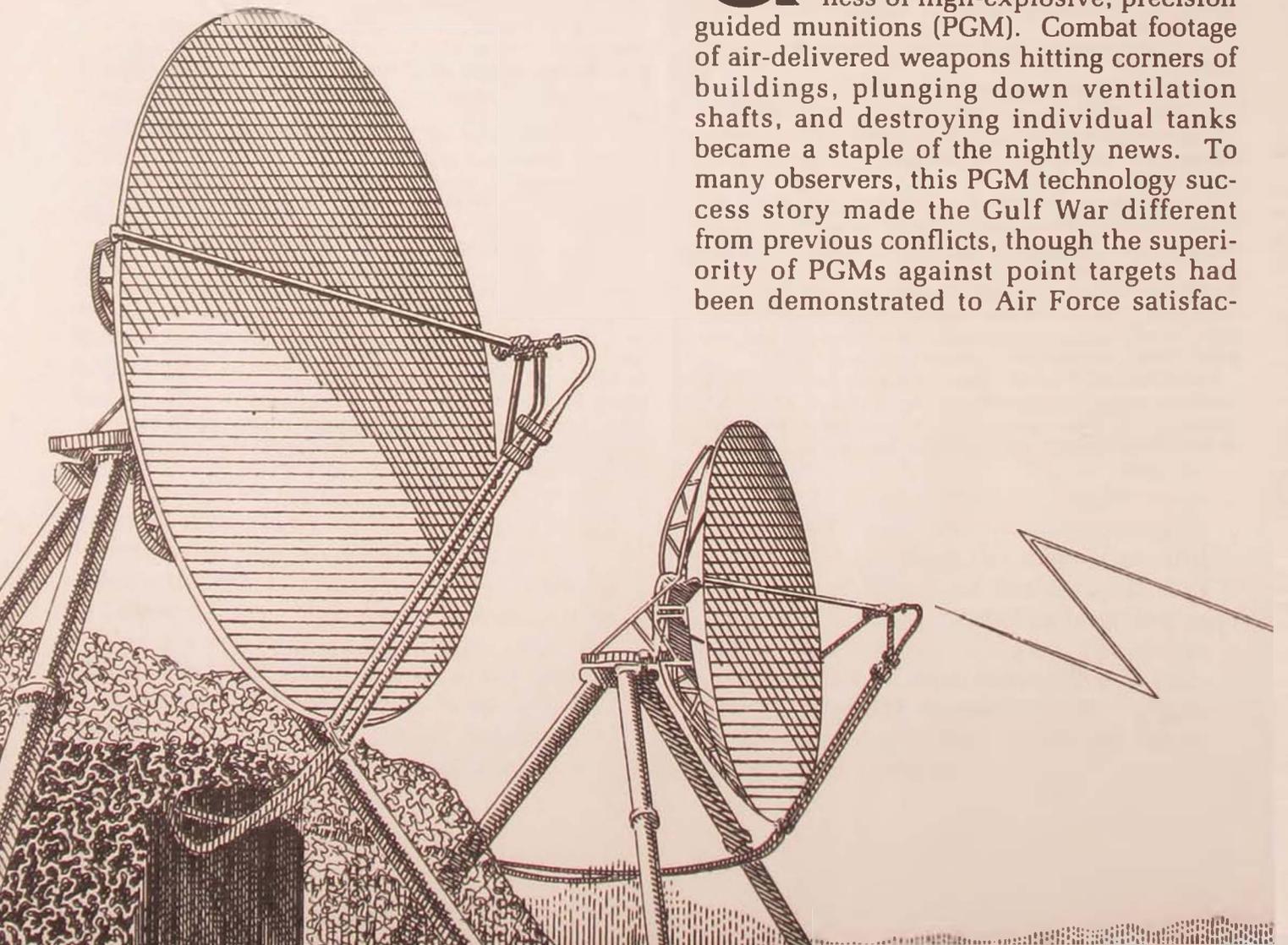
War-Fighting Option for the Future

The accelerated rate of military technological developments makes each succeeding war in many ways radically different from the previous one.

—Michael I. Handel

LT COL ALAN W. DEBBAN

US AIR FORCE operations in Operation Desert Storm dramatically demonstrated the effectiveness of high-explosive, precision guided munitions (PGM). Combat footage of air-delivered weapons hitting corners of buildings, plunging down ventilation shafts, and destroying individual tanks became a staple of the nightly news. To many observers, this PGM technology success story made the Gulf War different from previous conflicts, though the superiority of PGMs against point targets had been demonstrated to Air Force satisfac-



tion during sorties over North Vietnam.¹ Desert Storm air operations convincingly answered government studies that were harsh in their assessments of PGM reliability and capability.²

At the same time, the "precision" of PGMs could not eliminate the human suffering caused by collateral damage, even if this damage occurred as a direct result of an adversary's illegal actions. The outcry over civilian loss of life when the Iraqi military communications bunker at Al Firdos was struck caused a major uproar during the air campaign. Though it is debatable that the bunker would have been struck if intelligence reports had shown it was being used as a civilian personnel shelter, US forces had no option short of highly destructive munitions to neutralize this military facility. If Saddam Hussein had continued with the use of Western hostages as "human shields" around potential targets, coalition forces may have found targeting those facilities a very difficult political issue.

A major postwar issue became the inability of Iraq to repair its electrical generating plants and the consequent failure to restore water and sewage treatment systems. This led to a media discussion in the United States on the responsibility of coalition forces for civilian deaths in the aftermath of the conflict.³

The United States may now stand on the threshold of the development and acquisition of a new class of technologies that can overcome these problems and make the next war "radically different." The pinpoint targeting advantages of PGMs, when wedded to a large technologically diverse class of nondestructive or "disabling" munitions, may provide decision makers with additional force options while reducing casualties and property damage.

"Disabling Systems"—What Are They?

Under various names, such as "low lethal," "nonlethal," "mission kill," and "soft kill," an attempt has been made to categorize systems that do not directly purport to inflict casualties or cause large-scale property damage. The term that appears to have gained acceptance within the Department of Defense (DOD) is *disabling*. Paul Wolfowitz indicates that these systems have the potential that may "allow you to achieve your military objectives with substantially reduced collateral casualties," and he finds the concept that "we ought to exploit our technology to the



Table 1
Possible Disabling Technologies
and Applications

Technology	Applications
Pulse/Directed Energy	Radar Systems, Computer Nets, C ³ I
Acoustic Projection	Deception, Disorientation, Incapacitation
Bioengineering	Degradation of Propellants or Explosives (Energetics), Rubber or Silicone Seals
Microrobotics	Electronic Systems
Information Science	Computer Viruses
Materials Development	Pavement Deterioration or Adhesion, Nonvisible Taggants

maximum to achieve a military result" to be "very interesting."⁴

Though only a partial listing, table 1 presents some disabling technologies and weapons applications that present both unique opportunities and challenges. Ray S. Cline, chairman of the Washington, D.C.-based US Global Strategy Council, summarized the requirements for the new systems when he referred to the possible use of such weapons in the Gulf War:

It incorporates not only high-precision weapons but also comprehensive intelligence collection systems that allow pinpointing military targets with a minimum of casualties.⁵

Why Now?

There are national policy imperatives that suggest a need for military options between taking no action in a crisis and using highly lethal, traditional firepower. A recent Rand study recommends that "DOD should avoid over reliance—in a crisis—on a doctrine of overwhelming force."⁶ The existence of disabling

weapons could provide a deterrent prior to crisis development or could diffuse the crisis before it expands without resorting to conventional massive destruction options.⁷ In short, disabling systems may provide a new first step in the *application* of force when a *show* of force is insufficient.

In addition to providing an intermediate force option, disabling systems provide a partial answer to concerns over excessive casualties and damage. Beyond the obvious moral high ground that can be attained if campaigns are won with minimal human suffering (e.g., Desert Storm), the legal necessity to limit collateral damage and suffering in combat is a clear requirement under the concept of "proportionality" and fits in with the aims of disabling weapons.⁸ In fact, one of the "Seven Thrusts" of the new DOD science and technology strategy, that of precision strike, is in part driven by the military and operational requirement to reduce casualties.⁹

Finally, we should pursue these options now because US technology may be mature enough to provide weapons capable of meeting these goals. Advocates of these systems maintain that, when combined with the already demonstrated precision guidance, enabling technologies are either here now or could be developed in short order if sufficient resources were devoted to the programs.¹⁰

Advantages and Disadvantages

The future uses of disabling weapons can provide advantages that flow directly from their low-damage intent. There may be distinct political and psychological benefits accrued to governments of generally casualty-intolerant Western societies (giving and receiving). Public pressures to eschew or terminate the use of force against third-world states, who may be

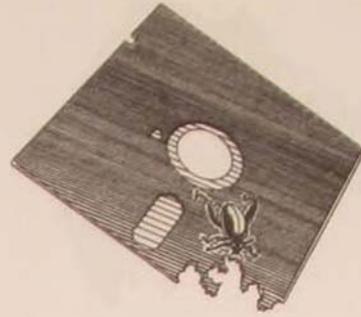
willing to absorb great losses for political gain, can be minimized if the United States is shown to be conducting a "humane" conflict.¹¹

The systems themselves theoretically can be applied across the spectrum of conflict. Some writers in the field have concentrated on small-unit special operations or tactical uses of disabling systems;¹² however, strategic applications only await the development of air-deliverable disabling munitions. If available and used during the Gulf War, munitions loaded with microelectronic "kill" devices and delivered in quantity against the Iraqi radar and communications defense nets could have caused strategic paralysis as effectively as high explosives, but without the attendant risks of collateral damage.

Postconflict problems may also be eased. The environmental impact and the time period for restoration of physical facilities necessary to the survival of a former adversary's civilian population can be lessened. A transition from war to peace and the resumption of normal relations, assuming the government of the former enemy cooperates, may thus be expedited.¹³

Finally, advocates of the new technologies feel that, once developed, they will be affordable as a munitions class. Basic scientific research is already available, and no radically different systems should be required. For the Air Force, current and anticipated aircraft should be able to deliver the proposed weapons anytime and anywhere for maximum strategic effect.¹⁴

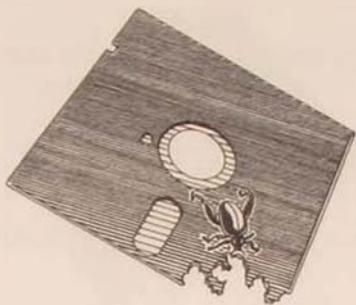
Unfortunately, few of these systems are actually available. With the exception of riot control agents, systems developed for special forces applications, and electronic countermeasures equipment, most disabling weapons are in the conceptual stage or at a basic technology level.¹⁵ While the developed weapons are expected to be affordable, the road to "weaponizing" a promising technology, or actually producing fieldable munitions,



can be very expensive and lengthy. For example, though the targeting capabilities of lasers are well developed, attempts to produce weapons using laser high-heat-generating potentials have taken years and have met with limited successes for a number of technical reasons.

Even those weapons that have been available have not always met with unqualified successes, and countermeasures may be easier to produce than the weapons themselves. In Vietnam, incapacitating agents were used but were not considered totally effective due to dispersion and persistent problems. Cloud-seeding efforts to turn the Ho Chi Minh trail impassable met with minimal success during the same conflict.¹⁶ Weapons based on light or sound effects are likely to be weather limited. Also, because of the very nature of disabling systems, adversaries may be able to recover war-fighting capabilities faster in an extended conflict, thus leading to continual target restrikes or use of destructive force.

Even if a promising technology is developed into an effective weapon, supporting technologies and systems may not be adequate to apply it to full advantage. The "comprehensive intelligence collection systems" mentioned by Ray Cline must be even more timely and accurate than in the Gulf War to isolate critical adversary nodes vulnerable to disabling weapons. Well-publicized difficulties of Scud-hunting efforts in Desert Storm illustrate the problem of locating potential targets even when advanced PGM attack capabilities are available.



While new technologies can solve old problems, they can also create new ones. Chief among these is the development and acquisition of new systems without a clear vision as to their use. (As much as we'd like it the other way around, technology historically has preceded strategy and doctrine.) However, weapons development without the thoughtful establishment of requirements or concepts for proper employment leads to unproductive efforts, which could prove fatal to overall program development in an era of declining military budgets.¹⁷

Finally, if disabling weapons are viewed as revolutionary and not evolutionary, their introduction could have a negative effect upon our relationships with other military powers. Though not a certainty, a new type of "disabling" arms race could occur that would "disable" a budget as well as an adversary. Also, arms control efforts can be hindered when opposing parties become reluctant to part with existing systems if they have nothing to counter new and unique weapons of potential enemies.¹⁸

Pitfalls to Development

Before a rational DOD evaluation of the total worth of disabling systems can occur, the whole disabling concept needs a standard umbrella vocabulary. Terms in use, such as *nonlethal* and *low lethal*, all contain at least two common elements. First, they emphasize the nondestructive intent of the systems. Next, they view these systems as providing the additional force option between doing nothing and

applying conventional firepower. Unfortunately, without a common term or readily identifiable "buzz" word, this commonality must be established in every paper, discussion, or discourse on the subject to find that particular forum's definition.

The current terms themselves contain seeds of confusion or derision. For example, a *nonlethal* weapon that kills even one individual is certainly *lethal* to that person. And what kind of veteran comes out of a war that uses *disabling* weapons? Of course, he or she is a *disabled* veteran.

The terminology problem leads directly to another major conceptual issue: these systems will *not* lead to bloodless battlefields or victories. Individuals or structures that are near an explosive dispersal point of even temporarily incapacitating agents are at risk of permanent injury or damage. In some instances, an adversary leader may recognize that he is in a war *only* when he is receiving large casualties and damage.¹⁹ Overselling the potential of disabling systems by promising perfectly "clean" wars can lead to unrealistic expectations and eventually unnecessary expenditures.

The introduction of disabling weapons certainly will not take the place of military forces capable of traditional conventional responses. Where a primary war aim is to permanently destroy war-making capabilities, "hard-kill" systems will still be predominant.²⁰ Disabling systems provide an *additional* force option, *not* a replacement for current ones.

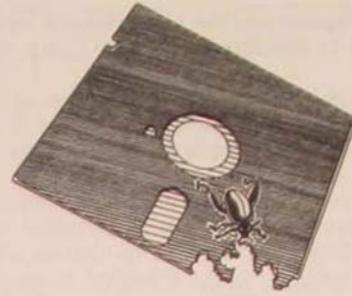
Any attempt to place disabling systems in a special category and divorce their development from that of other conventional systems is probably misguided. Both the potential and the requirements for disabling systems are derived from the evolutionary developments of precision guidance systems and politically motivated casualty-reduction imperatives. Development of the systems is a logical convergence of these two trends and presents an extension of conventional war-

fighting capability, not a radically unique approach. Successful electronic countermeasures operations during Desert Storm are an example of the integration of disabling systems into air campaign operations.²¹

Where Do We Go from Here?

The potentials and problems of the new technologies must be addressed. Considerations of strategy, doctrine, and the requirements of war-fighting commanders should form the foundation for the development of new technologies. At the level of tactical doctrine development, there is recognition that there are opportunities inherent in disabling systems for AirLand Battle operations. According to the Army's Training and Doctrine Command (TRADOC), development of these systems might provide weaponry "that can disable or destroy an enemy's capability without causing significant injury, excessive property destruction, or widespread environmental damage."²²

The new Air Force doctrine, while it does not specifically name them, implies that disabling systems may fit best in low-intensity conflicts. The emphasis on an evolving conflict paradigm involving "self-restraint toward firepower oriented operations and a propensity to operate within complex constraints"²³ fits the rationale for developing disabling systems. Additionally, the vast number of military activities short of war provides opportunities for disabling applications.²⁴



However, the ability of air power to attack high-value targets within short time constraints and over long distances is a key ingredient of Air Force "global reach—global power."²⁵ This advantage, if coupled to disabling air-delivered munitions, expands the potential of disabling systems into all levels of warfare. The need for systems capable of assessing damage caused by disabling (or nonlethal) weapons is already envisioned.²⁶ Certainly, construction of munitions deliverable from current airframes will keep operational and training costs at reasonable levels and make funding and development of disabling systems more likely.

In his book *War, Strategy, and Intelligence*, Michael Handel notes, "The endless number of military inventions is limited only by the imagination of the soldier and the scientist."²⁷ The intersection of military/political necessity and technological innovation has fired the imaginations of soldiers and airmen, scientists, and policymakers into investigating the possibilities of developing and acquiring disabling weapons systems. Their integration into conventional war-fighting operations will provide a significant addition to force employment options. □

Notes

1. For example, see the description of extended operations with gravity bombs and the eventual success of PGMs in knocking down the Paul Doumer and Thanh Hoa bridges in Col Delbert M. Corum et al., *Tale of Two Bridges and the Battle for the Skies over North Vietnam*, USAF Southeast Asia Monograph Series, vol. 1, ed. Maj A. J. C. LaValle

(Washington, D.C.: Government Printing Office, 1976), 31-92.

2. Commission on Integrated Long-Term Strategy, *Extended-Range Smart Conventional Weapons Systems* (Washington, D.C.: Government Printing Office, October 1988), 30; and United States General Accounting Office

(GAO), *U.S. Weapons and the Low-Intensity Warfare Threat*, GAO/PEMD-90-13 (Gaithersburg, Md.: GAO, March 1990), 7.

3. Most of the initial reports of civilian casualties from disease after the Gulf War were generated by Rob Moodie et al., *Harvard Study Team Report: Public Health in Iraq after the Gulf War*, May 1991, Harvard University School of Public Health, Boston, Massachusetts. The report postulates that the bombing campaign was responsible for the shut-down of a significant portion of Iraqi civilian medical facilities, due to the collapse of the electrical generating capacity in Iraq.

4. Quoted in "Pentagon Eyes Minimum Lethality Weapons," *Aerospace Daily*, 6 March 1992, 377. Paul Wolfowitz identifies *disabling* as the proper term for these systems in this article.

5. Ray S. Cline, "Warfare's New Era," *Washington Times*, 27 February 1991, G1.

6. Paul K. Davis and John Arquilla, *Deterring or Coercing Opponents in Crisis: Lessons from the War with Saddam Hussein*, Rand Report R-4111-JS (Santa Monica, Calif.: Rand Corporation, 1991), xi.

7. Janet Morris, "Enter Nonlethal Weaponry," *IEEE Spectrum*, September 1991, 58; David C. Morrison, "Bang! Bang! You've Been Inhibited!" *National Journal*, 28 March 1992, 758.

8. Cline, G1. A good discussion of proportionality requirements in response to third-world terrorist incidents can be found in Lt Col Richard J. Erickson, USAF, *Legitimate Use of Military Force against State-Sponsored International Terrorism* (Maxwell AFB, Ala.: Air University Press, July 1989), 146.

9. Victor H. Reis, *Defense Science and Technology Strategy* (Washington, D.C.: DOD Directorate of Defense Research and Engineering, 16 July 1992). This new strategy was confirmed as releasable to the public by the Directorate for Defense Information, Assistant Secretary of Defense (Public Affairs).

10. Cline, G1; Morris, 58. Alvin and Heidi Toffler, "War, Wealth and a New Era in History," *World Monitor*, May 1991, 46-52, though not referring to disabling-type systems directly, postulate that the Gulf War demonstrated the dawn of a new era in warfare, with the application of weapons based on information, not strictly on massed firepower.

11. Morris, 58.

12. Barbara Opall, "Labs Rush Nonlethal Arms for Mideast Deployment," *Defense News*, 5 November 1990, 1.

13. Morris, 58. The difficulties of recovery from conflict of even a partially industrialized society are portrayed in the *Harvard Study Team Report: Public Health in Iraq after the Gulf War*.

14. Barbara Opall, "Pentagon Forges Strategy on Non-Lethal Warfare," *Defense News*, 17 February 1992, 1, 50; Cline, G1; Morris, 58.

15. Morrison, 758.

16. Keay Davidson, "War without Death may be on its Way," *San Francisco Examiner*, 2 February 1992, 1; Morrison, 758.

17. Handel, 21, 25.

18. Richard Burt, "New Weapons Technologies: Debate and Directions," in *The Impact of New Military Technology*, ed. Jonathan Alford (Montclair, N.J.: Gower and Allanheld, Osmun Publishers, 1981), 70.

19. Davidson, 1.

20. Morrison, 758.

21. Cline, G1.

22. Quoted in Morrison, 758. This was probably lifted from a draft copy of TRADOC Pamphlet 525-5, "AirLand Operations: A Concept for the Evaluation of AirLand Battle for the Strategic Army of the 1990s and Beyond" which will not be published, according to the Army Staff, Concepts, Doctrine & Policy Division (DAMO-FDQ), Pentagon. Similar comments alleged to reference an Army publication were found in the Davidson article.

23. "Military Activities Short of War" (essay G), in Air Force Manual (AFM) 1-1, *Basic Aerospace Doctrine of the United States Air Force*, vol. 2, March 1992, 55.

24. *Ibid.*, 56-57.

25. See Secretary of the Air Force Donald B. Rice, "Reshaping for the Future," statement before the House Armed Services Committee, 20 February 1992, in House, *National Defense Authorization Act for Fiscal Year 1993: Report of the Committee on Armed Services, House of Representatives on H.R. 5006*, 102d Cong., 2d sess., 1992, 14.

