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Winter Reading
Doctrine

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DOCTRINE

FEATURES

DEPARTMENTS

Tie Everything Down

WE ARE seldom as passionate as when we are expressing our fundamental beliefs. Such is the nature of any good debate on doctrine by people who care about the profession of arms. With the advent of the latest basic doctrine, now termed Air Force Doctrine Document (AFDD) 1, *Air Force Basic Doctrine*, a few storm clouds and an ocean swell of opinion are rising in response to the changing wind. Some people note that our service's history already happens to be at high tide. Perhaps we should prepare for a storm surge. This issue's headliners—Builder, Holley, Mowbray, and Drew—all suggest that better ways exist for articulating Air Force doctrine. We think their ideas are worthy of your consideration.

Any process of doctrine revision has all the attendant risks of opening a constitutional convention—the most convenient way to change our national fabric. Unfortunately, such a convention subjects the entire document to changes by any well-intentioned group that shows up with an agenda. That's why you'll hear talk of it, but we'll never have another constitutional convention. Too many special-interest groups would have the opportunity to change the very essence of our nation. In light of the recent Air Force experience in the roles-and-missions debate and the resulting, subtly applied pressure by sister services to "joint" our Air Force doctrine, the same risks to our fundamental guiding principles could be at play here. Under such circumstances, why must we put the entire document up for grabs every time we change it?

Look at Col Denny Drew's article on page 42. Why can't we take his deliberate, methodical framework, which is very much in the mold of—dare I say it—the Quality Air Force, and publish vignettes of continuously improving proposed doctrine on these pages for your review and comment? Shouldn't *APJ* be the forum where you take a stand on your service's fundamental beliefs? We like the idea, and we're ready to serve.

In the interim, we're offering these articles because we think they're worth your time. Review what these distinguished authors have to say on the process of evolving doctrine—past, present, and future—and express your thoughts concerning the guiding principles that are or should be fundamental to our profession. We've taped all of the windows and put up the last of the plyboard. We're not exactly planning a doctrine storm party here, but we're prepared to ride this one out.

The Dialectical Envelope

Two articles in this edition push our limits of mellifluently reasoned logical argumentation. If you read this issue from cover to cover, you may not have any trouble culling out the two in question. We were obviously present when we made the decision to run them. Here's why.

Both articles represent opposing views of subjects that we've spent a great deal of *APJ* print on lately. Although we're not desperate for dialogue or discussion, not many "opposing idea" articles have been forthcoming. In a recent *APJ* editorial, the chief of staff described our forum as a marketplace of ideas. Having soaked up "you're boring" feedback for months on end, we find it difficult to be an interesting marketplace when no one's selling anything different.

Though our customers outside of Maxwell's academic circle thrive intellectually, our process remains—to a large extent—academically styled (spelled *disclaimer*). We support the free exchange of ideas even though ours is a profession encumbered with perceptive fetters against the same. We will, from time to time, publish papers like the two you'll find here. If you're a poten-

tial contributor, they should tell you something about our editorial standards.

First, we won't dismiss for publication any article simply because it's presented in a manner with which we may disagree. The articles you see represent months of work between the editors, referees, and authors to agree on style and tone, as well as content. Authors who work with us become familiar with where we draw that line. For authors who won't, we suggest an alternative publishing venue. Our new Board of Advisers may supply the chalk, and our referees may offer great advice, but the line, inexorably, remains ours to draw.

Second, when your articles contain excellent points, as is the case in this issue, please allow us to run them. We know that many of you are passionate about your profession. Although we want to reflect that enthusiasm here, we cannot pursue individual agendas at the expense of logical argumentation. Passion and scholarship are not mutually exclusive.

Ultimately, we hope your best points are made in letters to *APJ*. Take a look at us from cover to cover, and evaluate our dialectical flight envelope. If you find only one of the articles, fine. If you find more than two, let us know. We work hard at editing out ideas that lack scholarship or talk down to the readership. Still, some of these articles may not be for the professionally faint of heart.

Notice Anything Strange?

APJ should feel different to you. That's because we have added 32 pages to the Air Force's professional journal. Adding those pages completes the process changes we announced last winter—widening our editorial focus to include issues and ideas on strategy and policy. More of the dialogue is now available to more of you. Not since *Air University Review* have Air Force officers been able to participate as effectively in the marketplace of ideas.

You already may have noticed the changes in our table of contents. Recent editions have listed our articles under "Strategy and Policy" and "Operational Art." The new space allows us to pursue both forums without limiting the dialogue in either one. We realize that many of you are fans of one level or the other and may be keeping a page count, but we hope you won't. As long as we have one professional journal, we'll work hard to make each edition a cogent collection of relevant articles, ideas, and reviews.

Our new "Way Points" department features shorter works that we don't usually get to put in print. They may resemble op-ed pieces but are much more than mere opinion. We've jump-started that addition with an interesting essay by Dr Lew Ware. Then, Col Dick Szafranski takes on Dr Ware. Join in anytime.

Our new electronic journal, *Air Chronicles*, has been a smash on the World Wide Web. We were first on the Internet with the best articles, information, and discourse on what will become the staple of information flow for the future. Freed from the limitations of publication time and space, we've turned around discussion in hours that used to take as many months. And we've paved the way for other professional journals—we know; they've called.

We've had a busy year making it happen for you. Consider our efforts in process change as an early holiday gift. May we ask for something in return? Let us know what *you* think. Our mission is promoting the dialogue, and we hope the new year finds you closer to your profession as a result. □

Be sure to read Colonel Spencer's editorial "In Defense of Readability" on
Air Chronicles: http://www.cdsar.af.mil/air-chronicles.html.
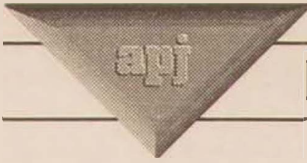
LEADING AND FOLLOWING

A big issue we face today in the United States Air Force, as well as in any organization for that matter, is exactly how we will continue to lead and follow amidst the "information revolution." Because of instant and direct access, I believe that some of our people are less inclined to be good followers because they no longer have to!

We used to lead—partially through information power—and follow, partly because we needed that information. Our leaders were our main conduit for knowledge. This is no longer the case. We just turn on our computers for almost everything we need. I can send E-mail to anyone in my chain of command, bypassing my leaders and followers. I can tap into information I used to get on paper, annotated with comments and interpretations from my bosses. Today's followers need to think through precisely why and how they need to continue following their leaders. Leaders must articulate very clearly to their followers why they (the leaders) have to be allowed to "steer the ship" and have to be kept informed on all the many communications and resultant decisions that their people are making over the information highway. Organizations attempting to empower their people under the Quality movement already face this problem; those empowered are still followers who must know when and how to keep their bosses informed.

To stay the great war-fighting organization we are and to handle crises with total effectiveness and clarity, we undoubtedly must keep leading from the front and speaking for the entire organization. We all have to keep refining our followership skills as well. Because of the information revolution, however, it will be a lot tougher to lead and follow in the future!

Lt Col Marc Lindsey, USAF
Washington, D.C.

TO THE RESCUE

I commend 2d Lt Dave Meggett's efforts for his article "Organizing for Search and Rescue: Force Structure in a Joint Environment" (Summer 1995). Fixing our nation's combat search and rescue (CSAR) capability is a very complicated topic and will undoubtedly require tough decisions at the highest levels. While I agree with his main premise, many of the comments he made are either incorrect or potentially misleading.

During Operation Desert Storm, Special Operations Command Central (SOCCENT) was tasked with providing theater CSAR. SOCCENT is US Central Command's subunified special operations component. Special Operations Command (SOCOM), a unified command headquartered at MacDill AFB, Florida, did not play an operational role during the war. Lieutenant Meggett said that SOCOM was loathe to reveal many of its "covert" tactics to regular forces and that, had SOCOM been more willing to integrate with regular forces, the rescue time for Lt Devon Jones could have been dramatically shortened. Both comments are incorrect. SOCCENT and its service components were extremely professional. Although CSAR was not a primary mission for which they had been trained, once they were tasked, they saluted sharply and conducted the CSAR mission as professionally as they conducted their primary special operations responsibilities. Lieutenant Meggett states that rescue forces were consolidated under the command of the joint force air component commander (JFACC). Not all of them. Special operations forces (SOF) assets remained under the control of the SOCCENT commander. The special operations liaison element (SOLE) at the JFACC's headquarters ensured that SOF assets were fully integrated into CSAR operations. That meant that joint air assets fully supported CSAR operations; further, SOF assets

were often used to support other joint air operations. The rescue of Lieutenant Jones was not delayed or hindered because of "covert" tactics by special operations. As a matter of fact, the SOF crews that participated in the rescue flew more than eight hours in support of this mission.

The doctrine on CSAR is not changing as slowly as Lieutenant Meggett would suggest. We have actually come a long way on CSAR doctrine. Lieutenant Meggett quotes Air Force Manual (AFM) 2-36, *Search, Rescue, and Recovery Operations*, to make a doctrinal point. That outdated manual was written in 1967 and reflected Vietnam thinking. It was superseded on 30 December 1994 by Air Force Doctrine Document (AFDD) 34, *Combat Search and Rescue Operations*. This draft was started in the fall of 1993. Neither AFDD 34 nor the new draft of AFDD 1, *Air Force Basic Doctrine*, considers CSAR a secondary mission. Lieutenant Meggett never called the Air Force Doctrine Center to discuss Air Force doctrine on CSAR or any of these other issues. Joint Publication (Pub) 3-50.2, *Doctrine for Joint Combat Search and Rescue*, is not a draft; it was approved in June 1994. Its subordinate pub on joint tactics, techniques, and procedures for CSAR is currently at the Joint Staff awaiting approval. Finally, Joint Pub 3-50.3, *Joint Doctrine for Evasion and Recovery*, has been approved by the services and is currently awaiting the signature of the chairman of the Joint Chiefs of Staff.

Lieutenant Meggett also incorrectly asserts that the Air Force was the only service that supported the concept of the Joint Search and Rescue Center (JSRC) commander. Actually, the Joint Staff was the only agency that supported this concept. The Air Force did not want to establish another functional component commander. Joint Pubs 3-50.2, 3-50.21, and AFDD 34 accurately reflect the Air Force position, stating that the joint force commander (JFC) will normally establish a JSRC by tasking one of the component commanders to designate the rescue coordination center as the JSRC. These documents further state that the JFC should give the designated component commander the authority and responsibility necessary for both operating the JSRC and providing CSAR for the joint force. This could include tasking authority. In essence, the JFC is responsible for ensuring a joint CSAR capability.

I believe that Lieutenant Meggett is also confused in his discussion of the Goldwater-Nichols Department of Defense Reorganization Act. CSAR forces are not and have never been the sole domain of the services. Nothing has ever stopped a JFC from designating service or other component assets as theater rescue assets. What Lieutenant Meggett is apparently trying to assert is the fact that the services must maintain a capability to rescue their own forces. He incorrectly implies that these service assets are under their parent service's control and not available for joint operations.

Lieutenant Meggett's description of the current Air Force CSAR capability is erroneous. That capability has gone through a number of organizational realignments and equipment changes. Currently, a number of active duty and reserve rescue units, both in the continental US and deployed, are under the command of Air Combat Command, Pacific Air Forces, and Air Force Reserve/Air National Guard. There are no active duty rescue units in US Air Forces Europe. By the way, HC-130s provide much more than just a command and control capability. They refuel joint CSAR assets such as HH/MH-60, MH-53, and MH-47 helicopters and so forth.

I believe that this topic is a tough one. Many of Lieutenant Meggett's points are good and well taken; however, the number of errors that he makes detracts from an otherwise important issue.

Maj Aryea Gottlieb, USAF
Hurlburt Field, Florida

EDITOR'S NOTE: In all fairness to Lieutenant Meggett, his article was submitted for publication well before December 1994, so he probably never had the opportunity to review AFDD 34 or some of the other publications listed in this letter. Draft AFDDs are seldom released outside of the coordinating offices until they are final.

MORE ON WESTERMANN

Capt Edward B. Westermann's article on "Contemporary Civil-Military Relations: Is the Republic in Danger?" (Summer 1995) contains a number of factual, editorial, and chronological errors of which your readers should be aware.

The author takes issue with General Powell's publication of an op-ed piece in the *New York Times* on Bosnia and an article on US security
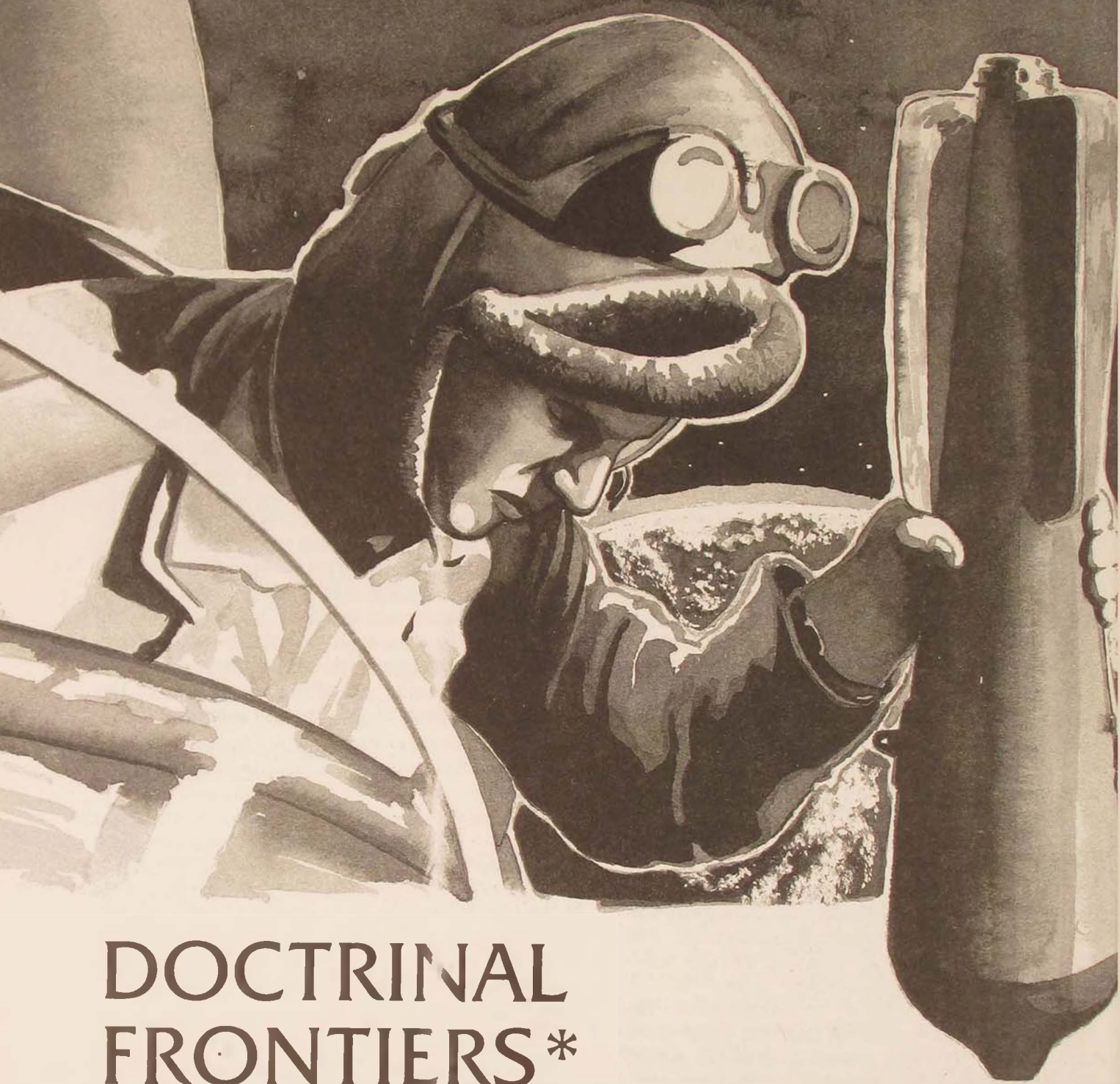
DOCTRINAL FRONTIERS*

CARL H. BUILDER

I WOULD LIKE TO develop two themes dealing with doctrinal frontiers. One is the importance of our pursuing this subject. The other is the location of one of those frontiers.