26. Reis, II-16.

27. Handel, 23.

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STEALTH, SEA CONTROL, and AIR SUPERIORITY

CAPT JAMES H. PATTON, JR., USN, RETIRED

About once each quarter century a technology appears that can really make a difference. Stealth is just such a technology. Its application will reduce attrition. . . . We dare not ignore the application of stealth techniques to all platforms.

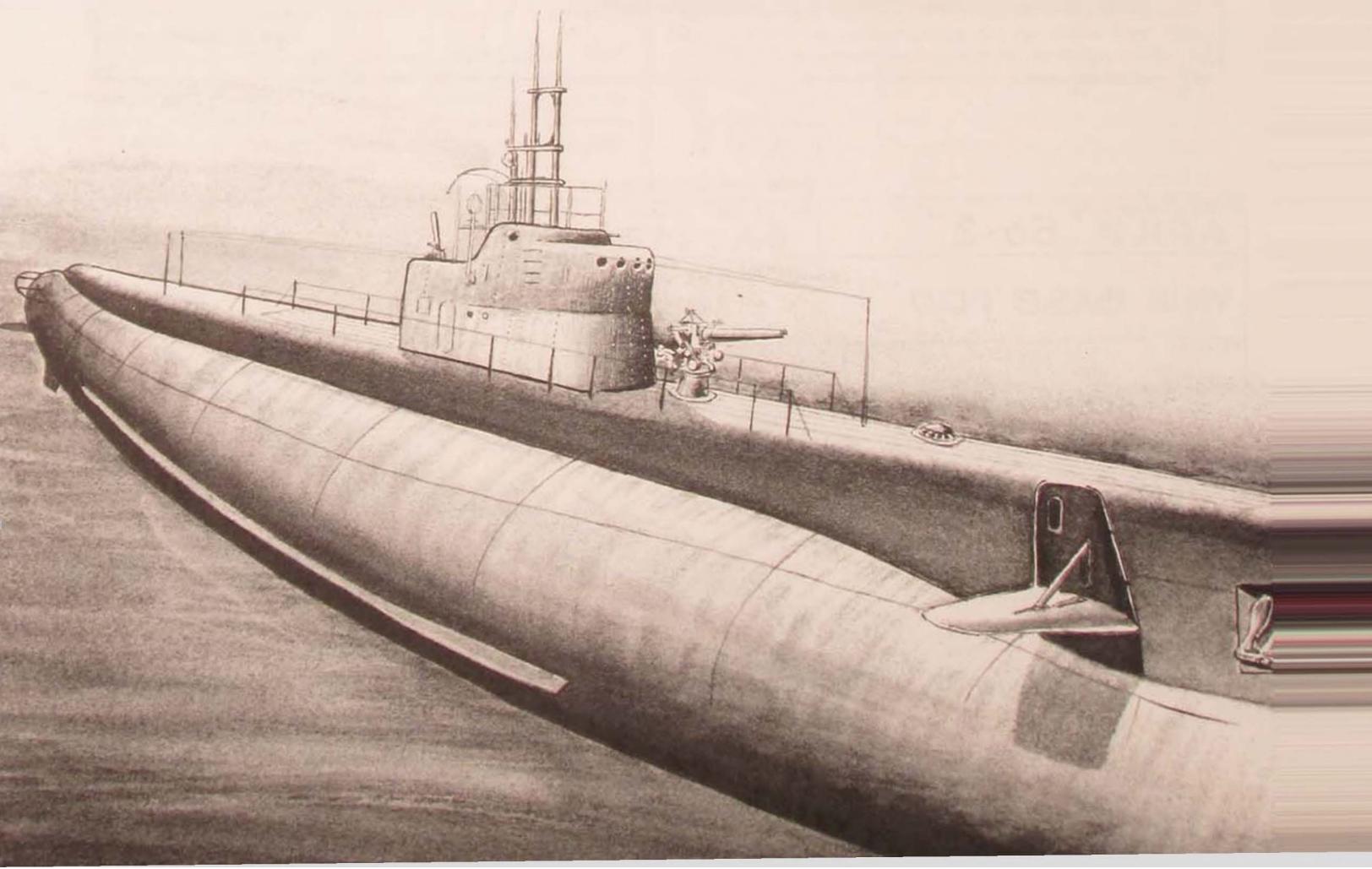
—Defense Science Board Summer Study, 1990

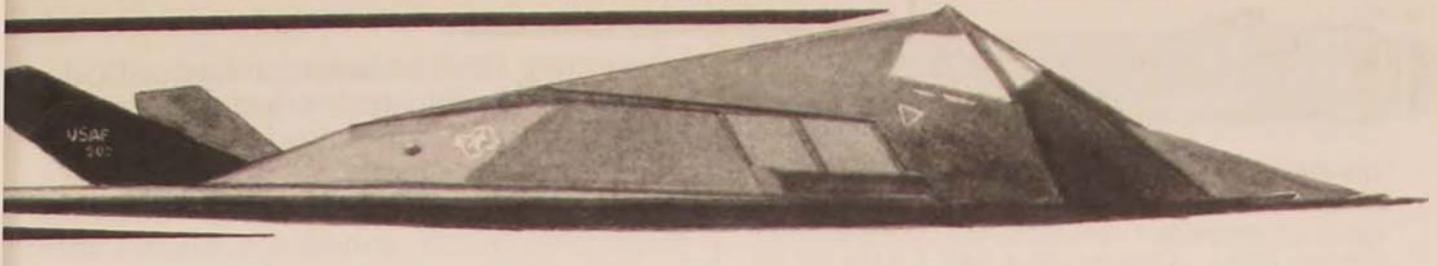
Psychological change always lags behind technological change.

—Prof Sir Michael Howard

IF HISTORY is any guide, stealth technology for combat aircraft will revolutionize aerial warfare in the 1990s at least as much as stealth for submarines revolutionized naval strategy, doctrine, and tactics during the preceding

half century. However, analysts are just beginning to understand and embrace the impact of stealthy aircraft on Air Force doctrine and tactics of air superiority. This article shows how the use of low-observable submarines to gain control of





the sea—by striking deep in heavily protected waters and thereby clearing the way for the arrival of nonstealthy surface combatants—can help illustrate and exploit the ongoing stealth revolution in military aviation.¹

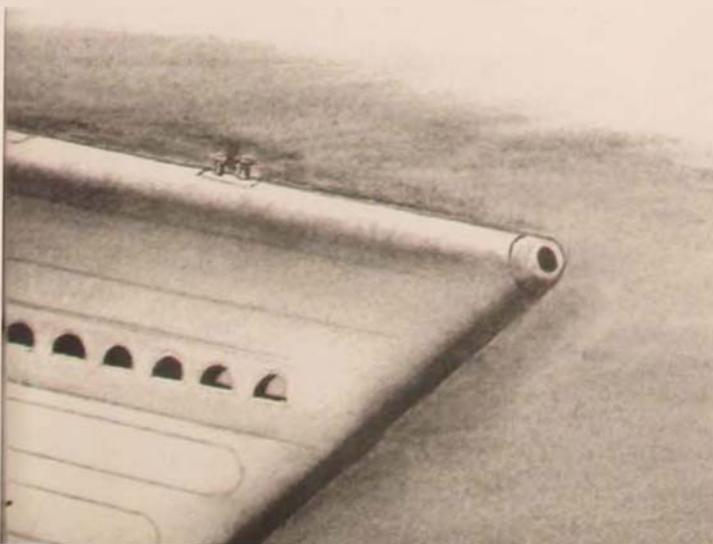
Stealth not only removes the need to defer offensive strike operations against deep, well-protected targets until one establishes air superiority (or *sea control*, in submariners' parlance), but it also helps create air superiority for the sake of less survivable platforms. The employment of the F-117 stealth fighter during Operation Desert Storm proved that airborne stealth works.² The challenge now is to develop the air doctrine and tactics to leverage that revolutionary technology.

Technology, doctrine, and tactics are so interdependent that a significant change in any of these factors creates pressures on the others to change or evolve. When such a major technological breakthrough as stealth occurs, one must reexamine and revalidate existing doctrine and adjust tactics—if not thoroughly revise them. This was clearly the case for sea control when nuclear propulsion added dramatic increases in speed and submerged endurance to existing submarine stealth.

It is now the case for air superiority, as technology has added stealth to the existing speed and range of air power.

In the great European air war of 1943, the Luftwaffe demonstrated beyond any reasonable doubt that the US Eighth Air Force's heavy bombers could not regularly bomb targets deep in Nazi Germany with "acceptable" losses unless they were accompanied by long-range fighter escorts. Since then, US Air Force doctrine and tactics have embraced the principle that securing control of the air by defeating the enemy air force is the unavoidable *sine qua non* of any well-planned air campaign. As formulated in the 1992 edition of Air Force Manual (AFM) 1-1, *Basic Aerospace Doctrine of the United States Air Force*, control of the air "normally should be the first priority"; only with the appropriate degree of air control in hand will air forces "possess the versatility to deliver combat power on the enemy when and where needed to attain military objectives at any level of war."³ Much the same sort of reasoning shaped naval thought on sea control.

Through the years, these doctrines of air and sea control have developed from the most elemental truths, as articulated by great thinkers such as Gen William ("Billy") Mitchell and Adm Alfred Thayer Mahan. The strength of these truths, however, lies in the enabling assumptions and





The Evolution of Stealth. The first submarine to sink an enemy warship was the CSS Hunley (above), an eight-man vessel that sank the USS Housatonic on 17 February 1864. Over a century later, F-117s like the one below slipped into Baghdad on 17 January 1991 to begin the onslaught against Iraqi command, control, and communications facilities.

unspoken “if thens” embedded in their brilliant simplicity of statement. Prestealth doctrines of air or naval combat implied that, until your opponent's forces are destroyed, they will note your presence, place themselves between your forces and your objectives, and require you to engage them first. Therefore, if one follows this line of reasoning, air forces must first engage and destroy other air forces, and fleets must first engage and destroy other fleets in order to permit the ensuing and successful prosecution of the war. Air superiority and sea control justly remained at the top of prestealth service priorities, and analysts developed and applied doctrine, technology, and tactics to underwrite this order. However, although command of the air and the sea continues to occupy their lofty doctrinal positions in a world of stealthy weapon systems, the means of obtaining air superiority and sea control and the time for doing so have changed significantly.

Assisting in this doctrinal and tactical revolution are the already well-developed subsets of both air and sea doctrines that allow for the temporary establishment of *local* air superiority and sea control. Superior aircraft armament, electronic warfare (EW) systems, and various concepts and methods of war fighting⁴ have created a bubble of relative invulnerability around aircraft in hostile airspace for a limited time. Slowly maturing throughout this century, however, has been a variant of local sea control which exploited a completely different technology. Rather than depending on a bubble of firepower or confusion, submarines operated unmolested within a bubble of nonobservability (i.e., stealth). One can gain an understanding of the revolutionary impact of stealth technology on the achievement of air superiority by briefly reviewing the doctrine and tactics of sea control prior to and following the implementation of stealth.

Stealth and Sea Control

Only by military command of the sea, by prolonged control of the strategic centers of commerce, can such an attack be fatal; and such control can be wrung from a powerful Navy only by fighting and overcoming it.

—Capt Alfred Thayer Mahan, USN



The establishment of local sea control by stealthy submarines allows the prosecution of vital missions before one establishes more traditional sea control by destroying the opponent's fleet. In the Pacific theater during World War II, US submarines interdicted Japanese merchant vessels steaming along critical western sea lines of communications. In addition to sinking 55 percent of all Japanese merchant shipping tonnage (70 percent during the first 24 months of the war before sea control was essentially established throughout the Pacific), the submarine force also destroyed 38 percent (by tonnage) of the Imperial Fleet⁵—a significant contribution towards the ultimate sea supremacy that permitted the unopposed naval blockade and bombardment of Japan.⁶

From the distance of four decades, one might infer that the doctrine supporting submarine operations in World War II was well understood and in place from the start. This was far from the case, however, because the leverage offered by stealth in the achievement of sea control was not immediately apparent to either the tactician or the operator; consequently, the Navy employed the submarine in very conservative ways and in essentially defensive roles.⁷

Thus, in 1942 commanding officers of submarines avoided detection by not

operating in waters shallower than 600 feet and by remaining submerged at 75 percent of their test depth from an hour before sunrise to an hour after sunset. Even as prestigious a figure as Adm Ernest J. King (the first and only man ever simultaneously to serve as chief of naval operations and commander in chief of the US Fleet) initially missed the significance of employing his stealthy boats in support of an offensive, sea-control mission. Instead, he favored employing submarines in a reconnaissance role—as scouts for the battle fleet.⁸

Thus, it took the employment of the submarine in a combat situation to overcome the established doctrinal mind-set of peacetime operations. However, as Prof Sir Michael Howard has pointed out, thought and employment processes lag behind technical change. Although some people quickly grasped the revolutionary impact of stealth in the laboratory of conflict, many others strongly resisted it. There occurred, therefore, a considerable sorting out of submarine skippers in 1942 and 1943. The ones who were willing to operate their stealthy platforms in an aggressive manner—while preserving

Stealthy submarines such as the USS Dogfish (below) were used primarily for reconnaissance during the first half of World War II.



their low-observable properties—could provide US naval forces with an enormous competitive advantage.⁹ By 1945, submarines were conducting offensive operations in as little as 90 feet of water. Further, daylight surface operations were commonplace, with submarines submerging only for attack or at the approach of hostile aircraft. Log entries documented the applications of stealth: “The Skipper noted through the periscope that the nearest destroyer was passing about 75 yards to starboard.”¹⁰ Thus, even a protective screen of surface ships proved unable to detect an attacking submarine.

In the late 1950s and early 1960s, US nuclear-powered attack submarines (SSN) began to replace the existing fleet of diesel-electric submarines, adding increased speed and endurance to inherently stealthy platforms. Again, doctrine and tactics were slow to evolve, as analysts only incrementally perceived the greatly increased technical capabilities of these stealthy submarines. Finally, from the mid-1980s on, the stealthy US SSN became a trump card in any NATO/Warsaw Pact conflict, holding the Soviet submarine-based strategic nuclear reserve at great risk, whether these ballistic missile submarines were deployed in open ocean or tucked away in much-publicized defended “bastions.” The US SSNs simultaneously retained the ability to engage all other significant Soviet naval vessels—surfaced or submerged. Innovative planning efforts such as the Global war-game series at the Naval War College in Newport, Rhode Island, concluded that this additional tasking would have gained enough sea control to allow carrier battle groups to engage targets ashore in theaters such as the Kola Peninsula or the northwest Pacific.

When one melds the results of these cold war exercises into the combat experiences of World War II, three key findings about stealth and sea control—as well as their relationship to stealth and air superiority—emerge:

1. *Stealth provides an extraordinary economy of effort and return on investment, and epitomizes the substitution of technology for manpower.* The force that imposed severe damage on the Japanese economy, fleet, and total war-making capability during World War II never exceeded 1.6 percent of US Navy personnel.¹¹ Even at the height of the cold war, with the additional responsibility for the sea-based leg of the strategic nuclear deterrent, only about 7 percent of Navy personnel were submariners.¹²

2. *The best wartime employment of stealth is in offensive rather than defensive roles.* The SSN that directly supports a carrier battle group—thus acting essentially as a submerged F-14 Tomcat aircraft—does have some viable defensive missions. However, the SSN's strong suit is employing stealth to avoid or penetrate opposing defenses and operate unsupported, either to strike protected assets deep in the adversary's rear or establish sea control by destroying or disabling enemy defenses.¹³

3. *As independent as it might seem, the stealth platform, in most cases, is ultimately operating in support of non-stealthy follow-on forces.* This will remain true so long as naval and air forces are composed of both stealthy and non-stealthy systems.

Stealth and Air Superiority

In the beginning, the Strategic Air Command supported long range nuclear deterrence. Tactical Air Command, on the other hand, supported the air power needs of the theater commander. But . . . one man's tactical is another man's strategic. . . . [F]rom my point of view, the difference between strategic and tactical is very fuzzy.

—Air Force Chief of Staff Gen Merrill A. McPeak

As planners in the USAF's new Air Combat Command struggle to define the “fuzzy” difference between strategic and

tactical, they may find that the distinction is no longer very useful. Indeed, the contributions of "strategic" stealthy aircraft to the establishment of "tactical" air superiority should loom large in both doctrine and tactics. The Gulf War of 1991 gives us much on which to build. During Operation Desert Storm, the 42 F-117s (2.5 percent of USAF in-theater air assets) flew only 2 percent of coalition fixed-wing sorties, yet struck 40 percent of all the "strategic" targets—achieving hits with 80 percent (1,619 hits and 418 misses) of the weapons they released—without losing an aircraft or even being struck by enemy fire.¹⁴ As the only manned aircraft to deliver bombs in downtown Baghdad, the F-117 proved the value of stealth. It safely attacked deep, well-protected targets long before conventionally established air superiority would have permitted such attacks by nonstealthy aircraft with a like degree of safety. More to the point here, many of the F-117 missions were also in direct support of achieving air superiority through the destruction of the enemy's integrated air defenses.

How can one achieve air superiority? The following are options for destroying an adversary's air assets:¹⁵

1. *Get them in the air.* This is by far the most difficult challenge; in the past, planners considered it the one most likely to occur.

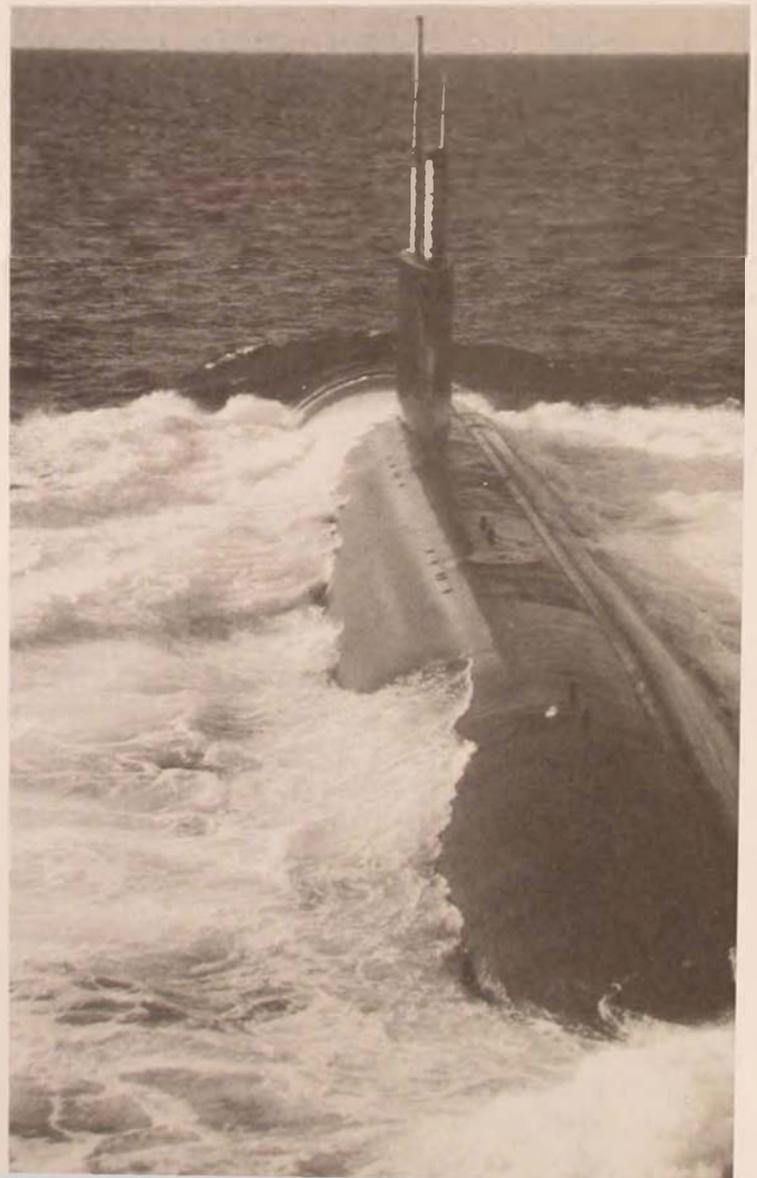
2. *Get them on the ground.* Airmen point to the ease with which Israel gained air superiority in the Six-Day War of 1967, but destroying aircraft on the ground becomes more difficult when the enemy disperses, revets, and shelters his aircraft. "Shelter-busting" munitions certainly proved their worth in the Gulf War, but low-level attack of defended airfields by conventional aircraft remains dangerous—witness the loss of about 10 percent of the Tornado aircraft so employed.¹⁶

3. *Neutralize them by reducing overall effectiveness.* The goal is to paralyze the enemy's air defenses or destroy his com-

mand, control, and communications net. This also becomes a very difficult option in the absence of excellent intelligence, stealthy platforms, and precision guided munitions (PGM).

Any reasonably capable defender who faces nonstealthy attacking aircraft will have enough warning time to force his attacker to select the first option and engage in air-to-air combat. But that option may be the least desirable from a US perspective in terms of the pace of the campaign and relative attrition rates. Stealthy attack aircraft armed with precision weapons now permit an air campaign

US nuclear powered attack submarines (SSN) such as the USS Alexandria augmented stealth with increased speed and endurance. Despite the SSN's defensive capabilities, experiences from World War II through the cold war show that stealthy submarines are best employed in offensive rather than defensive roles.





to open directly with the third option and proceed to the second and the first as the situation directs—that is, when it is prudent and effective to employ greater numbers of less-stealthy cousins. Clearly, the Air Force should preserve its capability to mount air-to-air offensives with non-stealthy aircraft. However, stealth makes it possible to invert the order of options for achieving air superiority.

Much has been made about the fact that the first strike of Desert Storm's air campaign was directed against Iraqi air-defense radars. AH-64 Apache helicopters armed with Hellfire missiles conducted the attack 21 minutes before H-hour.¹⁷ Implicit in such commentary about that opening blow is the point that these early warning sites had to be taken out before fixed-wing aircraft could penetrate Iraqi airspace without suffering significant losses. At the time of the Apache attack, however, F-117s were well beyond

During Desert Storm, stealth fighters used precision bombing to take out Iraqi targets such as this hardened aircraft hangar in Jalibah (above) and an important bridge in Nasaria (right, below).

the sites in question, having flown through the air defense system undetected,¹⁸ and were minutes from successfully attacking hardened air defense intercept operations centers and dozens of other critical air defense, leadership, and command and control targets.¹⁹

Desert Storm's air campaign commenced at 0300 local time on 17 January 1991, and air superiority was essentially established by daybreak—*more by the destruction of the means for massing and controlling Iraqi air assets (option three) than by the destruction of aircraft in the air or on the ground (options one and two).*²⁰ One should note that stealth aircraft directly contributed to establishing air superiority, but not as a prerequisite to

their ability to destroy vital target sets such as fixed Scud missile facilities; leadership and command and control nodes; and research, manufacturing, and potential nuclear-storage sites. Had large numbers of nonstealthy aircraft not yet arrived and been standing by to participate (or had not been necessary for the prosecution of a smaller conflict or a limited strike), stealth sorties in support of air superiority could have been deferred until those other aircraft were staged and ready, and until air strikes required the suppression of enemy air defenses (SEAD).

In any event, the establishment of air superiority in Desert Storm was not accomplished by a lengthy and costly process of destroying Iraqi airframes, but by the decapitation and intimidation of the means of controlling them. Air defense radars and ground-based fighter control centers proved to be ideal targets for stealthy attack aircraft armed with PGMs and will continue to be so in future regional conflicts. Therefore, the highly capable stealthy air forces to be composed of F-117s, B-2s, and F-22s—if fielded in sufficient numbers—will provide new options to establish air superiority extremely early in such conflicts and from great distances. These new options cap-

ture the very essence of air power—flexibility—by providing the planner with four diverse opening gambits:

1. Conduct meaningful stealth strikes without air superiority.
2. Use stealth to establish air superiority.
3. Do it the “old” way (i.e., use non-stealthy force packages composed of a variety of air assets [SEAD, EW, combat air patrol, and strike]).
4. Various combinations of 1–3.

Depending on the future scenario, the fourth choice is the most likely to apply because the Air Force will not be composed of all stealthy aircraft, just as the Navy will not be composed entirely of stealthy warships. Faced with this reality, we must review existing air superiority doctrine and tactics to ensure that we exploit our stealthy assets to the fullest. Although such a review should occupy a significant amount of time on the part of Air Force planners, two quick insights about leveraging stealth in sea control should prove transferable to the thinking on stealth and air superiority.

The first relates to the use of stealthy combat platforms operating independently in nontraditional roles and mis-



sions. Consider, for example, a regional scenario where an SSN is the first warship on the scene, with a carrier battle group en route a week or 10 days behind. In such a case, the SSN's optimum initial employment is quite likely *not* traditional anti-submarine warfare against any of the adversary's conventionally powered submarines deployed defensively. Those defenses represent little threat to the stealthy SSN, which can penetrate to attack key targets ashore, as well as mine submarine ports. Thus, the SSN can keep in port those enemy submarines not yet deployed and test the endurance of those already at sea.²¹

The second insight applies when less stealthy units enter contested territory. The SSN can shift to an "offensive counternaval" sea-control campaign phase against enemy forces. (In the interim, the SSN has collected a significant amount of operational intelligence on those forces in order to simplify the engagement.) In this scenario, the stealthy platform first creates its own local sea control and then contributes to establishing sea control for its nonstealthy colleagues.

These two insights suggest the powerful new capabilities that will accrue to an air component commander (ACC) who is armed with stealthy aircraft and who seeks to establish air superiority in future regional crises. The ability of stealthy aircraft to create local air superiority means that the ACC can hold at risk enemy defenses while neutralizing key targets. Then, if necessary, by shifting stealthy assets to an offensive counterair role, the ACC can quickly establish air superiority with minimum losses, thereby preparing the battlefield for the effective employment of nonstealthy aircraft. In either event, the air commander must avoid the temptation to employ invaluable stealthy aircraft in accordance with traditional, prestealth air superiority doctrine and tactics and thereby squander an immense technological advantage.

Therefore, the employment of stealthy

attack aircraft in an air superiority role meets both components of air supremacy, as defined in AFM 1-1: "Aerospace control assures the friendly use of the environment while denying its use to an enemy."²² Stealthy aircraft not only assure friendly use through their inherent low observability but—when employed in an offensive role against enemy air defenses, communications nodes, and aircraft/infrastructure—prevent the enemy from performing his mission in that same airspace.

Although some new thinking on the impact of stealth on air doctrine and tactics is beginning to emerge in public statements and documents issued by the Air Force, a submariner's quick read of that service's most recently issued doctrinal and policy statements suggests that the conceptual leap is yet to come. Thus, the "bomber road map"—despite its emphasis on the important conventional role to be played in the future by the long-range bomber force—does not make explicit the B-2's important contribution to achieving air superiority. More recent statements suggest a growing appreciation of that capability.²³ The contributions of stealth to air superiority so clearly understood by Air Force planners who directed the employment of F-117s during the Gulf War must now be incorporated by people who draft Air Force doctrine, tactics, and force-structure road maps.

Because of the technology that allows it to proceed to a desired launch point and release weapons from a covert stance, a stealthy combat platform acts as a powerful catalyst to the progressive enabling of large numbers of less stealthy assets. With flexible capabilities extending across the entire set of missions in a traditional air campaign, stealth aircraft represent the ultimate multimission airborne platform and—if properly used—a most powerful tool in the US military's kit. A future regional conflict may demand the precise application of US military power—from long range, at short notice, and with the

promise of minimum casualties on both sides. Stealth permits power projection without expending time or resources to establish air or sea control in traditional ways. To capture fully the impact of the

stealth revolution, we must renew our efforts to revisit doctrine, revise tactics, and plan forces in order to employ the F-117, B-2, and F-22 most effectively in the early establishment of air superiority. □

Notes

1. The article "Stealth Is a Zero-Sum Game: A Submariner's View of the Advanced Tactical Fighter" (*Airpower Journal* 5, no. 1 [Spring 1991]: 4-17), written before Operation Desert Storm, attempted to identify some generic attributes of mobile stealth platforms—as recognized and derived from decades of operating modern nuclear submarines—and to draw possible parallels to the emergent advanced tactical fighter. Readers interested in the advantages that will accrue to the stealthy F-22 in an air-to-air engagement may wish to review that article. The present article considers broader issues about all stealth aircraft, based on combat performance of the F-117 in the Gulf War and again as related to submarine experience. Thanks go to many of my Air Force friends for helping me draw these comparisons.

2. Office of History, Headquarters 37th Fighter Wing, "Nighthawks over Iraq: A Chronology of the F-117A Stealth Fighter in Operations Desert Shield and Desert Storm," Special Study 37FW/HO-91-1, 1991.

3. AFM 1-1, *Basic Aerospace Doctrine of the United States Air Force*, vol. 1, March 1992, 10-11.

4. Examples include

- Providing fighter escort for strike aircraft.
- Concentrating heavily armed B-17 Flying Fortresses to control the airspace around them, thereby permitting precision daylight bombing of strategic targets deep in Nazi Germany.
- Interfering with or neutralizing the enemy's detection, tracking, and targeting functions through heavy employment of EW and antiradiation missiles in suppressing his air defenses.
- Assuming that aircraft such as the F-4E Phantom, F-15E Strike Eagle, or F/A-18 Hornet on a strike mission intrinsically maintain enough air-to-air capability to protect themselves against defending fighters.

5. *The NSL Fact Book, 1989* (Annandale, Va.: US Naval Submarine League, 1989), 119-22.

6. Submarines were also often called upon to perform the mission an aviator would call "interdiction" and a naval officer "sea denial" (i.e., Perhaps I don't own this road or ocean, but you can't use it either!). For example, on the night of 1 June 1944, US submarines *Shark* and *Pintado* attacked a heavily escorted convoy to the west of and en route to Saipan, sinking four troop and cargo ships. This brief encounter, using only a handful of weapons, eliminated the men and materiel of a Japanese division that would have been in place to oppose the 43,000 marines who went ashore two weeks later. The loss of supplies and equipment in this submarine attack resulted in the rationing of ammunition to the remaining 32,000 Saipan defenders—significantly and adversely affecting defensive plans. See Corwin Mendenhall, *Submarine Diary* (Chapel Hill, N.C.: Algonquin Books of Chapel Hill, 1991); and E. B. Potter,

United States and World Sea Power (Englewood Cliffs, N.J.: Prentice-Hall, 1955).

7. Rear Adm Corwin Mendenhall's *Submarine Diary* (see note 6) provides a marvelous insight into the process of evolving tactics and doctrine. His book relates contemporaneously documented observations of 11 war patrols through the eyes of a man who started the war as an unqualified ensign and ended it as a lieutenant commander and prospective commanding officer.

8. Montgomery C. Meigs, *Slide Rules and Submarines* (Washington, D.C.: National Defense University Press, 1990), 49.

9. On page 19 of *Silent Victory: The U.S. Submarine War against Japan* (New York: Bantam, 1975), Clair Blair, Jr., notes that

during the first year and a half of the war, dozens [of submarine captains] had to be relieved for "lack of aggressiveness" (a disaster, both professionally and emotionally, for the men involved) and replaced by brash devil-may-care younger officers, some of whom would never have attained command in peacetime. The general changeover took months to accomplish, and many valuable opportunities were lost before it became effective.

In *Eagle against the Sun: The American War with Japan* (New York: Free Press, 1985), Ronald H. Spector adds that "almost 30 percent of all submarine commanders were relieved for unfitness, or lack of results, during 1942 [and] about 14 percent were removed for these reasons during 1943 and 1944" (page 482).

10. Mendenhall, 208.

11. *The NSL Fact Book, 1989*, 117.

12. *Submarine Roles in the 1990's and Beyond* (Washington, D.C.: Assistant Chief of Naval Operations, Undersea Warfare, 18 January 1992), iii.

13. When employed in this role, the nuclear-powered attack submarine is a much closer cousin to the F-117 and the B-2 than it is to the F-22.

14. James P. Coyne, "A Strike by Stealth," *Air Force Magazine*, March 1992, 38-44; Tony Capaccio, "F-117 Stealth Fighter Hit 80 Percent of Its Targets," *Defense Week* 13, no. 15 (13 April 1992): 1, 8; and "Nighthawks over Iraq." One might ask how the air war would have differed had the F-117 not been available to strike the adversary's center of gravity. Whether alternative tactics had been a Hanoi-type strike package or the nibbling away at peripheral enemy air defenses until the center could be attacked, the battle for air supremacy probably would have been lengthier and costlier without the stealth fighter.

15. John A. Warden III, *The Air Campaign: Planning for Combat* (Washington, D.C.: National Defense University Press, 1988), 41-58.

16. Air combat operations during Desert Storm demonstrated that sheltered enemy aircraft could be destroyed

without undue risk, given the proper mix of weapons and tactics. Some people may quibble with the Tornado example, but it seems clear that low-level, nonstealthy, offensive counterair strikes against heavily defended targets will prove very costly.

17. James P. Coyne, "Plan of Attack," *Air Force Magazine*, April 1992, 40-46.

18. The Apache attack was timed for, and in direct support of, a "stream" of inbound nonstealthy Air Force fighters. It would appear that this helicopter tasking was not driven by any consideration that the F-117 could not attack these radar sites but that the Apaches *could*, thereby releasing F-117s for sorties only they could safely undertake. Of course, the Apaches' (and Air Force Pave Lows') "nap-of-the-earth" brand of stealth made this use of rotary-wing assets a tactical innovation in its own right.

19. *Conduct of the Persian Gulf War: Final Report to Congress* (Washington, D.C.: US Department of Defense, April 1992), 153.

20. *Ibid.*, 164.

21. In-port submarines also present a marvelous target for the tactical land attack missile (variant D) (TLAM-D), a land-attack version of the Tomahawk cruise missile, whose dispersed "cluster" munitions serve to make many additional "main ballast tank vents" in these submarines, effectively submerging them for the duration of the conflict but with little loss of life.

22. AFM 1-1, vol. 1, 6.

23. Maj Gen Jay W. Kelley, "The Future of Heavy Bombers" and "B-2 Support," *Policy Letter*, June 1992, 1-2; US Air Force Issues Team, *Air Force Issues Book, 1992* (Washington, D.C.: Government Printing Office, 1992), 14-15; and House, Committee on Armed Services, Subcommittee on Procurement and Military Nuclear Systems, testimony by Gen John M. Loh, commander, Tactical Air Command, and Gen George L. Butler, commander, Strategic Air Command, 102d Cong., 2d sess., 1 May 1992.

RESULTS OF THE 1992 AIRPOWER JOURNAL READER SURVEY

THE SUMMER 1992 issue of *Airpower Journal* included a tear-out survey that asked how well we're serving your professional reading needs. Here's a synopsis of what you told us.

Nearly two-thirds (64.5 percent) of the survey's respondents were active duty; 20 percent were from the Guard or Reserve; and 15.5 percent were retired military people or civilians.

A high percentage (85.6) of the respondents read *Airpower Journal* regularly, while 85.1 percent read major portions of it (53.8 percent read most or all of the *Journal*, and 31.3 percent read two or more feature articles per issue). Further, 85 percent of our readers discuss *APJ* articles with their colleagues.

Our distribution calls for one copy of *APJ* for every five personnel on active duty. The survey shows that 70.5 percent put the copies back into circulation but that 27.5 percent keep them. Since paid subscribers account for 17.6 percent of the active duty respondents, apparently 9.9 percent (27.5 minus 17.6) feel that our information is too valuable to part with. That's flattering, but we prefer that nonsubscribers share the *Journal* with their associates. Lest we get too puffed up, we should note that 1.9 percent discard *APJ* after reading it.

The feature articles are the most appreciated

part of the *Journal* for 65 percent of the respondents, while only 3.8 percent like them the least. "Ricochets" and "Net Assessments" are the favorites of equal percentages of readers (13.1) but are the least liked of 9.4 percent and 10 percent of readers, respectively. Similarly, the same number of people like the editorials as dislike them. Because "Notams" received a preponderantly negative response from our readers, we have decided to discontinue that section as a regular feature.

Most respondents (81.3 percent) thought the *Journal's* material was readily comprehensible. Twelve and one-half percent, however, indicated that the writing was too difficult, while 4.4 percent thought it too easy.

The majority of readers approved of our focus on the operational level of war, only 6.4 percent preferring the tactical level and 9.4 percent the strategy/policy level. However, 15.6 percent weren't sure what the operational level of war is. (We'll take that as a challenge.)

We got a mixed response to our question about whether the Air Force should have a second professional journal that would deal with strategy/policy issues. Forty-three percent said yes, 30 percent said no, and 24.4 percent weren't sure.

The survey also revealed that people want to

read more articles on leadership, national security affairs/policy, and campaign planning.

Overall, readers think that *Airpower Journal* does quite well at providing an open forum for discussing the operational level of war (86.9 percent favorable, 11.9 percent unfavorable). That pleases us, but we still want to win over the rest of you!

Our solicitation of suggestions for improving *APJ* produced a variety of responses. Several readers made such comments as "maintain focus, but don't discourage articles outside the operational level" or "need more on interface of operational and strategic [levels of war]." Evidently, we are in the ballpark but may need to pay a little more attention to strategy and policy.

Many readers asked for more debate and fewer articles that followed the party line. One respondent said, "As long as you are perceived as the propaganda tool to indoctrinate the politically correct Air Force officer, you'll continue to be latrine reading material." A PME student offered this thought: "Publish critical articles. It wasn't until I started Air Command and Staff College that I read anything critical of USAF published by USAF. Thanks for your good work. I appreciate *APJ*." Another reader wrote, "Too often *Airpower Journal* does the party line. It needs to vary opinions on issues." Actually, we'd be happy to oblige these readers. If the truth were known, we receive precious few articles that challenge the establishment. *Airpower Journal* is a reflection of what people are willing to put on paper and sign their names to. If you will submit articles critical of the way the Air Force does business, we will be happy to evaluate them for publication. On occasion we have rejected such articles—not because they were critical, but because they were poorly written, improperly documented, or discourteous. In short, they failed to meet the standards we require of all submissions.

Other readers had suggestions about the appropriate level of scholarship for *Airpower Journal*. On the one hand, we got comments such as "do more to encourage average people (as opposed to military intellectuals) to write" or "[publish] more concise, less scholarly/stilted articles." On the other hand, some readers urged us to "improve the scholarship of the articles; too many are poorly researched" or "[put] the articles more on the level of Air War College readings. The articles are good for

their level, but the level should be much higher." Such responses probably mean that our approach is "about right," a conclusion that seems consistent with the fact that 81.3 percent of the respondents said they felt comfortable reading our articles.

We also learned something about our readers' tastes in authors. Several want articles by Air Force leaders: "Invite more Air Force icons to write articles, or provide a synopsis of their speeches." Others suggested "more articles by civilians." Another praised our choice of authors, saying that a "good mix of senior and junior contributors is evident. Keep it up!" Actually, we do try to be an "equal opportunity publication." We've published authors in every rank, from chief master sergeant through general, as well as civilians, civil servants, retired people, and even Academy cadets.

Other respondents wanted to see articles on a variety of topics, such as support functions, military history, joint operations, logistics, national policy, international affairs, and peacetime operations. Although we are quite willing to evaluate submissions on any of these topics, articles with the best chance for publication will show how the Air Force can increase its combat effectiveness at the operational level. Further, we believe that *APJ* writers should use history only to help readers understand operational-level issues. We rarely print history for its own sake, referring such submissions to several other good publications for whom history is stock-in-trade. One reader after our own hearts wrote, "Less emphasis on doctrine and more emphasis on applying doctrine at the operational level." Our reply is, Send us your article; we're ready!

Finally, some readers had recommendations bearing on the *Journal's* physical features and frequency of publication: larger pages, different typeface, more pages per issue, more/fewer photos and illustrations, and more issues per year (bimonthly or monthly). Unfortunately, some of these variables (e.g., the size and number of pages, the publication cycle, and the number of copies per issue) are set by the staff of the secretary of the Air Force. But as we prepare layouts for future issues, we will certainly consider those suggestions that address matters we do control.

Your responses are valuable to us. Generally, you seem satisfied with our emphasis on the operational level of war and give us the impression that our articles have an impact

on your thinking and discussions. Following your advice, we will try to live down our image as a party-line journal, but our success will depend on your willingness to send us

Ricochets

continued from page 3

duck, then it's CAS, whether the air power comes from USAF A-10s, Army AH-64 Apache helicopters, or AV-8B Marine Harriers. Similarly, it doesn't matter who the ground forces are—Army infantry troops, an armored battalion, or a Marine amphibious landing force. The concept remains the same, and so should the name.

Though the term CAS is still valid, another term needs to be pointed out and used—*joint air attack Team* (JAAT). Though this term is a doctrinal infant compared to CAS and is still evolving, it generally means a joint attack on hostile targets, under Army control, utilizing both Army assets (usually helicopters and tube artillery) with Air Force CAS assets such as the A-10 or the F-16. I've seen JAATs consisting of a variety of assets directed against a variety of targets, and not just against hostile targets in close proximity to surface troops. As the boundary lines of traditional air-to-surface missions—air interdiction (AI), battlefield air interdiction (BAI), and CAS—disappear, JAAT is a player to cover targets in all of those areas. If you've ever seen the firepower of AH-64 Apaches combined with A-10s and F-16s carefully sequenced by the JAAT commander, then you have to believe that this is a big part of the future of joint close air support. As this type of close-air-support/battlefield air interdiction mission develops, I expect the schoolhouses of the various services and joint schools like the Air Ground Operations School (AGOS) at Hurlburt Field, Florida, to better articulate the definition and roles of joint air attack.

Major Fawcett made his points about the difficulties of the tactical air control system/Army air ground system (TACS/AAGS) in the perspective of the rush of the four-day ground war of Desert Storm. I don't think anybody realistically expected the TACS/AAGS to operate perfectly in light of the large scale and short duration of the war. Therefore, I agree with Major Fawcett's contention that the system isn't broken. But it must be exercised if it

articles that challenge the status quo. We will also keep your suggestions in mind when we select articles and make decisions about our layout. Thanks for your help! RBC

is going to work. The example cited by Major Fawcett about his experience in the 8th Fighter Wing in Korea is still valid. The training process there is relatively easy because the necessary classic components of the tactical air control system—an ASOC (actually there are three in Korea), a tactical air control center (TACC), and tactical air control parties (TACP) consisting of air liaison officers and enlisted terminal attack controllers—all exist in Korea today, training with elements of both the US Army's 2d Infantry Division and the Republic of Korea's army units. That, with the OA-10 and F-16 air power of the 51st Wing and 8th Fighter Wing, makes for quality training when the system is used on a day-to-day basis.