Air Force Manual (AFM) 1-1 tells us that "doctrine should be alive—growing, evolving, and maturing. New experiences, reinterpretations of former experiences, advances in technology, changes in threats, and cultural

changes can all require alterations to parts of our doctrine even as other parts remain constant. If we allow our thinking about aerospace power to stagnate, our doctrine can become dogma."[1] We are accustomed to seeing doctrine grow, evolve, and mature, particularly where doctrine applies to what we care most about—our traditional roles and missions in the mainstream of the Air Force. We seem to have more difficulty, however, with nurturing doctrine off the mainstream roles and missions—what I call the doctrinal frontiers, such as space and special operations.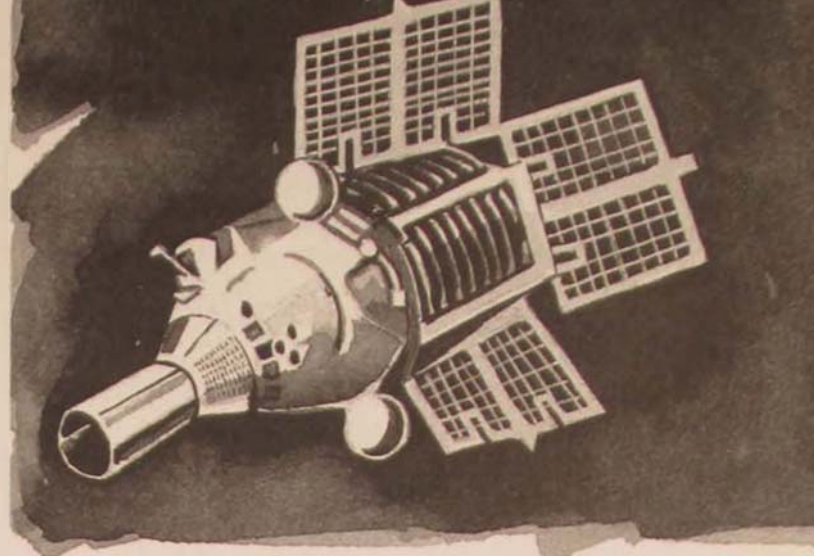 I don't know whether that is because of insufficient interest from the mainstream of the Air Force or because such developments might be perceived as threats to (or unwanted diversions from) the mainstream interests. History admits to both possibilities.

Frontiers Are Lonely

Think about the American frontier. Today we are proud of the American frontier spirit (even though we may be uneasy about some of its excesses[2]). But when the American frontier first yawned wide with the Louisiana Purchase in 1803, the mainstream of American society was not particularly enthusiastic. Indeed, many of the established Easterners were skeptical of the value and concerned about the future implications of an expanding Western frontier. Essayist Richard Barnet has noted that "in the War of 1812, a good many Federalists would have preferred to see the British win rather than to see the locus of national power pass to the American West."[3]

It got worse. By the time the Western frontier reached full flood, in the 1850s, its implications were tearing at the fabric of governance woven by the Eastern establishment 50 years earlier. The American Civil War was precipitated by many issues—not the least of which was how the West should be divided between slave and free states and, therefore, what the balance of power should be in the future union.

Nevertheless, the frontier spirit ultimately prevailed, and we still celebrate it in stories, films, clothing, song, dance, food, lifestyles, attitudes, and even as an ethic. The Western frontier helped define us as a nation and transform us from what we were to what we are today. "Go west, young man!" urged Horace Greeley. The frontier was the future of the nation, and our society still carries its imprint. Even though, at the beginning, the frontier was counter to the mainstream, it would ultimately become the mainstream.

If we allow our thinking about aerospace power to stagnate, our doctrine can become dogma.
—AFM 1-1

We have a good example of doctrinal frontiers in Air Force history—history that was written at Maxwell AFB, Alabama, and that we continue to celebrate. In the 1920s, the Army mainstream wanted its flyers to focus on providing air *services*—scouting and spotting for the Army—but some airmen saw a new frontier in an air *force* that could carry the war to an enemy as a new military arm. Sixty years ago, at Maxwell's Air Corps Tactical School (ACTS), some courageous airmen began to explore that frontier by pursuing

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Hugh Trenchard

their leadership, they were united not just by their dream, but also by their common jeopardy. More than one of these intellectual frontiersmen found himself exiled to *physical* frontiers—to the dusty camps of Kansas or the fetid air of Panama. Yet, less than a decade later, their ideas were molding the largest air armada ever assembled. In another decade, their ideas would be the mainstream of the most powerful military institution ever forged.

Today, we stand at a point of new departure in the aftermath of the cold war. We have the greatest opportunity since the beginning of the space age, 40 years ago, to be frontiersmen again. If we could turn back the clocks by 150 years, we would be gathering in Saint Louis, speculating about the opportunities and perils that lie to the west, at the risks of our lives and fortunes. If we could turn back the clocks by 60 years, we would be gathering at Maxwell, speculating about the opportunities and perils that will attend our efforts to turn the airplane into a decisive instrument of war, at the risks of our careers and our nation's security. We can't turn the clocks back, but we *should* be speculating about the opportunities and perils that will attend the wise use of air and space power by our nation as it pursues its interests in a radically changed world.

The New Landscape

The political stasis of the cold war masked just how much the world had been changing for more than a decade before the Berlin Wall collapsed. The microchip begat global communication nets, which, in turn, begat global markets, which gave wings to people and goods and wealth and information, which undermined the sovereign powers of all nations, which delivered increasing power into the hands of groups whose interests were no longer bound by geography and national boundaries. While we, as cold warriors, stood transfixed by the sudden col-

the doctrinal and tactical issues in an air force for strategic bombardment. They were frontiersmen—out of the Army mainstream, anticipating the future. The stories of their struggles and triumphs are now Air Force legends. Their frontier was the future of the Air Force. Their countermainstream became mainstream.

Let's not forget how far those early airmen were from the mainstream or what they paid for their frontier spirit. Benjamin Foulois recalled that "anyone who went against [Army] staff thinking on any subject in those days invited a reprimand for himself rather than a reward for daring to think imaginatively."[4] Those doctrinal frontiersmen were a lonely band of brothers. Disapproved by

lapse of communism, the 300-year-old world order of nations was being transformed into something else that still defies our naming or understanding. Is it to be Samuel Huntington's clash of civilizations[5] or Robert Kaplan's coming anarchy[6] or my disorderly world, where nations are in less control of their fates even as societies demand more of them?[7]

Whatever the shape of this new global structure, air and space doctrine will continue to evolve, of course. My concern is whether the evolution of air and space doctrine will be mostly in the mainstream—with the traditional roles and missions we have come to associate with fighting and winning the nation's wars—or out on the frontiers, in new or long-forgotten roles and missions for air and space power. My first plea is for the frontiers—not the mainstream. The mainstream, by definition, will have enough volunteers and preferences to garner the attention it needs to see us through the necessary doctrinal evolution. But what of the lonely, dangerous frontiers, with all of their uncertainties and risks? Will we have enough volunteers? Will those who volunteer have the wit, courage, and stamina that frontiers seem always to demand of pioneers? I hope that the frontiers of air and space doctrine will beckon those airmen who have the potential to be doctrinal pioneers.

Where are those doctrinal frontiers? They aren't hiding from us. Information warfare and space defense against ballistic missile attacks are two that are in the news every day. The fact that they carry with them more questions than answers is a very good sign that they are frontiers.

Constabulary Missions

For the past several years, I have been beating the drum for a frontier that I call the constabulary[8] role for air and space power—where our military forces are employed in policelike operations. It is not a new role. It emerged early in the history of flying ma-chines—in little more than a dozen years of Kitty Hawk.[9] But we seem to have neglected it as airpower became more central to fighting and winning the wars of the twentieth

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Could air and space power—by themselves—substantially pursue the constabulary objectives of the United States today?