While this training can be done back in the continental US (CONUS), opportunities outside of exercises involving the National Training Center at Fort Irwin, California, are meager. Everybody in the Air Force whose mission statement includes close air support, whether active duty, Guard, or Reserve, needs to get involved, along with the ground elements of the system, like the ASOC and its TACPs. Guard and Reserve support is especially important because much of the active duty A-10 force is reverting to Guard and Reserve control in the shrinking Air Force of the future. The establishment of the composite wing at Pope AFB, North Carolina, with its A-10/OA-10 and F-16 fighters collocated with the Army's 82d Airborne Division and other XVIII Corps assets is a step in the right direction. But it is not enough. The next war probably is not going to give us the lead time we enjoyed for Desert Storm, and victory in combat requires that we "train like we're going to fight."

Capt John G. Setter, Jr., USAF
Seymour-Johnson AFB, North Carolina

WHERE HAVE YOU BEEN?

I read with interest and surprise your editorial ("Where Would You Like to Go?") on officer PME in the Fall 1992 issue. It appears your

basic premise is that "we have no clearly articulated description of what we want our officer PME system to produce." You also imply that not much has been done since AFM 53-1 was published in 1966 to determine what we are trying to produce from officer PME. I disagree.

Quite a lot has been accomplished at Air University, Air Force, and DOD levels. Discussing all the efforts since 1966 would probably serve little value; however, describing the current situation may provide you and your readers a more balanced assessment of where we are today. There is specific guidance on not only what we *should* produce but what we are *required* to produce. This is contained in a variety of sources. Perhaps the most relevant are AFR 53-8, *US Air Force Officer Professional Military Education System*, 15 October 1990, and the Military Education Policy Document (MEPD), 1 May 1990.

AFR 53-8 defines the purpose and objectives of Air Force PME as well as the mission and goals of each PME school. The primary purpose of Air Force PME is to educate "experts in aerospace power and to provide an understanding of, and appreciation for, joint Service operations." The basic objective is to "enhance the professional military competence of Air Force officers through a program of education designed to broaden perspectives, increase knowledge, and prepare officers to assume higher levels of command, staff, and operational duties and responsibilities." More guidance translates these rather broad statements into specific requirements. Examples include:

Develop, impart, and preserve knowledge that is significant to the employment of aerospace power.

Increase understanding of war, its causes, doctrine, strategies, and tactics.

Increase understanding of how military forces, particularly aerospace forces, are developed, sustained, and employed in both peace and war.

Further requirements include such areas as developing leadership attributes and increasing understanding of national security and international relations.

The MEPD defines the objectives and policies of the chairman, Joint Chiefs of Staff, regarding the schools that make up the military education system of the armed forces. In regard to PME and joint PME, the document requires the services to accomplish the following objectives:

Provide the nation with military personnel skilled in the employment of combat forces—the conduct of war.

Provide officers with the skills and knowledge to make sound decisions in progressively more demanding command and staff positions within the national security environment.

Develop strategic thinkers and war fighters.

Provide officers a broad base of joint professional knowledge.

Develop officers whose professional backgrounds and military education will improve the operational excellence of joint military forces throughout the spectrum of war.

Improve the quality of military strategic thought.

Develop officers skilled in attaining unity of effort across Service, agency, and national lines.

Both Air War College and Air Command and Staff College have successfully passed a thorough accreditation process to ensure that they meet the above MEPD requirements. In addition, there have been numerous internal efforts by the schools to ensure that what they produce is in fact what the Air Force needs. These efforts range from curriculum reviews to new mission statements (personally approved by CSAF). Also, Rep Ike Skelton (chairman of the House Armed Services Committee's Panel on Military Education), who is thoroughly involved in ensuring that the military education system produces competent service officers, specifically commented on improvements in Air University:

You have come a long way. You have come to the top like cream. I compliment you and all those who have been instrumental in making . . . the intermediate and senior level schools top notch. (HASC hearings, 20 February 1992)

Your remark that "if we don't know where we are trying to go, it doesn't really matter which path we take" is not only unfair to the men and women who have diligently worked to improve Air Force PME, it is also inaccurate. I believe we are certainly headed in the right direction, with specific guidance and a clearly defined product. Air Force PME is committed to its charter—a charter echoed in AFM 1-1, *Basic Aerospace Doctrine of the United States Air Force*, March 1992:

Professional military education should encourage critical analytical thought, innovative problem

solving, and sound professional judgment. An objective approach to the problems of war and specialized competence in the operational and strategic employment of aerospace power should be the product of Air Force professional military education.

Lt Col Stephen L. Havron, USAF
Maxwell AFB, Alabama

EDITOR'S NOTE: *As an open forum for debate, we appreciate comments on all the contents of the APJ (including our carefully crafted editorials).*



Storm over Iraq: Air Power and the Gulf War by Richard P. Hallion. Smithsonian Institution Press, 470 L'Enfant Plaza, Suite 7100, Washington, D.C. 20560, 1992, 383 pages, \$24.95.

Storm over Iraq is a superb choice to begin your library or to expand it. Either way I guarantee it will become a cornerstone of how you think about the use of air power. It may be the benchmark by which we measure understanding of the debate over the revolution in warfare that was heralded by Operation Desert Storm. Richard Hallion, an internationally recognized authority, is well qualified to address the topic. He has dedicated his life to researching and understanding the history of air power. From his vantage point as the Charles A. Lindbergh Professor of Aerospace History at the National Air and Space Museum, he is uniquely qualified to explore the national security implications of the Gulf War. His underlying premise is that the very nature of warfare was changed by the events of Operation Desert Storm.

The first 120 pages of the book make an excellent short history on the development of air power. It is easy to read and is essential to what follows. The author builds a very strong case that what the history of military aviation

teaches is that sophisticated aircraft using force multipliers can exploit speed, range, flexibility, precision, and lethality to make Global Reach—Global Power a reality.

Having laid the groundwork, Hallion gives us 40 pages on the development of doctrine and another 40 on executing the air campaign over Iraq. This entire section holds your attention like a Tom Clancy novel, and you forget that this is a scholarly, well-documented discourse on the revolution in warfare. He contends that air power makes it possible to wage war from the "inside out" by simultaneous attacks on the leadership, key production, infrastructure, and popular support as well as on the fielded forces.

His post mortem on the war begins on page 201 with a buildup to what worked, what did not, and why. He notes that the "parallel attacks" made possible by stealth technology meant that while the F-117As flew only 2 percent of the combat sorties, they attacked 40 percent of the strategic targets in Iraq. By his analysis, one strike aircraft with two smart bombs did the job of 108 World War II B-17 bombers armed with 648 bombs. This makes a striking contrast to his comments on the inability of the intelligence system to provide the data the operators were demanding.

In my opinion, anyone contemplating a future with the Air Force needs to read and understand chapter 8, "Questions, Answers, and Conjectures." Hallion tells us that while elements of AirLand Battle were present in Desert Storm, we should not assume that the decisive application of the entire doctrine was the reason for victory. To the contrary, he makes the point that

air power can hold territory by denying an enemy the ability to seize it, and by denying an enemy the use of his forces. And it can seize territory by controlling access to the territory and movement across it. . . . Air warfare turns a flank from above, unconstrained by terrain or natural barrier. . . . Only air power . . . can strike anywhere in the world, anytime, hitting multiple targets in a way that an army advancing along a front or a fleet steaming at sea cannot. . . . Neither armies nor navies can be considered the primary instrument of securing victory in war. (Pages 253-54)

He concludes that given the nonnuclear technological superiority demonstrated by the United States, nuclear weapons will increasingly be considered the weapons of barbarians.

Despite the fact that the author raises some very important points for our consideration, there are two major criticisms of the book that need to be voiced. First of all, while he does not state blatantly that the Army and Navy are irrelevant, he does seem to imply "Don't call us, we'll call you if we need you." Second, his generalizations from Desert Storm are dependent upon that type of war. Iraq was a relatively well equipped conventional force with a top-down, information-dependent control system. The effectiveness of the same methods and techniques have yet to be proven against a less conventional opponent or in a different environment. In any event, the author has opened the discussion on the revolution in warfare and its future in a very well written and thoughtful piece.

Finally, I would be remiss not to comment on the eight appendixes that cover "Defense Technologies of the Post-Vietnam Era: A Selective Perspective." This is a collection of one- and two-page synopses of the critical technologies that help define the revolution in warfare.

Lt Col Albert U. Mitchum, USAF
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At the Edge of Space: The X-15 Flight Program by Milton O. Thompson. 470

L'Enfant Plaza, Suite 7100, Washington, D.C. 20560: Smithsonian Institution Press, 1992, 375 pages, \$29.95.

As Milt Thompson explains in the "Author's Note" to *At the Edge of Space*, he was "neither a professional writer nor a historian" when he wrote this account of the X-15 flight-test program. However, as one of the 12 pilots of this unique aircraft and as a veteran of 14 flights in the 22 months he was with the program, he is supremely qualified to describe the people, places, equipment, and—above all—the drama of the X-15. Neither a slick story nor a dry history, the book is a personal telling of the flight-test program for the "last real exploratory aircraft."

Thompson begins—appropriately enough—not with a description of the X-15 but of the men who flew it. This is the strength of this book—the fact that it looks at the human side of a very technical program. Such a focus gives the reader insight into what it was like to fly "at the edge of space" and what kind of pilot excelled at this exciting and dangerous work. He then examines the technical side of the program—the X-15 itself and the involved operation that allowed the aircraft to do its job.

The bulk of the book, however, is a description of the 199 flights of this ambitious test program, told through the stories of the men who flew the aircraft. The X-15 was created to see if we were smart enough to design, build, and fly a hypersonic airplane. Thus, the X-15 pilots flew test missions to validate theory and wind-tunnel tests, operating a vehicle that could travel over six times the speed of sound (twice as fast as a rifle bullet), climb above most of the earth's atmosphere (354,200 feet), and reenter and land under pilot control. Thompson's personal insight gives the reader a feel for what it was like to be strapped into an aircraft with 1,000 gallons of liquid oxygen, 1,400 gallons of ammonia, various tanks of concentrated hydrogen peroxide, and an engine that could provide 60,000 pounds of thrust (four times the dry weight of the aircraft) and a 50-foot flame.

This story also shows the dangers of flying high-performance aircraft. For example, not only did Thompson have to make an emergency landing in the X-15 after a premature engine shutdown, but he also had to eject from an F-104 during a preflight checkout of the emergency landing sites used for the tests. All in all, the X-15 pilots made 10 emergency land-

ings and had two major accidents, one of which killed Maj Michael J. Adams, USAF, a pilot on flight 191. *At the Edge of Space* tells of the many malfunctions that made each flight an interesting one, showing the heroic and humorous sides of flying the X-15.

When the program ended in 1968, it had provided enough information to make it one of the most successful flight-research programs ever conducted. In addition to validating the way hypersonic aircraft are designed, it provided a wealth of experience that was used to design and fly the space shuttle. It also paved the way for the current research in hypersonic vehicles that may culminate in the national aerospace plane, which would provide global access in hours and a (relatively) cheaper "single-stage to orbit" means of launching satellites. Furthermore, the X-15 is still the fastest aircraft in the world.

Although this book is not without its flaws (it is repetitive at times and occasionally uses technical or pilot terms that are not defined until later), Thompson more than meets his goal of capturing the human drama and technical accomplishments of the X-15 flight program. The author's use of personal (and humorous) stories makes *At the Edge of Space* worthwhile reading for anyone with a desire to see the inside of a flight-test program.

Maj William P. Doyle, Jr., USAF
Peterson AFB, Colorado

Eighty Knots to Mach 2: Forty-Five Years in the Cockpit by Richard Linnekin. US Naval Institute, Annapolis, Maryland 21402: Naval Institute Press, 1991, 408 pages, \$27.95.

Are you an aviation enthusiast, armchair aviator, or someone who has more than a passing interest in aviation? If so, you should read *Eighty Knots to Mach 2* because it is both an anecdotal narrative of the author's many years of flying and a comprehensive technical study of the aircraft he flew. Richard Linnekin is indeed qualified to write on this subject, having spent 22 years as a naval aviator and test pilot. As the title suggests, Linnekin's breadth of flying experience includes the lethargic N2S Stearman trainer, the sleek Phantom II—capable of Mach 2.3—and many other aircraft in between.

Put simply, *Eighty Knots to Mach 2* is a unique book in its purpose and organization.

Readers should not automatically include this book in the growing genre of pilots' personal recollections—accounts that serve mainly to highlight their careers. This is not Linnekin's intention. Rather, he concentrates on the aircraft—the nuts-and-bolts details—and the aviators who flew them. Although Linnekin makes no pretensions that his accomplishments were extraordinary, he indirectly demonstrates that his was a career marked by valor and superb proficiency in the cockpit.

The book is organized into 11 chapters, nine of which focus on single aircraft types: N2S Stearman, SNJ Texan, F6F Hellcat, F8F Bearcat, F4U Corsair, F9F Panther, F9F-6/8T Cougar, AD Skyraider, and F8U Crusader. The remaining two chapters, "Other Jets" and "The Little Guys," discuss several different jet types and general-aviation aircraft, respectively. In the preface, Linnekin establishes a basic format for each chapter:

- A general description of the airplane, including its historical significance, if any.
- How it flew. This includes the sort of stuff each machine was expected to do in its operational environment.
- Professional anecdotes aimed at the characteristics of the airplanes and their pilots while flying them.
- Occasional personal anecdotes about the folks who flew the airplanes: straight arrows, wild hairs, or whatever in between they may have been while they were *not* flying airplanes. (Page xii)

Because of his background as a test pilot, Linnekin could have easily overwhelmed the reader with the technical aspects and specifications of these aircraft. But it is this thorough knowledge that allows him to describe otherwise complex mechanisms and procedures in language that even a nonaviator will understand. Linnekin's concise depictions give each aircraft a distinctive personality of its own. He successfully conveys the sensations of flying in rich detail, while educating the reader about the hows and whys that surround these diverse aircraft.

Linnekin also goes to great lengths to set the record straight concerning many of the popular myths about naval aviation. One way he does this is by citing accepted references on the subject (movies, television, and other books) and either discounting or corroborating them, based on his personal experiences. Twenty-one pages of endnotes serve to support and

expand upon information presented in the chapters.

One fascinating aspect of *Eighty Knots to Mach 2* is its focus on the human factor—what sets naval aviators apart from their peers. Whether he intended to or not, Linnekin's anecdotes about his fellow aviators are extremely amusing. If one word can be used to describe them, it would certainly be *colorful*. Naval aviators share membership in an elite fraternity, and their spirit of camaraderie is evident both in the air and on the ground. Linnekin steers clear of the clichés surrounding the "right stuff" and instead sheds light on what he calls the "real thing" (page 129). According to Linnekin, many young naval aviators lived by the credo, "If you can't be good, be colorful" (page 84).

In short, Richard Linnekin has brought life to the otherwise inanimate components of numerous naval and general-aviation aircraft. In the process, he sheds light on the brave men who piloted these aircraft and debunks some of the myths surrounding naval aviation. His extensive experience as a naval aviator/test pilot and many outside references lend credence to his story—one that is made even more readable through his use of humorous anecdotes. What Linnekin presents is not necessarily an autobiography, but a portrayal of the superior qualities that naval aviators of his era personified. These enduring traits can also be found in today's crop of naval aviators. *Eighty Knots to Mach 2* is one of those rare books that both entertains and educates, and it should be a welcome addition to the libraries of aviators and nonaviators alike.

2d Lt Michael S. Milner, USAF
Francis E. Warren AFB, Wyoming

The Book of Stratagems: Tactics for Triumph and Survival by Harro Von Senger. Edited and translated by Myron B. Gubitz. 375 Hudson Street, New York 10014: Viking Press, 1991, 397 pages, \$24.95.

The fundamental truth of war is change, not violence. The nature of war is in a constant state of transition derived from the infinite combinations of societal factors that characterize its conduct. Each engagement, battle, campaign, or war is unique to its time and is fought relative to a transient set of conditions or circumstances, and even these evolve as combat

unfolds. Violence, as a consequence of combat, is a manifestation of the nature of war, but not a prerequisite. Recognizing that "change" in war is rudimentary and crucial in the conduct of war, it is therefore necessary to analyze how change is effected or, to the extent possible, controlled. Juxtaposed to change is a universal continuity in all warfare—the human element—the involvement of man's psyche. Circumstances can be created to produce advantages through the manipulation of the psychological influence—the morale factor. The mind can command brilliance, or fail to achieve mediocrity, depending on the rate and kind of psychological change it encounters.

The sixth century B.C. Chinese military theorist Sun Tzu understood this relationship of war within the context of Taoist philosophy. According to Chinese thinking, the concept of a unified, dynamic balance in nature connects the changing character of war to the intricate and sometimes delicate workings of the human mind. The Taoist perspective emphasizes the dynamic quality of all phenomena—the ceaseless transformation of all things and situations. The structure of this fluidity is a cyclical pattern based on the idea of opposites—yin and yang, each pair representing an implicit unity. Taoism, with its philosophic outlook and conceptual structure of nature, permeates Sun Tzu's *The Art of War*. Within this mental framework, he sought rational solutions founded on objective thinking by operating outside the realm of emotion and by imparting impersonal twists to the views of Taoist "reality." He considered the genius of generalship to consist of effecting changes to battle conditions and manipulating them to gain an advantage. As a counterpoise to an opponent's actions, Sun Tzu envisioned a commander having the ability to adapt to existing situations by presaging events to determine the appropriate preemptive responses. A *cheng* or direct action was to be countered by a *ch'i* or indirect action; as reciprocal elements, they presented infinite permutations. By careful calculation and dispassionate assessment of situations, he endeavored to decide the outcome of battle through the test of emotions. Sun Tzu elected moral force and intuitive intellect as mechanisms to understand the relationship of opposites and to effect different situations to confound his opponent. Master Tzu indicated that all war was a matter of deception.

In terms of *The Art of War*, the master war-

rior knows the psychology and processes of conflict so intimately that an opponent's move is anticipated before it is enacted. The master warrior understands the relative relationships between opposites and objectively employs stratagems in order to unbalance his opponent in relationship to the whole situation. By "knowing," the master warrior can be made aware of the situation before it happens and avoid a predicament or can change the predicament to his advantage. Such mental acuity or intuition is difficult to understand in the Western context; it is coup d'oeil extraordinaire.

The Book of Stratagems: Tactics for Triumph and Survival places Sun Tzu in historical context. This compilation of the first 18 legendary Thirty-Six Stratagems of ancient China is a compendium of Eastern thought distilled and honed by the practical application of generals, politicians, and businessmen for over five millennia. The contents of the Thirty-Six Stratagems consist of only 138 Chinese characters; most of the idioms are expressed in combinations of three to four characters. These written characters were not intended to be just abstract signs but an organic pattern—a gestalt of symbolic configurations with psychological implications. These characters represented aphorisms which preserved the full complexity of images and the suggestive power of the word. In each case, fables, parables, and actual experiences were subsequently employed to interpret or explain their meaning. *The Book of Stratagems* incorporates the original Chinese characters and their meaning, their interpretations with references to the oldest known case in which they were described, and the original source tales from Chinese literature and history in which they were used. Indeed, interpretation and illustration are essential, since the maxims by themselves would be largely incomprehensible as stratagems without explanation and example. This linguistic sparseness, however, leaves a great deal of latitude for interpretation and illustration.

As Harro Von Senger points out *ji*—or *stratagem* in the Chinese sense—ranges from a simple trick or a spontaneous act based on "sheer presence of mind to complex, carefully planned behavior." The stratagems are employed to produce one or more of the following psychological effects: masking something which is true, pretending something which is untrue, gaining the initiative or

advantage, gaining a prize, encirclement, enticement, and flight. One of the stratagems—called "Openly Repair the Walkway, Secretly March to Chencang"—Von Senger refers to as "the stratagem of the hidden route march." To confuse the enemy or lull him into a false sense of security, a commander would outwardly execute a perfectly normal military operation while secretly carrying out an unusual one. In another situation, accomplishing a diversionary maneuver to mask the real direction of an attack would constitute stratagem number six, "Clamor in the East, Attack in the West." While these two stratagems are similar, there are subtle differences to them; therefore, they can be used individually to psychologically confuse the opponent or as "a chain of stratagems," referred to as *lianhuanji*. The threat of an amphibious assault against the Kuwaiti beaches and the pinning down of the Iraqi forces along the southern border of Kuwait masked the real axis of attack for coalition forces in the Persian Gulf war. To complicate Saddam Hussein's mind, Gen Norman Schwarzkopf employed "the stratagem of disinformation" by using the "Create Something from Nothing" stratagem. He permitted the broadcast media to "advertise" that an attack might be delivered against the Kuwaiti beaches by US marines. While Hussein watched toward the Gulf, the main land thrust was projected in a classic turning movement around the entire Kuwaiti theater against the Iraqi army's principal line of communications.

These stratagems demonstrate the ageless wisdom of these potent and deceptively simple tactics for various applications ranging from battlefields to boardrooms to foreign policy. Packed with timeless insight and timely applications, *The Book of Stratagems* crystallizes the wisdom of 50 centuries for life in the 1990s. The stratagems constitute a body of practical knowledge which is far more valuable than empty moralistic phrases. The essence in the study of relationships is to understand the mental nature of a subject: in war it is the psychological characteristics that can and ought to be manipulated by the master warrior. Knowing the metaphysical aspects of a subject—the complementary synergism of opposites to the unified whole—is at the very root of Eastern philosophy. Sun Tzu postulated that when you know both yourself and others, you are never in danger; when you know yourself but not others, you have half a chance of

winning; and when you know neither yourself nor others, you are in danger in every battle. He understood the intricate relationship between the psychological element and the changes in war.

The Book of Stratagems is not a book on Sun Tzu or his *Art of War*; however, it places his thoughts and—more importantly—his methodology into context. Von Senger's book puts Sun Tzu into historical perspective. Read this book before embarking on the mental journey through *The Art of War*.

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The Cruel Peace: Everyday Life in the Cold War by Fred Inglis. 10 E. 53d Street, New York 10022: Basic Books, 1991, 492 pages, \$28.00.

Both eminently readable and repugnantly cynical, *The Cruel Peace* tells a story that many people believe—though it need not be believed merely because it is told. In one sitting, Fred Inglis, a British professor of education, gives a non- (if not anti-) American account of the cold war, from start to finish. His vantage point is the political Left, not the extreme Left perhaps, but far enough Left for Inglis to find disillusionment in the remains of the communist-socialist state and little hope in present-day Western democracy.

The title of this book—or at least the subtitle—is misleading. The prospective reader will be mistaken, and happily so, if *Everyday Life in the Cold War* conjures up images of stay-at-home mothers with wringer washing machines and hula-hooping children taught to crawl under their school desks in the event of nuclear attack. True, Inglis gives some account of things that touch ordinary people: he discusses the films and literature that grew out of and aggravated the cold war, for instance. But, perplexingly enough, the title suggests a much more mundane tale than the one he finally provides. Instead, Inglis tells the story of the “casting of the iron curtain”; the Berlin blockade; the Korean War; the “Red scare”; postwar Eastern Europe; the Berlin Wall; Suez in 1956; Tet, Prague, and the Chicago Democratic convention in 1968; the rise and rule of Reagan and Gorbachev; and—finally—the crumbling of

Eurocommunism in 1989, all from the point of view of a British Labourite.

In addition, interspersed throughout *The Cruel Peace* are biographical chapters about cold warriors—not necessarily those who are best known, such as Kissinger and Khrushchev, but those whom Inglis deems important: Frank Thompson, George Kennan, Freeman Dyson, Willy Brandt, Philip Agee, Neil Sheehan, Lord Peter Carrington, Edward Thompson, and Joan Didion. Among this group, as well as others, are Inglis's heroes. He openly lauds the Thompsons, Agee, Sheehan, Bertrand Russell, Gorbachev, Daniel Ellsberg, Nicaragua's Sandinistas, and Brandt, and tips his hat to Kennan and Carrington. For example, to Inglis, the “extremely bright” Ellsberg is “that all-American character, the romantic puritan, a hard-working man of passionate commitment, intense feelings, and no less intense conscience.” Sheehan is “the quiet, upright, implacable hero” of the Pentagon Papers story (page 276).

By contrast, Inglis does not hesitate to vilify his heavies, who include Nixon, Johnson, Kissinger, Thatcher, and Reagan. These last two, he writes, “both of them narrow, even bigoted, each blessed with luck, money, and a strong will—by the accidents of the electoral systems were brought to power at the same moment and with the same vision” (page 423). Reagan's expression following the Reykjavik summit, says Inglis, is “plain dumb, as though he has understood nothing of what has gone on” (page 358).

To his credit, Inglis spins his brazenly biased—but in that sense, honest—tale in a truly attention-riveting manner. He has tamed the English language to respond well to his pen and can turn a phrase with the best of the modern novelists. “The cold war was a perverted monument to human creativity,” he writes, “a creatively ruinous combination of passions, interests, money, and technology; it was the nightmare of the past weighing down the brain of the living.” The result of his gift for words is that one can enjoy a good read without accepting the snide egotism by which Inglis judges the past.

One cannot escape Inglis the cynic, however. His whining bathos and disillusionment is evident throughout. He proclaims, for example, that following World War II, “the British government feebly attempted a motion or two of independence—a nuclear device here, a

Byzantine adventure there—before taking its obsequious place as chief satrap to the Pax Americana" (page 34). He notes that the "baby-boom" generation "that will be mismanaging the world in the next millennium was being born as [Stalin] died" (page 37). And antiterrorism, to Inglis, is the US's way of "reassert[ing] its imperial reach and authority." The 1986 bombing of Libya, for instance, "was an act of cruel, mean-minded oppression . . . conduct of which the liberal superpower will one day be ashamed" (page 353).

Should USAF personnel read *The Cruel Peace*? Yes. Not unequivocally, unabashedly yes. But the book is worth reading because it offers a different perspective than that generally proffered to American bearers of arms. One need not fear subtle indoctrination from it, for the book is not subtle. But Inglis's clear, witty, sometimes charming cynicism reveals the pathetic detritus that remains for the arm-chair communist whose world has crumbled but who can see no hope in the alternative offered by the cold war victors.

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Instruments of Statecraft: U.S. Guerrilla Warfare, Counterinsurgency, and Counter-Terrorism, 1940-1990 by Michael McClintock. 201 E. 50th Street, New York 10022: Pantheon Books, 1992, 604 pages, \$30.00.

To the American public, unconventional conflict evokes an image of the Green Berets. To policymakers, it offers both dangers and opportunities. To the military, it brings a sense of doctrinal and operational uncertainty. To all, it is at once both fascinating and troublesome, for unconventional conflict in its many forms does not fit the American ideal on waging war.

After the decline of the Special Forces in the post-Vietnam era, President Ronald Reagan reinstated the importance of having the capacity to engage in "small" or "dirty" wars under the term *low-intensity conflict* (LIC) as a means of meeting a perceived Soviet threat in the third world and combating terrorism. President George Bush has continued to emphasize the need for a LIC capability as part of his declared war on drugs.

Despite the renewed interest in unconventional conflict, there has been a dearth of detailed histories on the development of the American experience in "the wars in the shadows" and on the way such involvement is related to the past and current conduct of US national security policy. Michael McClintock's book has helped to fill this gap.

At the outset of his study, the author effectively establishes the major factors that have conditioned the formulation of US foreign policy. He makes a cogent analysis of how Washington has historically sought to reconcile the pursuit of national interests—as an element of the realist school of global politics enunciated by Adm Alfred Thayer Mahan—with an ideological justification for American global commitment. His descriptions of President Woodrow Wilson's pursuit of an activist policy to achieve the idealized goal of world peace and of President Harry Truman's call for an effective response to meet the challenges of the cold war provide the historical foundation for ensuing chapters.

McClintock then provides an excellent discussion of American doctrine on special warfare from the early days of the Office of Strategic Services, which emphasized the conduct of partisan warfare. He traces the developments that led to Washington's involvement in covert operations and psychological warfare. His assessment of the lessons learned from the experience of World War II is must reading for people who wish to understand the underpinning of the development of doctrine associated with guerrilla warfare, counterinsurgency, and counterterrorism. The author cogently analyzes and illustrates how a doctrine and a capability to engage in counterinsurgency were developed in the Philippines and Indochina. His discussion of how a wide range of psychological operations was employed against the Hukbalahaps (Huks) not only provides a basis for understanding the genesis of the types of doctrine that would be applied in Vietnam, but also is still relevant to contemporary counterinsurgency operations.

McClintock provides a particularly effective discussion of US involvement in Guatemala, the Congo, and Cuba. It is striking to see the lack of both accountability and congressional oversight that took place when the American public was either more innocent or ignorant of the nature of Washington's programs of regime destabilization. The author covers familiar

ground when he discusses the impact of President John Kennedy's enchantment with Special Forces and Washington's commitment to engage in counterinsurgency. His discussion underscores how events in Camelot led to the formulation of doctrine that is still being applied today.

The author's discussion of counterterrorism as well as counterterrorism organizations illustrates the fact that resorting to such tactics was an inherent aspect of US unconventional warfare long before our preoccupation with the international terrorist threat in the late 1960s and the ensuing decades. He then provides a chilling assessment of how the US applied the colonial and—more specifically—the French model of population control in Vietnam.

McClintock effectively illustrates how President Jimmy Carter's focus on human rights was often derailed by a national security apparatus that often turned a blind eye to the terror tactics employed by "friendly" regimes in the third world. He also illustrates how the failure at Desert One was a defining moment that would lead to a renaissance of special operations under the Reagan administration.

The author's discussion of what he calls the "special warfare revival" provides a succinct account of a reorganization that continues today. His discussion of the development of LIC is an exceedingly well written historical narrative of the development of a concept which has gripped the military establishment from the mid-1980s to the present.

McClintock's evaluation of the development of counterterrorism doctrine and capabilities will be of particular interest to the specialist on terrorism. He ably indicates not only how the formulation of the doctrine raised fundamental moral questions but—more specifically—how covert action and preemptive terrorism represented "an un-American way of fighting war." He makes a telling case for the view that the operational ambiguities that often characterize special operations—particularly with regard to "direct action" (e.g., assassination, abduction, and hostage taking)—are not amenable to control through the strictures of narrowly defined legal terminology.

Instruments of Statecraft is a well-researched and well-written book. One should not overlook the extensive notes, for they provide a wealth of source material for the researcher who wishes to pursue the topic. Michael McClintock's fine study should be read by pol-

icymakers and by people who will be involved in what one author has aptly called uncomfortable wars—uncomfortable for the policymakers but oftentimes deadly for the willing or unwilling participants.

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British Intelligence in the Second World War, vol. 5, Strategic Deception by Michael Howard. 40 W. 20th Street, New York 10011: Cambridge University Press, 1990, 271 pages, no price available.

A critical aspect of the success in the overall plan for the recent Gulf war was the role played by strategic deception, a skill all too much neglected by American military planners. Military historians have long recognized that the art of deception planning at the strategic level was one that the British worked to perfection during World War II for the simple reason that they had to—particularly during the lonely months of 1940 and 1941 when they alone stood against the Third Reich. However, our knowledge of these efforts to date has been derived from journalistic accounts such as *The Man Who Never Was*, *Bodyguard of Lies*, and *Man Called Intrepid*. What was lacking was a definitive study based on official sources on both what and how this was done.

This void has been fulfilled by the final volume of the official series, *British Intelligence in the Second World War*, written by one of this century's most distinguished military historians, Sir Michael Howard, former regius professor at Oxford and current Robert A. Lovett professor of military and naval history at Yale University.

Sir Michael's focus is not only upon security—"concealing one's intentions from the enemy"—but more importantly "implanting in [your] adversary's mind an erroneous image which will not only help to conceal true capabilities and intentions but will lead that adversary to act in such a way as to make [your own] task easier. . . . It is not enough to persuade the enemy to think something; it is necessary to persuade him to do something." Thus, the task that he lays out for the deception planner is a daunting one.

Howard's account focuses on just how the British planners attempted to meet this chal-

lenge in the European theater of operations. He begins with a useful description of how the deception planning process was established in 1940—no easy task considering the tremendous variety of agencies involved to include not only the military services, the operational commands, and the various intelligence bodies but also the Foreign Office and Home Office that had interests. He then discusses some of the initial planning efforts, from those conceived by "A" Force in the Middle East to deceive the Nazis as to the actual locations of the risky 1942 North African landings of Operation Torch to the 1943 operations Cockade and Barclay to confuse Hitler with respect to the continuation of Allied offensives in the Mediterranean.

The major part of this book is devoted to what he calls "The Climax: Bodyguard," in which he outlines the how and what of the 1944–45 deception operations Fortitude, Zeppelin, and Crossbow, which were an integral part of Allied planning for operations on the European continent in the last year of the conflict. These code names have been well known to military historians of this phase of the war. What has been less well known have been the actual details, a task that Howard tackles with his accustomed authoritative style, laying out both process and substance of these efforts as well as the degree to which each contributed to the conclusion of the European war.

Several points emerge from Sir Michael's analysis. First is the remarkable degree to which the process of these operations depended upon an established system of "double agents." Without this network—the most famous of which was "Garbo"—it is clear that the vital intelligence feedback loop needed to validate the substance of these efforts simply would not have been there. But more important are his judgments on the overall impact of these operations, assessments that are clearly at odds with historical accounts written to date.

Operations Cockade and Barclay floundered badly in North Africa because of faulty organization and mistrust by commanders and operators. On aspects of Fortitude—the widely known deception operation for Overlord—"there is nothing available to indicate that this deception contributed to the tactical surprise achieved on the Normandy beaches . . . the surprise which the Allies achieved at Anzio . . .

owed little [to Zeppelin]; [and] little could be done in the way of deception" during Crossbow, the British efforts to deceive the Germans with respect to the effects of their V-2 campaign. Howard concludes that "deception during . . . [the] closing months of the war seems to have been an unsatisfactory and largely unsuccessful affair." These efforts seemed to have been pushed aside in the rush for operational success.

Such caveats are useful for future air power planners. First, regardless of what intelligence technology brings to the modern battlefield, one must not overlook the importance of human intelligence (HUMINT). Second, commanders as well as planners must be conscious of the degree to which deception operations must be integrated into operational plans lest all this effort be to no avail, as it now appears it was during the latter part of the Second World War.

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The Chancy War: Winning in China, Burma, and India in World War II by Edward Fischer. c/o Crown Publishers, Inc., 225 Park Avenue S., New York 10003: Orion Books, 1991, 250 pages, \$23.00.

One of the most neglected areas of study in the history of World War II has been the China–Burma–India (CBI) theater. Seen as important both then and since chiefly because of geopolitical ramifications, the CBI has not been dealt with much beyond the level of high diplomacy and the repercussions it held for the postwar fight for control of China. Eschewing such a lofty perspective, Edward Fischer tells in an interesting memoir what it was like for the soldiers fighting—or supporting the fighting—in the CBI theater. Written by a junior officer who arrived there in 1944, *The Chancy War* is an interesting memoir of this backwater of military operations during the conflict. In fact, Fischer begins his account by tying his title, *The Chancy War*, to low priorities assigned to the theater by senior Allied officials. A disheartened supply sergeant told him soon after he arrived in the theater, "Over here, we are fighting a chancy war. If you ask the States for something, there is a slim chance you'll get it and a greater chance you won't. A chancy war!" (page 1).

Edward Fischer makes clear that World War II in the CBI was primarily a war that relied on long logistical pipelines through some of the harshest country on the planet. The subjects of supply and maintenance, and the problems associated with them, come through at every turn. For instance, as a young logistics specialist assigned to Fort Riley, Kansas, in mid-1944, Fischer was trained to handle pack mules for the Army. The first section of the book is an interesting recollection of the Army's process of training mule handlers for supply operations in difficult terrain, something that became virtually outmoded in the postwar US Army. It was, however, a critical component of the mobility element of the American-supported rebels in Afghanistan during the 1970s, and some of the American foreign aid involved airlifting mules to rebels for use as pack animals in the mountains. When Fischer arrived at the military base near Myitkyina, Burma, he learned that he was not needed. "We don't use mules anymore," a superior officer told him. "We airdrop everything now. Fly in low. Kick it out" (page 4).

Fischer was quickly reassigned as a public affairs officer and assigned to help squire around the media as the first convoys traveled up the Ledo Road to China. He also flew on the famous Hump airlift from India to China, the tenuous aeronautical pipeline that kept China in the war between 1942 and early 1945. Later he was assigned to write official histories of the Army in the theater. Fischer recounts all of these episodes with insight and compassion, emphasizing the everyday life of Americans fighting a war in Asia.

Edward Fischer has some telling anecdotes about the conduct of war in the jungles of the CBI. He describes many of the instances of infighting between senior military leadership in China, especially between Gen Joseph Stilwell, Lord Louis Mountbatten, and Generalissimo Chiang Kai-shek. These are interesting but not nearly so telling as insights derived from Fischer's personal experiences recounted with vigor in *The Chancy War*.

In some instances, his narrative offers alternatives to conventional conclusions. Recent historical scholarship has emphasized the racism of Americans as a means of explaining the brutality with which the war against Japan was prosecuted. Fischer offers an intriguing explanation of this brutality beyond the race issue:

I came upon five Americans who had seen much fighting. I was struck by how little credit they would give the Japanese soldier, a tough competitor. In the European Theater, Americans saw German soldiers as fellows they might well share a bottle of beer with, and Italian soldiers as fellows they could drink red wine with, but in Burma the Allies looked upon the Japanese as little more than animals. Stilwell called the Japanese "these bow-legged cockroaches" and "bucktoothed bastards." I think the setting led to these primitive feelings. In Europe the war was waged through cities and towns and across cultivated fields, and mainly with the enemy at some distance; in Burma the jungle was primitive and the fighting often close up, eye-to-eye. (page 50)

The dehumanization of the enemy was not so much the result of race, according to Fischer, as it was due to the circumstances of jungle fighting—an intriguing idea that, unfortunately, the author does not pursue.

This book is one of the better memoirs of war in the CBI theater in World War II. Well written and insightful, *The Chancy War* is an unusually detailed and vivid account of one officer's experiences in Asia during the last months of the fighting. Fischer has produced an interesting book that will be permanently useful to academics and, more important, interesting to nonspecialists. An important addition to our understanding of the details of soldier life in the China-Burma-India theater, *The Chancy War* is well worth the attention of military historians or students of the era.

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Eyeball to Eyeball: The Inside Story of the Cuban Missile Crisis by Dino A. Brugioni. 201 E. 50th Street, 31st Floor, New York 10022: Random House, 1991, 622 pages, \$35.00.

A historical technothriller, this often spell-binding account of the Cuban missile crisis recreates the tension and drama of those 18 days in October 1962 when the world stood on the brink of nuclear holocaust. Mr Brugioni's title, taken from Secretary of State Dean Rusk's memorable quote, "We were eyeball to eyeball, and I think the other fellow blinked," reminds us how close to war we came. Even Mr Brugioni, who at the time was a senior CIA officer in the National Photographic

Interpretation Center, admits that at one point during the crisis, he "succumbed to the general mood of apocalypse" and told his wife to be prepared to take their kids to his parents' house in Missouri. If the personalities and events chronicled in this book weren't true, they could easily be the basis for a fictional best-seller. Mr Brugioni comes close to the popular technothriller genre, but the history buff in him tends to get in the way as he strives to fill in the details.

The focus of this book is on the absolutely indispensable contribution of aerial reconnaissance photography to the discovery of the missiles and the ultimate resolution of the resulting crisis. Developed during the Eisenhower administration, the Lockheed U-2 provided high-altitude photography, which enabled the United States to discover the presence of offensive missiles and bombers in Cuba. Later high- and low-altitude photos enabled the United States to prove to the world, beyond a shadow of a doubt, that these missiles and bombers were being made operational at the same time that the Soviets were still denying their very existence. In the end, aerial reconnaissance proved to be the only means available to verify the removal of the missiles and bombers.

But this book is about much more than just technology; it is about men and events. The contributions, strengths, and weaknesses of each of the key players are vividly portrayed. For example, a chapter is devoted to examining the Joint Chiefs of Staff (JCS) as a body and as individuals. They are described as "a quartet playing different tunes," whose recommendations, according to Dean Acheson, were "usually premised upon the meticulous statement of assumptions that, often as not, are quite contrary to the facts and yet more often than not control the conclusion." Air Force Chief of Staff Gen Curtis LeMay is described as an officer with "beetle brows, jutting jaw, sagging jowls, shock of slicked-down black hair" who with his "ubiquitous brown cigar" was "profane . . . demanding . . . restless for power." The book also describes how when the Air Force found out that the Navy was selected to fly the low-level reconnaissance missions, General LeMay insisted that the Air Force also be allowed to fly these missions, despite the fact that the RF-101C Voodoo was designed for medium- and high-altitude reconnaissance. Nevertheless, in the spirit of jointness (everyone gets a share of the pie), "the story of the

Navy bailout of the Air Force low-altitude reconnaissance predicament became a muted classic of the Cuban missile crisis."

My only criticism of this book, and a minor one, is that the editor should have caught the infrequent but nevertheless distracting redundancies and inconsistencies. For example, Robert ("Bobby") Kennedy's observations about the British, "Those sons of a bitches have a short memory," appears twice within 23 pages but with different words in quotations. I highly recommend this book, especially if you are interested in the answers to such questions as, Were there really nuclear warheads in Cuba and, why did Oxford, Mississippi, appear on the missile range maps used to brief the president and other government officials?

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Recurring Logistics Problems as I Have Observed Them by Carter B. Magruder.

Washington, D.C. 20374: US Army Center of Military History, 1991, 134 pages, \$8.50.

A Soldier Supporting Soldiers by Joseph M. Heiser, Jr. Washington, D.C. 20374: US Army Center of Military History, 1991, 323 pages, no price available.