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century. Now, as war clouds recede and civil disorders multiply, constabulary tasks are increasing. Airmen have been here before.

After the "war to end all wars," there was a clamor in Britain to disband the newly formed Royal Air Force (RAF). In the words of James Parton,

> [Hugh] Trenchard . . . the first Chief of the RAF . . . saw a unique way to prove . . . to the British public and government . . . that national security required a centralized and independent air arm. As part of the settlement of World War I, Britain had accepted from the new League of Nations a supervisory "Mandate" for a clutch of new "nations" formed from the territory that had belonged to the Turks. These included Palestine, Transjordan, Mesopotamia, the Lebanon, the Hejaz, and the Yemen, all of which were squabbling with themselves and the outside world as they still do today. In 1920, for example, quelling rebellion in Mesopotamia cost the British 2,000 military casualties and £1,000,000. Trenchard proceeded to demonstrate that the Royal Air Force, even though shrunk [to a third of its wartime strength], could handle Britain's problems in the Middle East effectively and at far less cost. He then did the same thing on the troubled Northwest Frontier of India. By 1924 . . . efforts to disband the RAF had disappeared, and Trenchard was secure in the reputation he carried ever after as its "Founder."[10]

That was airpower as an instrument of colonialism—albeit dressed up in the form of a
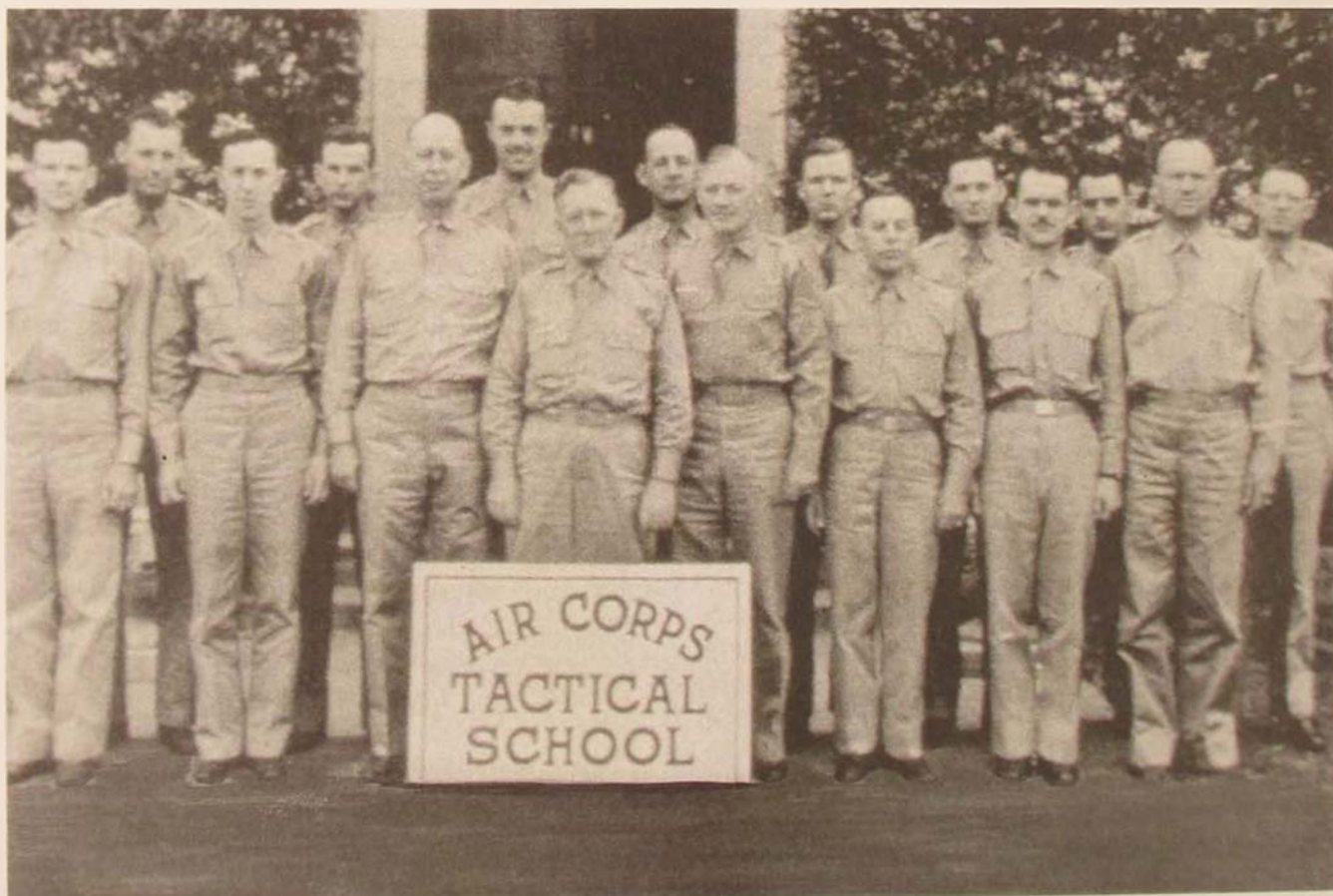
supervisory mandate from the League of Nations. Today, we might call it a peacekeeping mission from the United Nations (UN)—same problem and some of the same actors but with different words and 70 years apart. Today, we are flying over Mesopotamia (Iraq), trying to stop the Ba'athists from squabbling with their Shi'ite and Kurdish neighbors. We are also flying over Bosnia, trying to suppress conflicts between the ethnic factions left over from the fragmentation of Yugoslavia. But are we doing as good a job as Trenchard did? If not, why not?

Trenchard proved that the RAF could do the lion's share of Britain's constabulary job

Some airmen saw a new frontier in an air force that could carry the war to an enemy. At Maxwell's Air Corps Tactical School . . . some courageous airmen began to explore the frontier by pursuing the doctrinal and tactical issues in an air force for strategic bombardment. They were frontiersmen—out of the Army mainstream, anticipating the future.

with airpower, effectively and at far less cost than by putting more British soldiers on the ground. In today's cult of jointness, we are all but forbidden to suggest that one military service or instrument can do any job by itself; everything must be done jointly if it is to be politically correct. That point aside, the question remains, Could air and space power—by themselves—substantially pursue the constabulary objectives of the United States today? If not, why not?

I think the answer is that we are not pursuing these objectives, but we could do much more than we are. We are trying to apply forces and doctrine designed for fighting and winning wars to constabulary missions—and they don't apply very well. We are not stopping the enemy from flying in the no-fly zones. We are not stopping the use of heavy weapons against sanctuaries. Now, many people will protest that the fault lies with the restrictive rules of engagement or the inade-

quacies of the UN's commanders. I will argue that the fault lies not with the problem that confronts us but with the solution we have fashioned for a completely different problem.

Constabulary missions are different from fighting and winning wars. These missions are more policelike than warlike. They are reactive more than proactive. They typically cede the initiative to those who would violate the rules. The enemy is not persons or things but an act—a violation of rules. The purpose of the constabulary response is not to defeat an enemy; it is to deter and suppress violations of the rules. There can be no expectation of winning—any more than we can expect to win a war against crime. We can only hope to reduce violations to a more acceptable level. These are conditions for which neither our equipment nor our doctrine has been designed. We design our forces for speed, stealth, destructiveness, payload, and range. Our doctrine emphasizes surprise, initiative, freedom of action, mass, shock, and the principles of war. These qualities are only occasionally pertinent to constabulary missions.

Some people will argue that military forces should not be used for constabulary functions: they should be withheld for fighting and winning wars, which is their primary purpose for being. History, however, runs contrary to that argument. Historically, the military—including the American military—has been assigned constabulary missions in peacetime and in the aftermaths of wars. Ours have included the pacification of the American West, the suppression of rebellions in the Philippines, and the occupations of Germany, Russia, and Japan in the wakes of two world wars—not to mention many constabulary interventions into Latin America.

Today, our military forces are deployed around the world in constabulary missions that are much more policelike than warlike. Some people warn of the effect of these constabulary missions upon our war-fighting readiness, but they are shouting against the steady wind of history. The emerging shape of the world around us suggests that we will be involved in many more constabulary than war-fighting missions over the next several decades. Are we ready with the equipment and doctrine we will need? Are we willing to venture into this frontier? Or would we rather stay with the mainstream of war-fighting missions? That is the dilemma all frontiersmen must confront.

Constabulary Capabilities

What should we ask of air and space power in constabulary missions? We won't know all the answers until we explore this frontier further—anymore than the early pioneers at ACTS could be sure of all they would ultimately ask for strategic bombardment capabilities. But I would offer four places we need to look for new equipment and doctrine:

Historically, the military— including the American military— has been assigned constabulary missions in peacetime and in the aftermaths of wars.

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1. We need effective means for nailing the smoking gun—ways for immediately engaging and suppressing heavy weapons fire. Our current equipment and doctrine are designed for attacking artillery en masse, wherever and whenever it is detected and with little concern for collateral damage. What we need is reactive, directed counterbattery capabilities—to return fire, round for round—from the air, without having to put forward air controllers on the ground, where they can be turned into hostages. We ought to be able to do this by combining gunships and "fire-finder" radars.

2. We need effective means for stopping surreptitious flights by low and slow flyers. Our current equipment and doctrine are designed to attack aircraft wherever they are—on the ground and in the air. But constabulary rules of engagement may prevent us from engaging aircraft on the ground. That means that helicopters and light planes can "squat" on the ground when detected in order to avoid being engaged.[11] If we only have "fast movers" of limited flight endurance to enforce a no-fly zone, the violators can outwait us and move on when we must return to base. What we need are aircraft that can also squat and wait or, better yet, squat and capture. We ought to be able to do this with helicopters and vertical-takeoff-and-landing aircraft—even though we prefer the fast jets.

3. We need effective air and space power for suppressing street disorders and violence. We face the problem repeatedly—in Panama, Somalia, and Haiti—but when we put people on the ground to deal with it, we set ourselves up for hostages to the conflicts of others. Somewhere, in the emerging development of "nonlethal" weapons, we might be able to find the tools to exploit our control of the air and space for controlling the use of the ground. If air and space power can be forged into means that can effectively deny people the use of the streets for looting property or mobbing human victims, the dark shadow of one of the most vexing problems of the future will have been drawn back.

4. We need effective means for inserting and recovering modest numbers of people (a squad or so) and amounts of materiel (a ton or two) anywhere in the world, at any time (day or night, all-weather), at places of our choosing (a soccer field or tennis court instead of the few airports where we may be anticipated). From Desert One to Rwanda, we have learned that our current vertical-lift capabilities are too short-legged and that our current global airlift capabilities are too demanding of landing places. We need a marriage of these capabilities for urgent, high-priority drops and pickups.

Undoubtedly, there are other capabilities that would also make air and space power more effective in the constabulary roles and missions that I see in our future. But these four convey the flavor of the challenging frontier that is opening up on our flank.

Like Greeley, I too would urge young men to go west—would urge airmen to look to the frontiers of air and space power. New doctrine is desperately needed there. The doctrinal gaps between the war-fighting and constabulary roles for air and space forces are probably as great as those faced by the ACTS pioneers 60 years ago as they contemplated the doctrinal gap between an air service and an air force. Stalking and conquering frontiers are clearly the Air Force heritage. That alone should tell us where the future lies.

□

Notes

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

2. Those excesses, from today's perspectives, include the rough frontier justice (or lack thereof), the treatment of native Americans, and the disregard for the natural environment.

3. Richard J. Barnet, "Rethinking National Strategy," *The New Yorker* 64, no. 5 (21 March 1988): 109.

4. Quoted in Michael S. Sherry, *The Rise of American Air Power: The Creation of Armageddon* (New Haven, Conn.: Yale University Press, 1987), 51.

5. Samuel P. Huntington, "The Clash of Civilizations?" *Foreign Affairs* 72, no. 3 (Summer 1993): 22-49.

6. Robert D. Kaplan, "The Coming Anarchy," *The Atlantic Monthly* 273, no. 2 (February 1994): 44-76.

7. Carl H. Builder, *The Icarus Syndrome: The Role of Air Power Theory in the Evolution and Fate of the U.S. Air Force* (New Brunswick, N.J.: Transaction Publishers, 1994), 290.

8. A constabulary may be defined as an armed police force organized on military lines but distinct from the regular army. I use the word as an attributive here to describe the use of regular military forces in policelike functions.

9. Aircraft played a modest role in Brig Gen John J. Pershing's punitive expedition (what I would call a constabulary mission) into Mexico after the bandit Pancho Villa in 1916.

A MODEST PROPOSAL

MAKING DOCTRINE MORE MEMORABLE

MAJ GEN I. B. HOLLEY, JR., USAFR, RETIRED

O N THE SUBJECT of doctrine, there are two problems to be solved. The first is to perfect the means for devising sound doctrine. The second is to perfect the means for insuring that the doctrine we devise is communicated effectively and internalized by the people who must apply it.

I have spent the better part of my career in the Air Force trying to improve the process by which we formulate doctrine. In this I must confess I have been far from success-

ful. But in recent months, I have come to realize that the way we go about instilling doctrine in the minds of Air Force decision makers is no less important than the way we devise doctrine out of experience.

My thesis addresses the proposition that the way we articulate doctrine is flawed. My simple contention is that our doctrinal manuals consist largely of generalizations. They offer page after page of abstractions. Unfortunately, abstractions don't stick in the mind as well as real-life illustrations or historical examples.   I contend that paying more attention to the format in which doctrine is presented will work toward a wider familiarity with doctrine by Air Force decision makers at all echelons.

Over the years, various strategies have been employed to insure that Air Force officers become familiar with official doctrine. I suspect that few people recollect that 40 years ago we had a regulation requiring that each officer in the Air Force receive a personal copy of the current Air Force Manual (AFM) 1-1. This approach didn't work. It resulted in a lot of unread pamphlets and a mass of wastepaper.

Some years later, the doctrine shop staff tried another approach.   They sought to lighten up the text with illustrations of Air Force thinkers to accompany quotations from their pronouncements. This effort was quickly dismissed and consigned to oblivion when critics contemptuously called it the "comic strip" manual.

Then just last year at our doctrine symposium at Air University, Gen Michael Dugan tried another tack. He held up a 16-page pamphlet that constituted an early version of basic doctrine and admonished us to get back to that brief statement of the essentials. General Dugan's plea was further evidence that Air Force doctrine is not getting across as effectively as it should. Far too many officers still are not really familiar with the essence of our basic doctrine.

General Dugan made a good try, but will brevity—going back to a 16-page document—

do the trick? It didn't seem to work when we issued a personal copy of such a short pamphlet to every officer in the Air Force. Do we have any reason to think it will work any better today? I don't think so. This leads me to suggest my "modest proposal."

Why don't we experiment with a radical change in format and adopt a form of presentation that takes account of how the human mind works.   Much experience has shown that we find it easier to recall specific examples—historical instances—than purely abstract generalizations. Accepting this reality, why don't we accompany every doctrinal idea with an illustrative example?

To demonstrate an appropriate format to accomplish this suggestion, consider an architectural analogy (table 1). At the top is the frieze—the band at the top of the wall. The wall itself is the wainscoting, and down at the bottom is the baseboard. Now let's apply these divisions to the format I propose (table 2). The frieze will be a statement of doctrine. The wainscoting will provide an example—a historical illustration of the doctrinal idea. And down at the baseboard, we have a citation showing the archival or published source of the historical illustration.

In addition to the source citation for the illustrative example, there should be other citations leading to other similar examples and instances. Additional citations provide several advantages. Their mere presence indicates that

Table 1

Architectural Analogy

Frieze
Wainscoting
Baseboard

Table 2

Proposed Format

Doctrine
Historical Illustration
Footnote to Sources

the people who formulated the doctrinal statement at the top of the page didn't generalize from a single example but rested the doctrine on a broad range of experience. Further, the additional citations offer leads to instructors in our staff and war colleges for easy access to persuasive illustrations in support of the doctrines they are teaching.