The Lifeblood of War: Logistics in Armed Conflict by Julian Thompson. 8000 Westpark Drive, First Floor, McLean, Virginia 22102: Brassey's, 1991, 390 pages, \$39.95.

If you asked most military professionals whether they would choose to read a book about logistics or logistics history, they would probably say they'd rather go to the dentist. Yet, most of them are probably familiar with the aphorism "Amateurs talk about strategy while professionals talk about logistics." Logistics is about beans and bullets and trucks and fuel and numbers. The problem, of course, is that next to generals with pearl-handled revolvers and multicolored attacking arrows on maps, all those numbers are inherently boring. These three authors have taken three different approaches to this "boring" subject, with varying degrees of success.

In Carter B. Magruder's short work, what you see in the title is what you get—an analysis of recurring logistics problems he encountered in over 40 years of Army service (1917–61).

including why they recur, the form in which they are likely to recur, and suggestions for overcoming them. Among other topics, he addresses supply requirements for overseas theaters, contingency planning, and maintenance of materiel. Magruder speaks with authority, having served in a number of important logistics positions, including G-4 for the Mediterranean and European theaters of operations during and immediately following World War II, and deputy chief of staff for logistics. He retired as commander, US Forces, Korea and Eighth US Army.

Magruder's narrow focus can be regarded as both a strength and a weakness. Obviously, there is no room to provide a lot of context, or the "big picture," but Magruder makes no claims of being a historian or even of writing a history in the traditional sense. On the other hand, his discussion is tightly organized and well thought out, with appropriate examples.

Other weaknesses include the work's heavy dependence on the author's experiences in World War II and the long shadow cast by nuclear weapons over almost all his conclusions and recommendations (although the latter may have been unavoidable given the date it was originally written—1969). This is a book only a hard-core logistician could love. Given its brevity, however, it still has some useful information and things to think about for the average military professional, regardless of specialty.

Joseph Heiser's book is another that only a specialist would seek out. It, too, is a first-person account of a logistician's career. Heiser entered the Army during World War II in response to the recruitment of civilian specialists who could quickly assume military logistics duties. He stayed for 30 years, having risen from the rank of private as an ordnance specialist to lieutenant general as the Army's deputy chief of staff for logistics.

Heiser describes his work as "part textbook and part memoir," and so it is. He approaches the subject from his personal experiences and then extrapolates from them to more general principles. He also describes a second purpose in writing—to discuss his ideas on leadership and opportunities for advancement in the military service.

This work is more "interesting" than Magruder's but also contains some flaws. Heiser basically bites off more than he can chew for such a short monograph. Combining

textbook and memoir is possible and even works fairly well for him, but his attempt to interject his thoughts on leadership is where the book suffers. Not that logistics and leadership are incompatible subjects—logisticians are people and need to be led like anyone else. The problem comes when he tries to combine logistics textbook, personal memoir, and leadership philosophy into one slim 300-page package (which includes 60 pages of epilogue, appendices, bibliography, and index). He's got some interesting things to say about all three, but there's no central thesis or focus.

The flaws evident with Magruder and Heiser are not a problem in Julian Thompson's work. There is no doubt this is a well-researched logistics history. Thompson served 34 years as a British Royal Marine, retiring as a major general. Although holding a number of staff and logistics positions, he is not a career logistician, nor is he a career historian. These facts pose no difficulty, however. In three parts, Thompson analyzes the effect of logistics on various campaigns and wars from the Assyrians of 700 B.C. to the Falklands campaign of 1982, and even into the future.

The opening section is a very broad-brush treatment of the subject from 700 B.C. through 1945 using selected campaigns, battles, and wars to illustrate his points. The second part, by far the most interesting and useful, is a more detailed discussion of post-World War II logistics including Korea, Vietnam, the Yom Kippur War, and Bangladesh. The final section details the Falklands campaign, his speculations regarding the central European NATO versus Warsaw Pact conflict that never was, and his prognostications of future war.

The book is worth reading if for no other reason than Thompson's analysis of Vietnam and the Falklands. He has a way of blending the details of logistics with the "big picture" to produce a good story as well as illustrating the lessons to be learned. The opening section is his weakest, since there appears to be no rhyme or reason in his selection of examples, particularly from very early military history. For example, he chooses to briefly discuss Charlemagne, the Byzantine Empire, and the Crusades while ignoring the Romans, perhaps the most adept logisticians in the ancient world. From there, he skips forward to Napoléon, leaving the reader to wonder if nothing logistically important happened in the interim. Another, more amusing, irritation is

caused by Thompson's propensity for culinary analogies (e.g., "currant bun" deployments and "club sandwich" battles), proving once again that the British and Americans may share a common heritage, but not a common language. Despite this "problem," the book is interesting and instructive, and I recommend it to all military professionals.

Even I, as a logistician, recognize that logistics is not the most scintillating of subjects. But the reader who is interested in expanding professional horizons looks beyond entertainment to educational value. All of these books have something to offer the reader who is willing to put forth some effort, especially if the reader is a logistician. Those who are searching for an introduction to the subject should stick with Thompson or, more appropriately, Martin van Creveld's *Supplying War* and Henry Eccles's *Logistics in the National Defense*.

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The Drift to War, 1922-1939 by Richard Lamb.
St. Martin's Press, 175 5th Avenue, New York, New York 10010, 1991, 340 pages, \$24.95.

Over the past three decades, the story of the outbreak of the Second World War has been essentially deciphered. No reputable scholar now disputes that this conflagration was Hitler's war. To say that Adolf Hitler neither wanted nor expected a world war in 1939 in no way relieves him or his country from the heavy responsibility of initiating this conflict. Yet, if the central role of Hitler and Germany is now firmly established in the historiography of the war, there remain numerous questions about the role of the other powers in the birth of this terrible struggle.

Richard Lamb's *The Drift to War* deals with one such issue of perennial interest: the role of British policy and policymakers in the coming war. Why was it, he asks, that Britain took a much harder line toward the Weimar Republic, reluctant to offer that troubled country any concessions, than she did toward Nazi Germany, with whom Britain seemed positively eager to reach accommodation right up to the outbreak of the war? The answer is a complicated one, forming the bulk of the narrative of this book. In brief, Lamb argues that

British governments were too unwilling to split with France in the 1920s, when that battered and weary country held to a "hardline" enforcement of the Versailles Treaty. Thus, Britain followed the French lead in demanding full compliance with the treaty terms, despite the economic hardship and domestic unpopularity they heaped on the German government. By the 1930s and the coming of Hitler, successive British governments sought to deal with the Nazis even as they took a hard (and morally high) line with Benito Mussolini's Italy. Even after the Germans occupied the remainder of Czechoslovakia in March 1939, London still lacked a clear-eyed vision of the looming danger. It guaranteed a virtually defenseless Poland, sought to make amends with Italy to reforge the "Stresa Front" (as if the presence of Italy in the Allied camp would have cowed Hitler), yet ultimately refused to negotiate seriously with Stalin's Soviet Union, the one power that might have checked Nazi Germany's course.

What emerges clearly from Lamb's book is that the British establishment, from the very inception of Nazi rule, was more fearful of communism than of the consequences of coming to terms with the Nazis. How else can Britain's preoccupation with checking Mussolini's Ethiopian adventure, while Hitler sought lebensraum in central and eastern Europe, be explained? Certainly many conservatives in the 1930s saw Hitlerite Germany as a distasteful but necessary bulwark against the spread of Bolshevism. Clearly the misbegotten preference for Italian instead of Soviet aid to check Hitler in 1939 is another manifestation of this preference.

The Drift to War is a provocative, even contentious book. If Lamb is correct in evaluating British policy as inept, he is altogether too sanguine in his assessment of Britain's ability to stop Hitler. Could Britain have kept Hitler from coming to power through a policy that rewarded Weimar? Lamb himself points out that for much of the period, appeasement of Hitler was wildly popular, and British politicians were neither the first nor the last of their genre to allow themselves to be shaped by, rather than seeking to shape, public opinion. And why should British public opinion be buoyed, or Hitler cowed, by the specter of intervention by Mussolini and his legions? Perhaps most importantly, Lamb does not fully confront the bankruptcy of a policy that sought

to wield a great power's continental influence through a military strategy of limited liability. In all the author's criticisms of Britain's allies, it must be kept in mind that "from the other side of the hill," it did often appear that Britain, before 1940, was determined to fight Hitler to the last Frenchman, Italian, or Russian.

Regrettably, Lamb's efforts have been hindered by poor editing. The book is marred by numerous mistakes that induce perhaps unjustified skepticism in this reader. So interesting a book deserves better.

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Flying Tigers: Claire Chennault and the American Volunteer Group by Daniel Ford. Smithsonian Institution Press, 470 L'Enfant Plaza, Suite 7100, Washington, D.C. 20560, 1991, 450 pages, \$24.95.

"They were heroes to a nation that needed heroes." Mr Ford's description of the American Volunteer Group (AVG), popularly known as the Flying Tigers, succinctly explains why the AVG was enshrined in the pantheon of American heroes. It is refreshing to read a book like this that rings the bell of reality rather than one that elevated Gen Claire Chennault to John Wayne-like status.

Delightfully, Chennault fades into the background once this book moves beyond the formative stages of the AVG's history, delightful not because of any dislike for Chennault, but because it allows the individual members of the AVG to step to center stage. And rightfully so, for like any flying unit it was team effort that achieved success.

The format of this book is a chronological, month-by-month (at times, day-by-day) account of the AVG, from its inception as a volunteer group to its ultimate reconstitution in the active Army Air Forces in 1942. Initially, the book's emphasis is on the development and direction Chennault gave to the AVG. But after the organization reaches operational status, the author shifts the focus from Chennault to the individual team members. As the combat activity in the story increases, the cockpit activity takes precedence over the managerial decisions. With the reining in of the overwhelming personality of Chennault, the individual personalities of the AVG mem-

bers—Greg Boyington, Tex Hill, Charlie Bond, John Petach, and so many others—emerge in the vignettes that constantly pop up in the book. What the reader discovers is that the AVG was not made up of patriots so much as adventurers. As Tex Hill put it, "The thing that motivated me to go to China was, more or less, adventure. I had no particular dedication to anything." Other than Chennault and a few others, the members of the AVG declined induction into the American military forces, even when given the opportunity to do so. The AVG pilots were mercenaries and were in the game for the action and for Generalissimo Chiang Kai-shek's bounty payments. The concept of the Flying Tigers as heroes was a creation of Henry R. Luce, who coined the nickname in the 29 December 1941 issue of his *Time* magazine.

Ford's work is based on a myriad of primary historical sources: personal diaries, letters, interviews, and official documents. Adding even more detail to the book is his use of Japanese primary sources as well. Extracting from Chennault's early writings in various professional military journals, Ford pulls together Chennault's prophetic view that "World War II would begin with a surprise attack from the air, and that the combat would be radically different from that of all previous wars. . . ." No, this was not Billy Mitchell, it was Claire Chennault—a mighty visionary!

The goal of the author is to separate myth from reality. It turns out to be a formidable task. Ford alludes to the maddening frustration he faced as a researcher in Chennault's diaries, discovering that Chennault made scant mention of significant events but wrote in great detail about his tennis and mah-jongg games. Similarly frustrating were the enormous discrepancies in the combat "kills" recorded by the Americans and those recorded by the Japanese. The author makes some headway in resolving the discrepancies in these figures after learning that the Japanese did not count an aircraft that crashed after leaving the scene of an aerial battle as having been lost in that particular action. Nevertheless, this still did not account for all the discrepancies in the losses as reported by the Americans or the Japanese. He discovered so many factors leading to these discrepancies—double-counting, undercounting, and outright exaggeration—that the true number of combat "kills" may never be known. On the whole, Ford does a credible

job of separating myth from reality. However, in light of his lament more than once that Chennault "did not leave much of a paper trail" for the researcher to rely upon, one is left with the nagging question of just how accurate are his interpolations of the sources he did use.

From the combat vignettes that appear on page after page, the boldness of the Flying Tigers in combat demonstrated that, above all, a successful combat pilot requires a belief in his own immortality. And even more, this breed seemed to thrive on adversity. Chennault did not fly combat missions as commander of the AVG. For him, the greatest challenge was to defend a 750-mile line of communication along the Burma Road to Rangoon, as well as western China—and to mount an aerial offensive in Indochina—all with 48 aircraft. Ford demonstrates that Chennault's AVG surmounted these difficulties because of the intensity and cohesiveness of the Flying Tigers as a fighting unit.

In overview, *Flying Tigers* is a researcher's book. This is not said in a negative light, but by way of forewarning. Four hundred pages of almost day-by-day accounts do tend to get repetitive after a while. But it is a fruitful orchard for the researcher. This book is not a glorification of the Flying Tigers. It is a serious research study, weaving together a narrative from a bountiful harvest of primary source material. Persistence in reading through this tome pays off in uncovering so many nuggets of insight into the events that occurred in that theater of operations. For example, one eventually realizes that there most definitely was a growing feeling of mutiny among the pilots of the AVG by 1942. A diligent reader will also discover that a series of coincidental encounters often make up the threads of a war. An astute reader learns from the many stories making up this book that underlying the decision making in the China-Burma-India (CBI) theater was a four-way power struggle between Chennault, the British, Chiang Kai-shek, and Gen Joseph Stilwell. The list of little nuggets goes on and on, and readers can make their own list as they peruse the book.

General Chennault was one of the most popular commanders in American history. One-third of the original AVG pilots died in action. But they received no official recognition for their combat victories or their time spent in the AVG. Generals George Marshall and Hap Arnold considered Chennault a maverick and

were determined to get rid of him. At midnight on 4 July 1942, the AVG passed into history. Ford concludes his book, "All honor to them." A resounding "Hear! Hear!" to both the AVG and to Daniel Ford.

Ron Callahan
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In Mortal Combat: Korea, 1950–1953 by John Toland. William Morrow and Company, Inc., 1350 Avenue of the Americas, New York, New York 10019, 1991, 624 pages, \$25.00.

In Mortal Combat is a highly readable history of the Korean War. John Toland, as always, is the master of the popular history. As you read *In Mortal Combat*, you come to understand the Korean War from the point of view of the soldier in battle, yet Toland can still tie together the strategic and operational threads that link these battles together.

I particularly enjoyed Toland's depiction of the humanity of the participants. Toland interviewed many survivors of the battles, including soldiers from the North Korean and Chinese armies. Particularly provocative is the image of Chinese soldiers walking to the front from the Yalu, all the while seeing thousands of fellow Chinese soldiers along the side of the road, dead from starvation or battle wounds. The cruelty of sending thousands of Chinese troops into battle without proper logistics and medical support is striking.

One section of the book that stands out is the initial North Korean invasion, the fall back to Pusan, and the engagement of Task Force Smith. Task Force Smith was an ill-advised engagement south of Seoul by poorly trained American soldiers. It resulted in disaster. That same Task Force Smith is now the rallying cry for current US Army efforts to preserve operational readiness among its remaining forces during the current defense drawdown.

There are other noteworthy sections. The operational decisions and positioning of forces in the Pusan perimeter and Gen Walton Walker's handling of the crisis will grab the reader. The operational decisions for the assault at Inchon as well as the tactical battles fought by Marine and Army units during the withdrawal from the Chosin Reservoir are also fascinating.

Most readers will already be knowledgeable about these aspects of the Korean War. What

Toland does tie the strategic and operational decisions into the thoughts and feelings of the soldiers who had to execute those decisions. It is that style that contributes to the intense readability of the book.

From the point of view of an airman, however, there is a critical element missing in this history: the role of air power is given short shrift. There is no discussion about the initial fight for air superiority with the North Korean air force. Nor is there any discussion about the impact of the Chinese air force on the operational thinking of the Far East Air Forces and Gen Douglas MacArthur himself. There is one paragraph that discusses the effects of our own air interdiction campaign on the Chinese army. Otherwise, no cause-and-effect relationship is formed between the interdiction campaign and the ground maneuver accomplished by United Nations ground forces.

I liked this book. It was immensely readable and it captivated me. For the airman interested in military history, this book provides many insights into the strategic and operational decisions as well as the tactical battles at the front. However, for the airman wanting to learn about air power in the Korean War, please look elsewhere.

Perhaps John Toland's concluding remarks in the book best summarize the themes of *In Mortal Combat*:

It is human nature that repeats itself, not history. We often learn more about the past from the present than the reverse. I also discovered that a vile person can occasionally tell the truth and a noble person tell a lie; and that men don't make history as often as history makes men; and that the course of history is unpredictable. Finally, that the history of war can never be definitive.

Maj Daniel Jordan, USAF
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Eagles of the RAF: The World War II Eagle Squadrons by Philip D. Caine. National Defense University Press, Washington, D.C. 20319, 1991, 415 pages.

After Germany overran France and the Low Countries (Belgium and the Netherlands) in 1940 and was poised to attack Great Britain, the United States was still neutral and officially unable to provide aid. President Roosevelt's administration, still in a depression, faced a large isolationist sentiment in the

country. A Neutrality Act, passed by Congress, allowed the Federal Bureau of Investigation to investigate anyone suspected of aiding the British. Some Americans, however, in spite of the strict neutrality laws, volunteered to fly alongside the Royal Air Force (RAF) in stemming the Nazi onslaught. These airmen, known as Eagles, manned Number 71, 121, and 133 Squadrons, and Colonel Caine has written a concise history of these men and their accomplishments. The Eagles were transferred to the United States Army Air Forces (USAAF) in 1942 after the United States entered the war. Avoiding past "hero" histories, this account traces the Eagle squadrons back to the Lafayette Escadrille, which had fought in France in 1916 prior to the entry of the United States into World War I. This precedent helped the various approaches to be utilized to get American pilots in RAF cockpits; some were barely legal, having to operate undercover to avoid FBI detection, others using fancy hotels and operating in the open.

Once accepted, most pilots left through Canada by ship on the hazardous North Atlantic convoys and after a quick orientation flight on Hurricane or Spitfire aircraft, fought in the air battles that took place after the actual Battle of Britain. As more Americans arrived, additional squadrons were established. After three squadrons were operational, the RAF decided that other Americans who came over would become replacements in these squadrons for those airmen lost. Looking past the outstanding mission results, Caine points out that some Americans had doctored their flight records, forcing the RAF to move one squadron to Northern Ireland for training. But because of the press coverage and some of the RAF officers assigned to the squadron, most of the Eagle squadrons were in the heaviest action from 1940 to 1942. Integrated into British society and genuinely appreciated by the British public, these Americans received hospitality that later Americans would not see since their large numbers led to friction with the local population.

The missions varied from dogfighting over the Channel, to two-ship sweeps over France and the Lowlands, to boring convoy escort duties in the Channel and top cover over maritime approaches to the British Isles. The losses were at times staggering. Only when the direct threat was removed with the Nazi invasion of the Soviet Union in 1941 did the RAF

have the opportunity to offer more training. RAF Fighter Command was glad to have the American Eagle squadrons, and as the combat experience of these squadrons became greater, the British were reluctant to turn them over to the USAAF. After Pearl Harbor, the USAAF began to arrive in Britain to assist in air attacks on the continent. The B-17 bombers were in workable condition, but the USAAF lacked a good fighter. The members of the Eagle squadrons had never jeopardized their citizenship since they did not swear loyalty to the king. However, as Caine documents in his book, a lot of Eagle squadron members had legal trouble even as late as 1970!

After the decision was made to transfer the Eagle squadrons with their Spitfire fighters to the USAAF, some pilots stayed in the RAF and fought in the Far East and Malta. The three RAF squadrons became the Fourth Fighter Group with three squadrons—the 334th (71), 335th (121), and 336th (133)—and went on to be one of the most successful fighter groups in the USAAF. While most Air Force members know about the Eagle squadrons, few know the details, suffering, courage, and raw flying ability these Americans demonstrated. In this fiftieth anniversary year of World War II, this book is an important contribution to the study of American involvement in the war. It is highly recommended reading for the Project Warrior programs and an excellent historical account of early Air Force operations.

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The Wings of Democracy: The Influence of Air Power on the Roosevelt Administration, 1933–1941 by Jeffery S. Underwood. Drawer C, College Station, Texas 77843: Texas A&M University Press, 1991. 234 pages, \$39.50.

In May 1933, newly inaugurated President Franklin Roosevelt sent a message to the London Disarmament Conference advocating the elimination of bomber aircraft and all other "offensive" weapons. Eight years later, Roosevelt called for the production of 500 heavy bombers a month and implied his willingness to unleash an aerial armada against Japanese cities. Air Force historian Jeffery S. Underwood attributes the change in the president's attitude to two factors: the savage nature of the war that had embroiled Europe

and Asia, and the convictions of airmen with "extraordinary political acumen" (page 4) who had persuaded Roosevelt of air power's merits through "spectacular, long-range flights and other examples of efficiency" (page 5) following the 1934 air mail fiasco.

Underwood contends that Gen William ("Billy") Mitchell and Gen Benjamin Foulois, outspoken American proponents of air power during the interwar years, alienated political leaders as well as Army and Navy chiefs in publicizing the need for a separate air force through controversial spectacles such as the *Ostfriesland* sinking. After Foulois retired as chief of the Air Corps in 1935, a new breed of air leader, typified by Gen Oscar Westover, Gen Frank Andrews, and Gen Henry H. ("Hap") Arnold, worked to secure Mitchell's goal through harmonious relations with service counterparts and Roosevelt administration officials. For these airmen, "Billy Mitchell became a dual symbol of the right message but the wrong presentation" (page 45).

Andrews was particularly successful in working "within the system" to build support for an Army Air Corps centered around the B-17. As commanding general of the General Headquarters (GHQ) Air Force, he supported Roosevelt's efforts to stem fascist encroachment into Latin America with a flight of six B-17s to Argentina for the inauguration of President Roberto Ortiz in February 1938. The trip included a nonstop, 2,844-mile flight from Miami to Lima, Peru, in 14 hours and 35 minutes, and received high praise from *Time* and *Newsweek* reporters. Yet Andrews refused to highlight the journey as an extraordinary achievement. "By treating this spectacular feat as an everyday occurrence," Underwood observes, "Andrews quietly built trust in the Army Air Corps and added validity to the spectacular claims about air power" (page 109). Additional B-17 flights to Latin America followed, and Roosevelt began to take note of the bomber's ability to serve as a primary weapon for hemispheric defense.

The Munich Crisis later that year caused the president to consider air power's potential as an offensive force. Underwood maintains that Roosevelt's increasing calls for aircraft production initially resulted more from a desire to send airplanes to Britain and France than from an intent to create a vast American air force. By the summer of 1941, however, in the aftermath of air power's success against naval

forces in the German assault on Crete, Roosevelt believed that American bombers based in the Pacific could deter a Japanese strike against the Philippines, Guam, and Wake Island. Moreover, Secretary of War Henry Stimson thought that the fear of an aerial holocaust against Tokyo would restrain the Japanese. "Thus," Underwood writes, "four years before the atomic bombs were dropped on Hiroshima and Nagasaki, the United States government was considering a policy of atomic diplomacy—without the atomic bomb" (page 177). The attempt at aerial coercion failed because it assumed too much. Military chiefs discounted the Japanese carrier force, and political leaders placed inordinate faith in the ability of a meager number of bombers to stop a concerted Japanese advance.

Underwood's meticulous research of personal papers, government documents, and Air Corps archives, combined with straightforward and often understated prose, deftly illuminates the change in "political tactics" adopted by air leaders during the Roosevelt administration. Underwood also paints a convincing picture of why a pragmatic president embraced air power on the eve of America's entry into World War II. However, the author's characterization of Arnold as an advocate of area bombing of Japanese cities in 1941 is subject to question. The Air Corps chief did indeed call for the development of incendiary ordnance following a spring trip to Great Britain and assured its delivery to the Philippines before Pearl Harbor. Yet only after the failure of seven months of precision raids to affect Japanese war-making capability in 1944–45 did Arnold push for a new approach to bombing Japan. Although Underwood acknowledges in an appendix the "army fliers' continued faith in precision bombing" (page 188), the image presented in the main text needs clarification. Nevertheless, *The Wings of Democracy* offers students of American air power history a solid account of the Air Corps's march towards autonomy during the first nine years of the Roosevelt era.

Maj Mark Clodfelter, USAF
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Sled Driver: Flying the World's Fastest Jet by Brian Shul with Kathleen O'Grady. MACH ONE, Inc., 1017 Willow Street, Chico, California 95927, 1991, 151 pages, \$38.00.

Sierra Hotel, Brian! At last a real story has been given to the public about the SR-71 Blackbird from someone who has flown her, loved her, and understood her as well as she would allow any to comprehend her complexities. Through an interesting blend of pictures, facts, and anecdotal history, Maj Brian Shul shares the unique experiences of flying one of the world's aviation legends. *Sled Driver* is a unique book that offers the reader three themes, yet ultimately delivers the excitement of experiencing, perhaps even capturing, a bit of an enigma.

First, the story is about the world's fastest jet. But as Shul points out in his introduction, "It is not a story of the making of the SR-71, nor is it a technical digest of the many facts and figures about the plane." Rather, the book is about the experiences and emotions of flying. Shul leads his readers through a journey that begins with the week-long interview process for candidates, a year-long training program, and finally through the thrills of flying reconnaissance missions at the edge of space.

He next demonstrates his ability to capture on film his unique experience of flying the Blackbird. One can almost sense the magnitude of the inspirational sights that Shul so beautifully captures on film. He is an accomplished aviation photographer with the ability to provide a medium through which few could experience the art that is captured at the edge of space. *Sled Driver* is an experience that easily captures the attention of aviation enthusiasts as well as those that just appreciate an interesting story and beautiful photography.

Finally, the reader cannot help but sense the theme that engulfs the entire book—a love story. From Shul's opening introduction, in which he describes the machine's sensuous design of blended metals and elegant lines, the reader realizes that this is more than a story about just another aircraft. "The SR-71 had a lure for pilots all its own; it had an exciting combination of grace, speed and danger." Yet, to those few who flew her, to reveal all that she could do, is unthinkable. It is like sharing intimate secrets and establishing a personal relationship with a fusion of titanium, fuel, stick, and throttles only to betray her confidences.

The Sled was to those who flew her a very personal experience. Shul describes one of his experiences: "For a brief moment I was more than an Air Force pilot on a training flight. Our incredible speed became insignificant as

the jet seemed to stand still before the heavens. I was part of something larger and more profound. I felt a joy to be at this place, at this time, looking at these stars." However, these were often precious moments stolen from a jealous jet.

Unquestionably, this book will add to personal libraries. Just as the Sled will continue to stimulate conversation, Shul's account will help to historically document the personal accounts of those who flew her and offer interesting discussion for those in search of fact and myth—the stuff of which legends are made. From one "Habu" to another—Thanks, Brian!

Maj Hunter W. Vardaman, USAF
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Fifty Mission Crush by Lt Col Donald R. Currier, USAF Retired. Burd Street Press, 63 West Burd Street, Shippensburg, Pennsylvania 17257, 1992, 176 pages, \$24.95.

If you thrived on the suspense of watching the *Memphis Belle* run the German gauntlet in World War II, or if you struggled with the painful boys-to-men experiences of West Point's Class of '66 in *The Long Grey Line*, you'll enjoy the worlds to which this book will take you. Colonel Currier's reflections of his World War II experiences are remarkably vivid considering the 40-plus years it took to bring them to paper. Why the wait? Despite the significant emotional events that occurred during his tours with the 449th Bomb Group, Colonel Currier was "indifferent to reunions in general and to a war-time reunion in particular." Most of the friends he trained with were shot down or replaced. After finding out that six out of the 10 men on his crew were still alive, he started talking to them about their experiences. After a little reminiscing, "recalling the names of so many battles was a terribly moving experience for me. I wanted to remember more. I was ready to recall what I had long put behind me."

The adventures of Currier's B-24 crew start on a pathetic note. He laments, "I can hardly believe how ill-prepared we were to do the job assigned to us." Currier recounts many senseless and unfortunate mistakes in jolting detail. The crew started behind the curve and stayed stateside weeks after their group deployed overseas. The accounts of their chase across

Puerto Rico, Brazil, and Africa showed how teamwork and bonding occurred during their "orphanhood." Interestingly, Colonel Currier mentions the same "empires" and rivalries between major commands and specialties that are evident in today's Air Force. The fraternity of first pilots considered copilots as apprentices. There were also walls between the pilots and navigators. Colonel Currier further provides a look at leadership and trust at work in the cockpit when he outlines the relationship between his pilot and the credibility placed with the navigator. Currier witnessed such trusting comments as "Currier, I'm going to land, and this better be Grottaglie, or your name is mud with me." In many strange situations mentioned, aircrew cohesiveness was formed by "necessity and not by choice." All of Colonel Currier's mission debriefings are realistic and candid. His writing style is very readable, and he explains any technical terms that might cause distraction.

Not all of the incidents recalled by the author took place in the air. Aircrew antics on the ground are discussed, but probably not enough. Given the tremendous losses during raids on Ploesti, Mostar, and Udine, the stories taking place in the tents and mess halls further document the growth of these young, maturing aviators. Colonel Currier addresses both types of reminiscences with stories of rowdy experiences and the dark realities of aircrews who did not return. Worse than the painstaking chore of going through the personal items of tentmates and other acquaintances to ship their belongings home was the uncertainty of whether these men were dead or were prisoners of war. Sometimes their fate depended on which side of a river they fell.

I enjoyed this book for the most apparent offerings—mission debriefs and the documented reality of war. With little searching, I appreciated the big picture that Colonel Currier's story gives. The story of men, given little experience and focus, who went back up into the air no matter how tragic the previous mission. In an ominous environment of death and despair, these men matured quickly and did their duty unquestioningly. Such devotion to duty, honor, and country put these men in the company of Gen Douglas MacArthur by earning their "fifty mission crush."

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Flying Blind: The Politics of the U.S. Strategic Bomber Program by Michael E. Brown. Cornell University Press, Box 250, Ithaca, New York 14850, 1992, 350 pages, \$47.50.

Flying Blind is an important original study of the American weapon-acquisition process. Author Michael E. Brown takes an exhaustive look at how US military acquisition programs begin, the forces that shape them, and most important, why they turn out as they do. The book's foundation is a series of case studies of weapon acquisition in the US strategic bomber programs. The outcome, "all too frequently, was disastrous from an acquisition standpoint."

For Brown, now a senior research fellow at the International Institute for Strategic Studies in London, this massive effort began almost a decade ago as his PhD dissertation at Cornell University. At that time, he concentrated on only five strategic bomber programs: the B-47, B-52, B-70, B-58, and B-1. In the interim, he realized that a comprehensive study of all the main bomber programs that the US Air Force (and its predecessors) had pushed for was necessary to adequately analyze the role of organizational forces throughout the complicated acquisition process. The result is an unprecedented examination of all 15 of the major post-World War II strategic bombers—from the propeller-driven B-35 (a B-2 look-alike) to the stealthy intercontinental B-2 and everything in between.

The massive archival data for these case studies come from five main sources, many of them primary ones: declassified Air Force documents and studies, aerospace industry documents and studies, interviews with policy makers and program participants, congressional hearings and reports, and trade journals and secondary literature.

The primary focus is weapon-acquisition activity that falls within established mission areas. Most observers believe that four explanations can account for military policy and, in turn, the origins of weapon-acquisition programs as related to core mission areas. The explanations are strategic, bureaucratic, economic, and technological.

Major weapon system programs that are part of established mission areas are generally started by the military services. Each service has core missions that make for uniqueness and sense of purpose. Strategic bombardment,

for example, is a core mission of the Air Force, one that has defined its essence since its inception. Since military organizations are sensitive to threats—strategic as well as bureaucratic—to their core missions, Brown suggests that strategic and bureaucratic developments are generally responsible for triggering mainstream developments.

Contrary to their prominence in the literature on the subject, he finds no significant support for technological and economic arguments. Instead, he finds some support for bureaucratic accounts and a great deal of support for strategic explanations of how weapon development efforts begin. Bomber programs are classic examples of such programs.

A main premise of this book is that the Air Force, and the Army Air Corps and Army Air Forces earlier, were all "flying blind" in several respects when they began their bomber development programs. Three fundamental unknowns were present in their decision making: unclear understanding of the nature of the operational threat, unclear technological possibilities for bomber development, and unknown end results by setting performance requirements often far beyond the state of the art.

Regarding outcomes given development objectives, one of two basic procurement strategies can be employed: sequential and concurrent. Sequential strategies are based on the assumption that research and development programs are laced with technological uncertainties that are best resolved by proceeding in an orderly, sequential manner. On the other hand, concurrent strategies try to speed up the acquisition process by initiating production activities while development is still under way. Brown points out that concurrent strategies have dominated US weapon acquisition throughout most of the postwar period.

For the bombers, some of these programs were extremely ambitious technologically (e.g., B-35, B-47, B-58, B-70, B-2), while others were only moderately ambitious (B-36, B-52, B-1, B-1B). Others used highly concurrent procurement strategies (B-58, B-70, B-1B, B-2), while two featured highly sequential strategies, at least in their early stages (B-47, B-52).

Brown comes on strong in pointing out that the Air Force was flying blind when it repeatedly issued performance requirements for the bombers that demanded major technological advances. It was also flying blind when it imposed concurrency on its development and

production programs. Brown argues that military organizations like the Air Force prefer concurrent procurement strategies for a variety of strategic and bureaucratic reasons.

Yet concurrency has proven to be badly counterproductive in most cases. Only when there has been a combination of the two strategies or a sequential strategy alone has the Air Force achieved qualified success in acquiring new bombers. In this respect, while some consider the B-1A to be a total acquisition debacle, Brown asserts that it was actually a partial success, "which is what one would expect from a program with fairly modest technological objectives and a mixed procurement strategy." What cancelled the program was a political decision by an incoming president due to excessive cost overruns. Moreover, a complete success would be the venerable B-52, which used sequential strategies throughout its early development stages.

In summarizing his findings on the cost and performance problems that plague modern weapons programs, Brown tries to present policy recommendations designed to address these issues. Paramount to real reform is the realization by Air Force leaders that the service was "flying blind when it imposed concurrency on its technologically ambitious bomber development programs." Yet the main obstacle to weapon acquisition reform will be the substantially formidable problem of "institutional bias." Until the course is changed, future weapon system acquisitions could follow the same types of paths as the modern strategic bombers.

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Command and Control for War and Peace by Thomas P. Coakley. National Defense University Press, Washington, D.C. 20319, 1992. 184 pages.

Thomas P. Coakley has written an easy-to-read book on command and control (C²) intended for individuals new to the command and control arena. Coakley writes, "The primary goals of this book are to make C² a topic accessible to anyone with a stake in the national security of the United States and to suggest a practical approach to difficult C² issues." His book covers a wealth of topics in an amazingly compact fashion. At first glance,

these traits are taken as a strength. However, in compacting this complex subject, Coakley has missed his intended audience. The complex issues covered are sometimes confusing to the uninitiated. In addition, an experienced individual will probably find Coakley's treatment simplistic or superficial.

The basic premise of the book is that command and control is the fundamental aspect of winning battles. Other aspects of fighting and winning wars—security, logistics, doctrine, tactics, and such—are seen as secondary at best. Coakley writes in the last chapter, "Fighting Smart," that "command and control is the basis for efficient operation at all times; in armed conflict, it is the basis for fighting smart. Capable C² is the key to the flexibility our leaders and forces need in the complicated international environment." According to Coakley, secondary aspects may at times conflict. For example, Coakley cites the need for strategic and operational control as sometimes conflicting with a need for tactical flexibility. Military failure is viewed by Coakley as an inability to finetune these secondary aspects through an organization's command and control process. His sixth chapter, "A Matter of Balances," is devoted to describing the need to strike an ideal balance between these conflicting aspects of operational warfare.

The bulk of Coakley's writing rests on the above premise. If it is accepted, then most of the book can be quickly read in a few evenings. Coakley expands the reader's outlook by portraying command and control under three major aspects: as a process and system, as technology, and as human and organizational interaction. Separate chapters are devoted to each of these aspects and then the whole discussion is tied together in the last two chapters. The book is well organized and footnoted. The index is useful. Structurally, the only thing missing is a bibliography.

However, if the basic premise is not accepted, the book then becomes incomplete because Coakley does not take the time to prove his fundamental assertion that command and control is indeed the single basis for victory on the battlefield. Coakley believes all doctrine and tactics issues are tied to the command and control structure.

For example, he is quick to point out that our superior command and control system gave coalition forces the edge over Saddam Hussein's forces during the recent Gulf War.

However, according to William J. Perry in "Desert Storm and Deterrence," *Foreign Affairs*, Fall 1991, Hussein had a technically good command and control system before hostilities began. It just operated under a restrictive employment doctrine. Tactically, Hussein made a decision to dig in. That, in hindsight, was a strategic error. Finally, coalition forces orchestrated an unprecedented air campaign at the tactical, operational, and strategic levels of war that paralyzed the Iraqi government and military and its command and control system. Robert Allan Doughty in *The Seeds of Disaster: The Development of French Army Doctrine 1919-1939*, explains how the French doctrine of the late thirties also viewed war in terms of methodical, controlled battles. Supporting this doctrine was a well-developed command and control system. According to Doughty, this doctrine led to the collapse of France in 1940. A fundamental question is thus left unanswered. What happens to a good command and control system when the strategic and tactical war-fighting doctrine is flawed? Additionally, are failures in tactics, strategy, and doctrine really tied to command and control?

This book will not be the last word in command and control. Nor should it be the first for the reader. The uninitiated may find portions of *Command and Control for War and Peace* confusing. I found it to be a good jumping-off point for further discussion and thought. But it should not be the only book read on the subject.

Maj Nick Clemens, USAF
Washington, D.C.

Low Level Hell: A Scout Pilot in the Big Red One by Hugh L. Mills, Jr., with Robert A. Anderson. Presidio Press, 1 Pamaron Way, Novato, California 94945-1340, 1992, 305 pages, \$21.95.

In August 1969, as I and another enlisted soldier of the 101st Airborne Division hitchhiked through the evening darkness from Saigon to our home base of Bien Hoa, we realized our grave situation. As we trudged unarmed on an unlighted rural road, the cliché we had consistently heard that "at night the roads belonged to the Vietcong" became more perceivable. Had I been aware of the contents of this book, my anxiety would have turned to stark-raving

fear. The author mentions a major enemy underground tunnel system positioned just a few thousand yards from the 1st Division field headquarters at Lai Khe, a mere 22 kilometers from Bien Hoa. The Vietcong could easily have been out there on that August night. After all, who set off all those lethal rockets that periodically hit Bien Hoa?

Author Hugh L. Mills, Jr., left college after a semester, signed up for Officer Candidate School, and leaped at the opportunity for helicopter pilot training. He was assigned to D Troop (Air), 1st Squadron, 4th Cavalry, and the 1st Division's crack hunter-killer teams in which he flew over 2,000 combat hours in Vietnam, the majority of the time in his beloved OH-6 "Loaches." Arriving in Vietnam in January 1969, he quickly learned things that flight school had not taught him, such things as how to land without a tail rotor, "combatlike autorotations, tricks of flying under in-country conditions—techniques that were not yet in the books" (page 30).

The author describes the OH-6 as having a personality of its own: "She was light, nimble and extremely responsive to every control input. While the Huey was stable and dependable—kind of like the faithful family sedan—the OH-6 was like getting a brand new MGA roadster. She was sexy" (page 32). At the same time, the OH-6 was small and cramped.

Mills states that there were four basic parts to the aeroscouts' (as the Loach pilots were called) mission: conducting visual recons, making bomb damage assessments, evaluating landing zones, and screening for ground units. The scout portion of a Loach-Cobra team mission was to find the enemy and, if fired upon, to drop smoke and call in the Cobra to shoot up the place. The scout wasn't supposed to go back to the battle area until the Cobra finished, but Mills relates that he more often than not got involved in the fray. The Loach was equipped with an M-60 machine gun operated by the crew chief. Mills had an optional mini-gun, the General Electric 7.62-caliber electric Gatling gun that could fire 2,000 to 4,000 rounds per minute, attached to the left rear of the cabin. He consistently used this gun.

While the Loach pilots were either warrant or commissioned officers, the crew chiefs were enlisted. Mills maintains that there was perhaps no closer military camaraderie than that between the aeroscout pilot and his crew chief. Their lives depended on each other. And

when he became platoon leader, Mills made it an important part of his business to ensure that crew chiefs had well-maintained quarters, that their chow was good, that they were kept off strictly "bullshit" details, and that they got equal awards. Yet on the ground there remained a separation of the enlisted and the officer. Mills never mentions eating or "sucking" on a few beers with his crew chiefs. The crew chief could have a college degree and the pilot none and after the war they could stand together in the same unemployment line, but in the US Army they were from two divergent classes.

Within a few months, Mills's combat experience enhanced his confidence. He discovered that he had developed an instinct, a warning bell that sounded when danger was near. "It was a feeling in my gut, coupled with a tingling on the back of my neck, almost as though it was electrified. When I got that feeling, my senses automatically doubled guard" (page 65). When this happened to him, he usually found trouble.

The author relates one thrilling combat adventure after another. He was shot down, wounded, rescued other Loach pilots, assisted trapped infantry units, called in larger air strikes, saw buddies killed, hunted crack North Vietnamese Army (NVA) regular units, enjoyed getting even with the enemy, and eventually tired of combat. It was tough flying under pressure an average of five hours every day 30 days a month. It was strenuous flying constantly in fear and attempting to second-guess the enemy. Mills worried about his airplane, about his crew chief, and about learning scouting skills well enough to survive.

When training new pilots, Mills's "Outcasts," as his unit was called, provided advice from the school of hard knocks that meant the difference between surviving or not. "Don't hover, don't return to the target area twice from the same direction or at the same speed, and don't give Charlie a chance to anticipate your movement or lack of it because he will shoot you out of the sky" (page 198).

There are a couple of minor errors, such as Bien Hoa being right next to Ton Son Nhut (page 28). Maybe it is from the air, but not from the ground. Also, the 1st Division (Big Red One) went home in March 1970, not 1971 (page 298). The book could use a few more well-placed maps. I constantly flipped back to the only map in the front of the book to locate the many places mentioned.

This is an excellent account of the tremendous job the OH-6 pilots did in Vietnam. The reader gains enormous respect for all the combat units listed, including the tough and tenacious North Vietnamese Army regulars who, with no air power, consistently managed to be in places where they should not have dared to be. This is Mills's story of his first tour in Vietnam. He served a second tour. To write a narrative as exciting as *Low Level Hell* will be difficult indeed.