Now, let me illustrate the format proposed here with an actual example (table 3). The doctrinal statement is a generalization—an abstraction. It goes back to Clausewitz's famous dictum that *"war is nothing but the continuation of policy with other means"* (emphasis in original).[1] But standing alone, how much of an impression does it make? However, when we go to the historical example, we meet a real-life event—an application of doctrinal notion. Here, it is easy to see that there are times when the demands of the political situation override well-established doctrinal verities such as the top priority of the need to gain air superiority.

I should point out that in order to keep the figure simple and easy to read, I omitted the first sentence, which put the paragraph in the context of the Gulf War. For the same reason, I limited the footnote to the source actually used. Other examples come readily to mind.

For instance, one might use the sinking of the *Lusitania* by a German U-boat in World War I as a negative illustration. The *Lusitania* was carrying munitions, and she was in a war zone, so she was technically a legitimate target. But if German policy was to avoid bringing the United States into the war on the Allied side, then sinking the *Lusitania* was a strategic mistake.

Let's look at another example. During the Gulf War, our strategic planners followed

Table 3

Illustrative Example

"War is an instrument of political policy." AFM 1-1, *Basic Aerospace Doctrine of the United States Air Force*, vol. 1, March 1992, 1.
"US military planners seriously underestimated the impact that Scud attacks would have on the overall political situation. They recognized that militarily Scuds were insignificant; they were inaccurate, had a small payload, etc. The military planners' failure was in not foreseeing the political impact. The political need to keep the Coalition together and seriousness of the Israeli threat to retaliate unilaterally quickly resulted in a military impact on the air campaign in that a significant amount of the most capable elements of USAF forces had to be diverted to 'Scud Hunting' missions. The political need to react to the Scuds overrode the military desire to keep the tactical plan on track."
Gulf War Air Power Survey, vol.1, *Planning and Command and Control* (Washington, D.C.: Government Printing Office, 1993), part 1, 102–4.

sound doctrine in attacking the command structure of the Iraqi forces. Decapitating enemy command and control pays high dividends. To this end, our air strikes hit the Al Firdos bunker. As it turned out, large numbers of civilians were killed in the process. Saddam charged us with wantonly attacking a civilian bomb shelter. The photograph in the *New York Times* showing iron-barred gates on the bunker certainly gave the lie to his claim. Apparently, the officers assigned to the command bunker had invited their families to join them there, believing that the hardened bunker was one of the safest places in Baghdad. They were mistaken.

The high loss of civilian lives, however, had its impact in the United States. Fighting a war with Cable News Network looking over your shoulder has its difficulties. Ever sensitive to public opinion and the need to sustain popular support for the war, high-level decision makers, probably Gen Colin Powell or Gen Norman Schwarzkopf, promptly intruded on the target-selection process and withheld most targets in the Baghdad area thereafter—

another example of political concern overriding purely military considerations.[2]

In my first example, the suggested innovative format goes all the way back to Clausewitz. Another illustration reflects a much more recent instance of a doctrinal notion (table 4).[3] Once again, I have deliberately shortened the historical statement for simplicity.

My proposal for a radical revision of format—the way we present doctrine—is offered as an experiment. It may well fail to accomplish a greater understanding and familiarity with doctrine throughout the Air Force. But, given the perception that we have not been very successful in communicating doctrine in our various previous publications since World War II, it would appear that a change in format may well be worth a try. One of the side effects of the change in format I'm advocating is the impact it should have on credibility. If doctrine writers are required to document each doctrinal statement with several citations to specific historical experience, then surely their generalizations will be more believable and more readily accept-

Table 4

Illustrative Example

"Strategic attacks are defined by objective—not by the weapon system employed, munition used, or target location." AFM 1-1, *Basic Aerospace Doctrine of the United States Air Force*, vol. 1, March 1992, 11.

"For many years the Air Force has painted itself into a strategic-tactical paradigm that was artificially based on platforms and weapons instead of objectives. Desert Storm demonstrated that this paradigm was flawed. Single seat 'fighters' (F-117) carried out textbook strategic attacks in the enemy capital; single-seat close air support aircraft (A-10s) carried out anti-Scud operations with grave strategic and political implications, while the world's premier 'stratecic' bomber (B-52) bombed mine fields protecting the enemy's front-line trenches. The growing realization of the 'indivisibility of air power' was part and parcel of the unification of the Air Force's two combat organizations, SAC and TAC in the Air Combat Command."

Gulf War Air Power Survey, vol. 5, *A Statistical Compendium and Chronology* (Washington, D.C.: Government Printing Office, 1993), part 1, tables 177 and 185 (pages 418 and 517).

able to the reader. Anyone who wishes to dispute the validity of the doctrinal generalization must assume the burden of proof by digging up contrary examples.

In the past, when proposed or draft manuals were circulated to the major commands for comment, the responses were of two types. Either the commands returned a perfunctory approval, which suggests that little or no really serious thought had been given to the details, or they raised violent objections to one or more features of the proposed doctrinal text.

Disagreement can lead to a healthy dialectic and exchange of ideas on the merits of the case, but not infrequently these objections have been raised without accompanying historical evidence to justify the objection. So it is my contention that requiring doctrine writers at all echelons to support their formulations with citations to actual experience will not only improve credibility but will impose a higher level of objectivity on people who wish to dispute any given doctrinal statement.

Now I want to circle back to the place where I began. I suggested that we have two basic problems with doctrine: (1) to perfect the means for devising sound doctrine and (2) to perfect the means for insuring that the doctrine we devise is communicated effectively and is successfully internalized by those who must apply it.

Let's turn now to the task of devising sound doctrine. Little wonder that we are still groping in our efforts to improve the way we formulate doctrine. Although informal doctrinal writings have existed since remote antiquity, the phenomenon of formal, officially sanctioned, and periodically revised or updated doctrines is of comparatively recent date. The famous British military historian G. F. R. Henderson, writing in 1905, put it this way: "In the British Army no means existed for collecting, much less analyzing, the facts and phenomena of the battlefield and the range. Experience was regarded as the private property of individuals, not as a public asset to be applied to the

benefit of the army as a whole. . . . The suggestion that a branch should be established for that purpose . . . was howled down."[4]

If doctrine ever becomes mandatory, it will curb initiative and lead to lockstep performance—if it is not ignored entirely.

We have come a long way since Henderson wrote those words, but we are still far from having perfected the means by which we formulate doctrine. We talk about jointness, yet to this day the way the Navy defines and describes doctrine is quite different from the way the Air Force and the Army define it. To my utter dismay, the chairman of the Joint Chiefs of Staff appears to have a different conception of doctrine from the prevailing Air Force view. After the tragic shootdown of the friendly helicopters in Iraq, the chairman, in an effort to avoid a repetition of this unfortunate episode, proposed to *mandate* certain doctrinal procedures.[5] He did this in spite of the fact that much effort over many years has been expended in trying to make absolutely clear that officially promulgated doctrine is *never* prescriptive, *never* mandatory, and *never* rigidly binding on the commander in the field. It is only suggestive. Doctrine is only what has usually worked best in the past. It never curtails a commander's freedom of action. If doctrine ever becomes mandatory, it will curb initiative and lead to lockstep performance—if it is not ignored entirely.

Not only do wide differences exist in the way we interpret the term *doctrine*—indeed the very concept of doctrine—but today we have no clearly defined and established procedures for compiling doctrinal manuals. Although none of us doubts that the USAF is the best air force in the world, that fact should not deter us from learning whatever we can from the air arms of other nations.

Some weeks ago, some of our friends in the Royal Australian Air Force (RAAF) sent me the published proceedings of what they termed a Regional Air Power Workshop held in Darwin in August 1993. It includes a chapter devoted to the development of doctrine. What immediately caught my eye were two brief lists.

The first was captioned "We want doctrine to"

• reveal capabilities of air forces yet offer guidance on how best to use those capabilities;
• be enduring yet flexible (i.e., be valid over time yet responsive to change);
• provide guidance to personnel yet remain open to interpretation;
• provide direction yet not be too restrictive;
• guide research and development yet adjust to technological innovations; and
• set out maxims and imperatives.

I'm not suggesting that we ought to copy these verbatim, but it strikes me that such a presentation as an introduction to our manual might be helpful. The second list followed the heading "Doctrine offers"

• a conceptual framework;
• general guidance in specific situations;
• a foundation for the air force (including force structure, strategy, tactics, training, and procedures);
• guidance for establishing employment priorities;
• a sounding board for testing, evaluating, and employing new technologies and new policies; and
• a rationale for the organization and employment of air forces.[6]

One may argue that there's little that is new here, but the point I'm trying to make is that it is useful to spell these ideas out in our doctrinal manuals by way of introduction to the newcomers.

If we are going to spell out the procedures for devising doctrine, we have to start with the three well-known potential sources:

1. Theory: the visionary speculations of individuals of unusual imagination. Theories and visions can be helpful in virtually forcing us to appreciate possibilities that most of us have overlooked. But theories are hypothetical, and they lack the substance of reality—the test of actual trial.

2. Technological advance: the significant breakthrough that opens up a whole new range of tactical possibilities. Sometimes doctrine *pushes* the creation of a technological advance, and sometimes an unexpected technological breakthrough *pulls* doctrine into a new and unanticipated arena. A good example is the case of US power plant production in World War II. As world leaders in the development of piston engines, our designers kept pushing the envelope with bigger and bigger piston engines. This effort culminated in a gargantuan, multirow radial by Lycoming, now on display at the Silver Hill facility of the Smithsonian Air and Space Museum. It was an obsolete dinosaur the day it was finished because a visionary designer named Whittle developed on a financial shoestring a revolutionary jet engine that induced significant doctrinal changes.

3. Day-to-day operations of the Air Force, in peace as well as in war: the major source of doctrine. Major technological breakthroughs are important stimuli to doctrinal change, but they are far from the commonest cause of such changes. Daily operations are the source I want to consider now.

Historical experience provides the proof of what has worked and what has not worked. Experience carries us beyond the visions and speculations of theorists. Actual experience reveals that which is practical. But what do we really mean by experience? Living through an operation is in one sense "experiencing it." However, that is not what we mean by *usable experience for doctrinal purposes*. To be usable, the experience we observe or live through has to be reflected upon and *recorded*. Recording is a demanding task, for it involves explicating the context in which the experience was acquired—the

prevailing conditions, institutions, equipment, and the like.

Without thoughtful reflection, careful analysis, and objective *recording,* experience is almost meaningless. Frederick the Great recognized this problem. "Some of my pack-mules," he said, "have experienced three campaigns, but they still don't know anything about waging war." We have able and talented officers in the doctrine shop in the Pentagon and at the doctrine center at Langley AFB, Virginia, as well as in other echelons of the Air Force, but they are utterly dependent upon the historical experience of the Air Force at large to provide them with the evidence, the case histories, and the after-action reports that provide the substance of doctrine.

I've been working the doctrinal problem for nearly 50 years, and my observation is that the weak link in the process of generating doctrine is the paucity of well-prepared after-action reports. If the people who are charged with formulating doctrine have only a few cases upon which to base the generalizations that we call doctrine, then almost certainly their inferences are going to be skewed.

Doctrine is everybody's business in the Air Force. We have never sold that idea. Perhaps we should come up with a system of incentives for the most useful after-action reports produced each year. Our Canadian army friends have tackled the problem head-on. They established the *Canadian Army Doctrine Bulletin* as a vehicle to circulate new doctrine and to provide a forum for the discussion of ideas that have not reached the status of formal doctrine. This strikes me as a good idea, but if our existing professional journals are doing their job properly, then surely the discussion of doctrinal ideas ought to take a large place in their pages.

Doctrine is everybody's business in the Air Force.

Although I have indicated that our collective experience—properly recorded and communicated for people assigned to formulate official doctrine—should be a major component of doctrine, we certainly don't mean to suggest that past experience is an infallible guide to future action. That's why we say that doctrine is advisory, suggestive, and not mandatory. As Mark Twain put it, "History doesn't exactly repeat itself, but it rhymes." □

Notes

1. Carl von Clausewitz, *On War,* ed. and trans. Michael Howard and Peter Paret (Princeton, N.J.: Princeton University Press, 1976), 69.

2. Col Edward C. Mann III, *Thunder and Lightning: Desert Storm and the Airpower Debates* (Maxwell AFB, Ala.: Air University Press, April 1995), 157–58.

3. I am indebted to my former student, Lt Col Dan Kuehl, USAF, Retired, currently on the faculty of the National Defense University, for the two doctrinal illustrations offered here.

4. G. F. R. Henderson, *The Science of War* (London: Longmans, 1905), 418–19.

5. Gen John Shalikashvili, chairman, Joint Chiefs of Staff, memorandum CM-367-94 and enclosure to Gen Merrill A. McPeak, chief of staff of the Air Force et al., 18 July 1994.

6. Gary Waters and John Mordike, eds., *Regional Air Power Workshop: Darwin* (RAAF Base Fairbairn, Canberra, ACT, Australia: Air Power Studios Centre, 1993), 43–44.

AIR FORCE DOCTRINE PROBLEMS
1926–Present

DR JAMES A. MOWBRAY
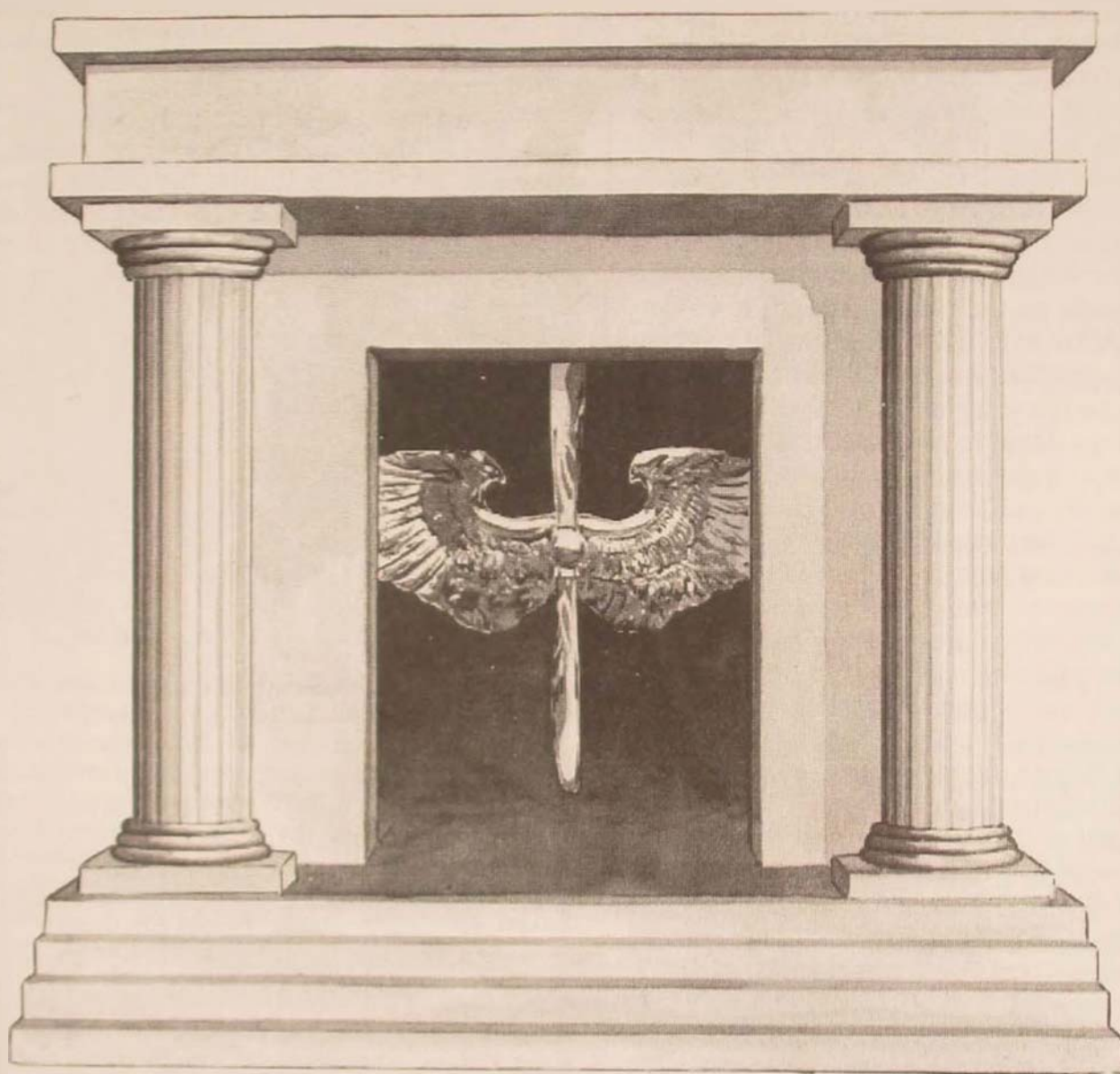
At the heart of warfare lies doctrine. It represents the central beliefs for waging war in order to achieve victory. Doctrine is of the mind, a network of faith and knowledge reinforced by experience which lays the pattern for the utilization of men, equipment, and tactics. It is the building material for strategy. It is fundamental to sound judgment.