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

Segregated Skies: All-Black Combat Squadrons of WWII by Stanley Sandler. Smithsonian Institution Press, 470 L'Enfant Plaza, Suite 1700, Washington, D.C. 20560, 1992, 217 pages, \$24.95.

"With the nation gearing for war by 1940 and the subsequent advent of conscription, it might be presumed that the American military would welcome blacks. Such was not the case. . . ." So begins Stanley Sandler in *Segregated Skies*, a primer of sorts on the subject of Air Force integration. Over 50 years have passed since 11 black men and one regular Army officer (Capt Benjamin O. Davis, Jr.) set out to prove that black pilots merited a place in the Army Air Corps. From these 12 evolved a distinguished group of pioneers known as the Tuskegee Airmen.

Sandler, a former professor of history at Northern Virginia Community College, has set the context of their story within that of the US Army and not simply the air component. This newest title in the Smithsonian History of Aviation series recounts the group's battles on both sides of the Atlantic—against Hitler's Luftwaffe in Africa and Europe and against Jim Crow's segregationist policies in the United States and in the defense establishment. While engaged in this two-front "war," Sandler writes of another "hidden front" that the men also endured: battling against those who expected, and wanted, the colored experiment to fail. It was against this hidden front that the greatest battle was won.

Sandler begins the work by quickly detailing the history of blacks in America's defense from the Civil War through post-World War I, when a very small number of blacks began to enter civil aviation. Complying with public law in

1941, the Army Air Corps drew up plans to begin the segregated training of 460 black enlisted personnel at Chanute Field, Illinois, and black pilot training at Tuskegee Institute in Alabama. Dr James Patterson, Tuskegee's president, was not happy with a "Jim Crow Air Corps" at his institution. Yet he realized that, although segregated from white military pilot trainees, "at least blacks were in the Air Corps" (pages 19-22). Success in this black experiment, and over their hidden front, came in small ways.

Officers at the Southeastern Army Air Corps Training Command (SEAACTC), headquartered at Maxwell Field, Alabama, treated the project with "amused detachment." Yet an early commander at Tuskegee, Col Noel Parrish, remarked after the war that "no one could afford to be seen as opposing the idea either" (page 28). With this small victory in hand, the newly formed 99th Pursuit Squadron moved out in April 1943 to fight against their intended front—Hitler's Luftwaffe.

Three additional segregated fighter squadrons (the 100th, 301st, and 302d) soon joined the 99th in Italy to form the 332d Fighter Group. The 332d battled their way up the Italian peninsula and joined Lt Gen Ira Eaker's Fifteenth Air Force, successfully escorting B-24 Liberators that were bombing petroleum, oil, and lubricants (POL) targets.

While the 332d was engaged in combat, the newly formed all-black 477th Bombardment Group was making a name for itself on other fronts. Sandler quickly recounts the stormy history of the 477th, especially the "Freeman Field 101," who nearly mutinied over that Indiana base's segregated officer's clubs. Sandler uses the 477th's story to show that through them, in effect, black military aviation had won further moral victories. However, First Air Force commander Gen Frank Hunter, no friend to the 477th or to black aviation, saw no victories for the 477th. Hunter later bitterly recounted how he had received no guidance from his superiors on how to deal with the all-black group and resentfully added that "General Arnold got orders from General Marshall, and he got his orders from Secretary of War Stimson, and he got his orders from *Mrs. Roosevelt*" (emphasis added) (page 130). With the war in Germany won, Sandler writes, there remained one front left for these black pioneers—it was not the Pacific but their very survival at home.

After 1945, the Army Air Forces began calling for reports on how the Negro performed in combat. The authors of these reports, confusing the words "intelligence" with "education" in writing their reports, wrote that Negroes performed their duties at a lower level due to lower intelligence rather than a lack of education. Fortunately, these reports sparked others on the same subject refuting this flawed reasoning. The aftermath of these reports showed that, among other things, segregation was simply not an efficient management tool.

Moreover, the 1948 presidential election came on the heels of these reports. Special Counsel Clark Clifford advised President Harry S Truman to endorse the protection of minority rights to garner the black vote. Truman agreed, which eventually resulted in the presidential order to desegregate the US military.

By 1949, Secretary of the Air Force Stuart Symington and Air Force Chief of Staff Gen Hoyt Vandenberg were diligently working to integrate the new service. For the pioneering Tuskegee Airmen, the "hidden front" of battling those who had wanted them to fail was beginning to crumble.

Sandler has written a concise and accurate portrayal of black combat squadrons in World War II. His detailed account of day-to-day missions of the 332d becomes laborious at times, but the dogfighting accounts of the survivors offer quick compensation. The work is solid and will be a complement to other works on Air Force integration. As Sandler writes, "It would be difficult to imagine any progress taking place . . . without the pioneering Tuskegee aviation organizations" (page 157). This is the story of those pioneers who overcame hidden and extreme obstacles and endeavored to ensure that "in peace or in war, there would be no more segregated skies."

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Bataan and Beyond: Memories of an American POW by John S. Coleman, Jr.
Texas A&M Press, Drawer C, College Station, Texas 77843, 1978, 210 pages, \$12.95.

Brothers from Bataan: POWs, 1942-1945 by Adrian R. Martin. Sunflower University Press, 1531 Yuma, Box 1009, Manhattan, Kansas 66502, 1992, 334 pages, \$21.95.

Few events in American military history are as grim, and as gripping, as the story of those who survived the fall of the Philippines. While many readers of *Airpower Journal* have had the opportunity to meet survivors of the infamous Bataan Death March and to hear firsthand the incomprehensible brutality they suffered, the next generation will have to rely upon recorded sources to ponder the tragedy and learn its many lessons. These two volumes make a solid contribution toward the goal of passing on this valuable story to posterity.

Bataan and Beyond, number six in Texas A&M's Centennial Series, is the personal account of Capt John Coleman, Jr., who arrived at Nichols Field near Manila just before the outbreak of the war. From the outset of his story, one is drawn deeply into the swiftly flowing events so that by the time of the surrender on the Bataan peninsula, the reader is as emotionally exhausted as the defenders were physically drained. This is good writing. The simple, straightforward narrative is powerful because the events were all too real. Passing matter-of-factly over descriptions of the dead communicates with stark clarity that one had to deal with the imminent future and had little time to pause and take in the present horror. Fortunately, the preservation of a compact diary allowed for the detailed account of this particular warrior, whose own traumatic experiences doubtless paralleled those of hundreds of others.

"If ever there was a hell on earth, this was administered to the 7,000 souls of some of the bravest and most devoted of our military personnel" (page 93). Still, it was a torment from which some lessons, if we were willing to learn them, can be redeemed.

Coleman shares a strict chronological account, beginning with his posting and continuing on through the attack and defense of the Philippines, the surrender and merciless captivity, and ending with his liberation and return to the land for which he had sacrificed so much. With the falling of the first bombs, the reader becomes quickly enmeshed in the battle, joining "the air corps personnel [who] had not been issued a full complement of infantry equipment," which would be sorely needed during the combat to come in the days ahead. You sense their frustration as they "counted ninety-six heavy bombers flying at about twenty-one thousand feet" with their

antiaircraft shells vainly "exploding just below them" (page 11).

His description of the rapidly deteriorating conditions during the defense is powerful. Performing scouting missions, eating python meals, and scrounging for disappearing supplies tell the story. Also heavy is the irony. A master sergeant who sold his seat on the last ship out of the Philippine Islands prior to the war for \$50 did not survive captivity to spend the money. Perhaps more ironic is the fact that in faithful obedience to international laws (which would repeatedly and viciously be violated by the adversary), Coleman obeyed a directive to turn in "five 12-gauge shotguns we were using" on intelligence-gathering patrols (page 31).

When the surrender came—a consequence of starvation rather than military superiority—he describes his fellow prisoners: "Their faces were stoic. They looked like walking dead men. Little did they know or realize that the worst was yet to come" (page 69). Indeed, none could anticipate the ruthlessness of their captors. Coleman's own survival was nigh unto miraculous. Suffering a fractured ankle and a major shrapnel wound, emaciated and enduring bouts of malarial attacks, he was dragged along in the death column by other troops seeking to offer what little aid they could. Having witnessed the murder of others who fell from the ranks, he says, "I was determined not to fall out of the column" (page 77).

Yet, not desiring to drag others down with himself, Coleman withdrew from the grasp of weakened American hands and fell to his knees. Within moments, a bayonet was thrust into his side, and "I felt a grinding of bones and a streak of fire in my right side." He awakened to find that he had been left for dead beside the road, laid between two cold Americans, one of whom was a Catholic chaplain who had his rosary beads on his chest (page 78). Sustained by a vision of his wife and children while he had been unconscious, Coleman amazingly struggled to rejoin the column and march off to four years of imprisonment.

It is the objective descriptions of the numerous atrocities that magnifies their horror. To become hardened so quickly to marching on the crushed flesh and bone of one's comrades itself (page 72) is a strong testimony to the human mind's ability to adapt to the incomprehensible.

The remainder of Coleman's account is

equally gripping, although mercifully less violent. We accompany him to his imprisonment at Camp O'Donnell, and eventually to his transfer to Japan. Along the way, we witness forced labor, needless deaths due to the withholding of available medicines, amputations, suicides, and despair. Yet even before the jubilation of the liberation, there were a few bright moments. One of the most moving occurred in November 1942 as the prisoners were marched publicly to the hell ships that would transport them to forced labor camps in Japan. As they passed a Filipino band, it began "playing 'God Bless America' and at first everyone yelled; then there was silence. Tears were streaming down our faces. . . . The bandleader could have been executed for this, if the Japanese had known what he was playing" (page 105).

One of his most special memories followed the liberation, as "General MacArthur was helping fit the men with clothes." He records a personal chat in which MacArthur, upon learning that he had served in the Air Corps, stated, "That was the biggest mistake I made at the beginning of the war. I did not believe that any airplane could sink a battleship" (page 188).

While Coleman's account is a personal one, *Brothers from Bataan* is a collection of remembrances woven into a common framework by the author. Martin draws upon the testimonies of numerous survivors to relate the story of his uncle, who did not return from Japan; tragically he died of tuberculosis shortly before the liberation. In a sense, this could be the story of many of those who did not return to recount their own trials.

Martin's narrative, filled generously with quotations consistent with his "oral history" approach, does not read as smoothly as Coleman's work. However, this less-smooth presentation is also inseparably linked to the volume's greatest strength: it conveys insights and experiences from a number of Bataan survivors. Thus, it is somewhat more comprehensive than the experiences and perspective of a sole POW. Martin acknowledges another limitation in his introduction: "One of the real challenges of portraying these terrible years of POW life was that much of the history of those events in the Philippines and Japan exists today only in the cracks, crevices, and recesses in the minds of these 60-, 70-, and 80-year-old men."

Brothers from Bataan follows the life of Martin's uncle from his prewar school years,

on through his imprisonment, to his ultimate death. Ironically, it appears that his uncle was fortunate enough to have escaped the Death March itself, due to the fact that the commander of his unit insisted to their captors "in the strongest possible terms that we had been on short rations and were very weak and could not possibly walk that far, and that the Japanese must . . . take us to O'Donnell by truck" (page 78). This demand was surprisingly met, probably because their unit was among the first to surrender and the Japanese had no idea how many prisoners would fall into their hands during the days ahead.

Due to the fact that Martin's uncle was a chaplain's assistant, a number of the reflections in the volume come from a Catholic priest with whom he worked before and during the captivity. Martin notes that "after 120 interviews I have heard a Bataan veteran occasionally condemn an officer or doctor, but never have I heard one criticize a Chaplain. . . . The tremendous pressure they worked under from 1941 to 1945 demanded heroism, and they accepted the challenge—and most went well beyond the call of duty" (pages 70–71).

Also in a religious vein, the following comments are taken from the diary of a doctor who tended his comrades in the prison camp. In Japan, those who died were placed in a box and taken to the local crematorium. Later the ashes were returned. Before the body left the camp, however, officers and selected enlisted men were forced to attend a Shinto funeral. In the words of the doctor, "What sacrilege and show, this Shinto funeral for OUR soldier" (page 255).

Martin's study of the subject also offers a wide range of vignettes into the plight of the POW held by the Japanese: a Japanese officer laying a wreath at an American Memorial Day service, POW self-administered justice, paying rice rations to have one's arm broken to avoid work details, and the giving of their POW "pay" to the Red Cross before departing Japan.

These books tell a shared story with many common themes. However, each is worthwhile in its own right, and reading both provides a detailed picture of these dark days. Both contain helpful maps and photographs. In addition, Martin's book includes camp drawings and facsimiles of documents such as Japanese propaganda leaflets, the few postcards Sergeant Martin was allowed to send

home, the letters of regret received by his family, and even two cartoons drawn in the camp by one of the prisoners.

Bataan taught lessons we should never forget, and these two works can help us recall them. One never knows what the future may bring. Listen to Coleman: "When we lined up in the column [to begin the Death March], none of us doubted that we would be treated in a decent and humane way, according to the international law dealing with prisoners of war" (page 71). Years later he would have learned, "we had been gone over four years and many times over those four years it looked as if it would be impossible to live. There were many times it would have been much easier to die . . ." (page 193).

Chaplain, Capt, Robert C. Stroud, USAF
Poulsbo, Washington

Mister: The Training of an Aviation Cadet in World War II by Eugene Fletcher.
University of Washington Press, Box 50096,
Seattle, Washington, 1992, 190 pages, \$19.95.

"Mister" Eugene Fletcher has crafted a concise, well-written, and well-researched memoir of US pilot training during World War II. The book progresses through all five phases of his flight training—preflight, primary, basic, advanced, and finally B-17 transition.

The author's flying odyssey begins on 7 January 1943, when he reports to the Army Air Forces Classification Center at Santa Ana, California. Here he spends three months undergoing basic military training and physical fitness conditioning and learning physics, radio code, meteorology, theory of flight, Army organization, and many other subjects. Off-base passes were few, primarily because of numerous quarantines due to measles outbreaks. Preflight was significant because it was in that phase that Fletcher and fellow pilot candidates were given the name "Mister," a title they would not shed until November of that year, when they would get their wings and officer commissions.

The actual flight training begins in primary flying school, and for the author this occurs at Oxnard, California. During these three months, he logs 65 hours of "arduous and dangerous" training in the Boeing-built Stearman PT-13B biplane, a 2,700-pound, 220-horsepower relic. With civilian instructors, he

learns basic flight maneuvers, pattern procedures, and aerobatics. Between flying, ground school, studying, physical training, and drill, Fletcher manages to periodically see his new wife, who faithfully follows him to each base. Her presence helps ease the pressure of checkrides, which "every cadet hated and feared," the pressure of washing out (176 of 200 made it through this phase), and the overall danger. Interesting anecdotes include the continued quarantines and the constant state of alert because of the fear of invasion by the Japanese.

The next phase of training, basic, begins with a stark reminder of the inherent danger in flying—the display of aircraft wreckage at the front gate of War Eagle Field, Lancaster, California. This incident is almost prophetic. During basic, Mister Fletcher would barely avoid killing himself on two solo flights, one during a spin and one when he lost an engine on takeoff. His 80 hours of dual and solo time in the BT-13A Vultee Valiant, a 4,490-pound monoplane with a 450-horsepower engine and a top speed of 156 mph, consist of formation flying, navigation and instrument training, night flying, and extensive pattern training, especially at auxiliary airfields. The author attempts to break the occasional monotonous description of flight school with brief discussions of the rationing of consumer goods, his wife's employment at the base in the dining hall, and get-togethers with friends.

The last school in the cadet flying program, advanced, begins at Douglas Army Airfield, Arizona, in August 1943. Using the twin-engined, fabric-covered AT-17 Cessna "Bobcats," also known as the "bamboo bomber," Fletcher logs 126 hours. The Bobcat grossed at 5,700 pounds, and the 240-horsepower engines gave it a top speed of 176 mph. The instructors in this phase of training considered their students already pilots and therefore gave concentrated instruction in instrument flying, day and night formation, and navigation.

Although in advance flying school some of the pressure was off, the hazards remained, as illustrated by Fletcher's near miss with a civilian airliner, a landing at the wrong airfield on a night solo navigation ride, losing an engine at an auxiliary airfield, and the death of two students the day before graduation. Despite hazardous incidents, Fletcher and his class receive their wings and commissions as second lieutenants on 3 November 1943, and with it the

satisfaction of no longer being referred to as "Mister."

Fletcher closes his book with a brief description of B-17 transition and crew assignment at Roswell Army Airfield, New Mexico, of the thrill of flying the 55,000-pound Flying Fortress with its four 1,200-horsepower engines, and of his initiation as a B-17 aircraft commander. This training apparently prepared him well for 35 combat missions in Europe, which is the subject of his first book, *Fletcher's Gang*.

After reading this book, I was relieved that I had earned my wings in 1983 and not 1943, and that my combat time was earned over Panama and Southwest Asia and not Nazi-occupied Europe. All US Air Force undergraduate pilot training students should be issued this fine book to understand the historical underpinnings of their training, to realize the crucial importance of safety and the consequences of ignoring safety, and to gain an appreciation of modern technology and flight-training procedures.

Capt Phil Bossert, USAF
USAF Academy, Colorado

Band of Brothers: E Company, 506th Regiment, 101st Airborne from Normandy to Hitler's Eagle's Nest by Stephen E. Ambrose. Simon & Schuster, 1230 Avenue of the Americas, New York, New York 10020, 1992, 335 pages.

The saga of a Second World War unit from its formation to its inactivation is an oft told tale. It is a tried-and-true formula that usually produces a bland product with perhaps a dash of spice here and there. Not so with *Band of Brothers*. Easy Company's epic is one of the best works on the American soldier in World War II.

Easy Company's story is stirring for many reasons, but several stand out from the very beginning. First, the men themselves. A casting call could not have produced a better collection of characters. These were men of the early days of the airborne—hard men. Their training was brutal. Of the many thousands that began, only a few hundred remained to wear the silver wings of the airborne. The company was filled by men hardened by the Depression and eager for action. Most had only modest educations, but there were some

college types in the company, even a Harvard graduate.

The company commanders were a fascinating study in contrasts. Easy's first commander, Herbert Sobel, was a widely disliked, if not hated, martinet who was a master in what Paul Fussell has termed *chickenshit*. His pettiness, demeaning antics, and sheer arrogance created an extremely high level of unnecessary stress in the company. And yet one of the veterans of Easy Company states, "Herbert Sobel made E Company." And many agreed. The commanders that led Easy into combat, Dick Winters and Ron Speirs, were men that inspired the weary, the exhausted, the scared, to perform feats that are nothing short of amazing. On D day, with what was in essence little more than a reinforced squad, Captain Winters led an attack against a German firing battery, and its supporting infantry, that threatened to turn Utah Beach into a possible bloodbath. The men of Easy Company destroyed the German force in a truly remarkable feat of arms. The performance of Easy Company under Captain Speirs in the Ardennes and later campaigns was just as impressive. The attack by Easy at Noville may have been one of the outstanding small unit actions of the entire war.

Another reason *Band of Brothers* is an excellent book is the craft and, well, love, that the author puts into the work. Better known for his biographies of Eisenhower and Nixon, Stephen Ambrose is also a very skilled military historian. He has a fine touch for letting the men and their stories flow from page to page. It is almost as if it were an adventure story rather than a military history. Only a small handful of similar books accomplish this, Charles MacDonald's *Company Commander* being one of the few that comes immediately to mind.

From its formation in July 1942 at Camp Toccoa, Georgia, to its inactivation in Austria three years later, Easy Company saw the underbelly of the war: the brutality, the destruction, the senseless random way in which death was dealt out, and the weariness that only warriors can know. At full strength, Easy Company had 140 officers and men assigned. Easy left the battlefields of four campaigns with 48 men dead and over 100 wounded, many wounded more than once. Easy jumped into both Normandy and Holland. It was part of the "Battling Bastards of Bastion Bastogne." The men of Easy Company emerged from the war as

a special breed of men—men that fought with the “Screaming Eagles” of the 101st Airborne Division. In 1945, few units anywhere were as admired as the 101st Airborne, and Easy was the class of the 101st.

Band of Brothers is more than just an excellent book. It is a superb military history.

There are few books that can match this epic tale of men, true citizen-soldiers, in combat. Stephen Ambrose is to be commended for bringing the story of Easy Company to life. It is an exciting, vivid, and moving odyssey of men that were truly a “Band of Brothers.”

Maj Hubert D. Capps, US Army
Arlington, Virginia



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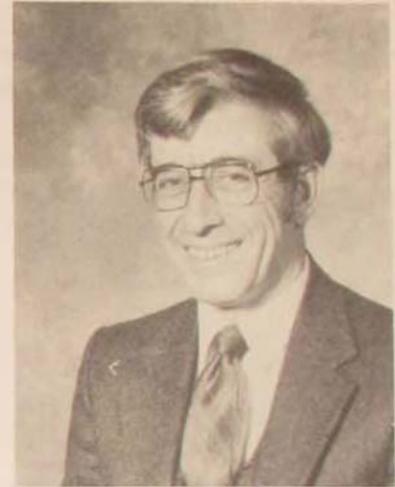




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