—Gen Curtis Emerson LeMay, 1968

THE DOCTRINAL HISTORY of the United States Air Force has been short and troubled. The Air Force[1] first tried to write doctrine in the aftermath of World War I, while still an organic part of the United States Army. It confronted numerous problems then, just as it has ever since that time. Some of those problems run like consistent threads through Air Force history, and they are the focus of this article. Until the Air Force acknowledges, accepts, and understands these persisting problems, it will not be able to resolve them. Until it does resolve them, it will continue to have trouble with its doctrine and its place in the order of battle. The consequences of these problems for its relations with the other services, its role on the battlefield, and its continued viability as a fighting force will be highly significant. This is especially true in a time of serious fiscal constraint.

Four problems stand out. The first is a corollary to the argument that Carl Builder advances in his new book, *The Icarus Syndrome*. Builder argues that the Air Force has neglected airpower theory as the basis for its mission or purpose.[2] This neglect of airpower theory, from which doctrine should flow,[3] has also impaired the ability of the Air Force to write sound doctrine, particularly operational doctrine. The second problem is the Air Force's need for an established and institutionalized process for the development and transmission of basic and operational-level doctrine. The third problem is its fear of finding itself committed doctrinally to more than it can in fact deliver. As a result of this concern, the Air Force has been unwilling to articulate precisely what it can do for each of the other services. The fourth problem is that of its own long-term paranoia, a difficulty that has been to a great extent an influence on the Air Force abandoning its reliance upon airpower theory as its underlying creed. Specifically, it has become obsessed with winning the budget battles for hardware without the underpinning of airpower theory. As a result, it

has lost a bigger and bigger piece of that very action which the service itself has come to believe is essential to its survival, the budgetary battles.[4] These arguments must be examined more closely to establish them as past problems, as well as existing problems yet to be addressed.

Terminology

The arguments raised here only deal with *basic* and *operational* doctrine. These terms came into general use during the period under discussion. Doctrine that belongs to each of these categories was developed before the definition that best describes it came into general use. First, it is necessary to establish exactly what is meant by these terms, and to show that doctrine developed prior to the establishment of these definitions does in fact conform to them.

According to the leading Air Force doctrine historian, Frank Futrell, the term *basic doctrine* appeared in 1940, when it was applied by the Army Air Forces (AAF) to Field Manual (FM) 1-5, *Employment of the Aviation of the Army*.[5] It stated that basic doctrine

> establishes fundamental principles that describe and guide the proper use of aerospace forces in war. Basic doctrine, the foundation of all aerospace doctrine, provides broad, enduring guidance which should be used when deciding how Air Force forces should be organized, trained, equipped, employed, and sustained. Basic doctrine is the cornerstone and provides the framework from which the Air Force develops operational and tactical doctrine.[6]

Operational doctrine as a term appears later than basic doctrine. In the 1930s, when airmen began to try to write air doctrine, they had no definition of the term *operational* in the modern sense of that expression. One of the earliest uses of the term was postwar and meant that "the activity is in operation," in the sense of ongoing.[7] Operational doctrine was first conceived at Air University about 1947,[8] as one of three categories of air

doctrine.[9] In the modern sense, operational doctrine establishes principles that guide the use of aerospace forces in campaigns and major operations. It examines relationships among objectives, forces, environments, and actions to ensure that aerospace operations contribute to achieving assigned objectives.[10]

These, then, are the definitions we will use in considering the doctrinal problems of the Air Force.

Early Efforts to Develop Doctrine, 1926–41

The Air Corps issued its first doctrine publication in 1926, after spending almost eight years working on the problem of describing what aviation could be expected to do in war.[11] The War Department, understandably dominated by ground combat arms officers, oversaw the preparation of this publication, which appeared as Training Regulation (TR) 440-15, *Fundamental Principles for the Employment of the Air Service*, on 26 January 1926.[12] In the view of Alfred Hurley, one interpreter of the main thrust of this doctrine: "'The fundamental doctrine' permitted the airmen was 'to aid the ground forces to gain decisive success,' with some recognition of the need for special missions at a great distance from the ground forces."[13] Revised in 1935, this was the doctrine of Army Aviation from 1926 to 1940.

Those airmen who believed in the potential of airpower as a decisive weapon were viewed as radicals by the balance of the Army.

The Air Corps Tactical School (ACTS),[14] located at Langley Field, Virginia, until the summer of 1931 and from July of that year at Maxwell Field, Alabama, began to assess what air forces might do to help avoid a repetition of the stalemate and bloodbath of trench warfare. The faculty focused on ideas about winning a war quickly, with the smallest possible cost to the nation in terms of blood and treasure. The drive to achieve the goal of a separate, or independent, air force within the American military structure was an important influence, if not the predominant influence.[15]

Post-World War I airpower theory was being developed premised upon the ideas of airpower's very first theorists, notably William ("Billy") Mitchell and Gen Hugh Trenchard. Arguments still rage over whether or not Giulio Douhet had any influence at ACTS through translated versions of his impressive *The Command of the Air*,[16] published in 1922 and revised in 1930.[17] Most of the men there at the time have said postwar that they knew little or nothing about his work.[18] But there is no doubt that Mitchell and Douhet shared ideas in the early twenties,[19] and most of the men at ACTS were disciples of Mitchell.[20] Hence the communication of ideas may have occurred and been no more than a result of intellectual conversations.[21]

Those airmen who believed in the potential of airpower as a decisive weapon were viewed as radicals by the balance of the Army.[22] Moreover, these visionary airmen who foresaw the need for an independent air force if airpower was ever to be exercised with real effectiveness, became progressively more independent of the balance of the Army in their thinking. A logical outgrowth of this, coupled to the Mitchell controversy and court-martial of 1925, was the creation of a cadre of Mitchell supporters and adherents who came to dominate Air Corps thinking, organization, and development.[23] Over the passage of time, these men, like Mitchell, became ever more committed to a separate air force independent of what they viewed as the stifling effects of Army control of aviation. Thus, they became, by Army standards, true "heretics," even compared to other Air Corps officers of a more conservative bent.[24]

The main issue for airmen who believed in the ultimate efficacy of airpower as a war winner was how to produce such an outcome. Work by the dedicated visionaries at the Air Corps Tactical School, the Air Corps's "think tank" in the late twenties and early thirties, focused on a solution to war winning that was a product of the British experience of World War I and the views of Mitchell, Trenchard, and possibly Douhet—strategic bombing of the enemy war-making capacity.[25] The work at ACTS from the late twenties onward focused on air forces in national strategy and by the mid-thirties was a major part of the curriculum.[26]

The concomitant desire for a separate air force led to a long, drawn-out, often bitter struggle between airmen and nonairmen. The airmen often became embittered, and that struggle produced a paranoid state of mind in airmen that has been transmitted from one generation of airmen to the next.[27] It is this paranoia that has been largely responsible for keeping modern airmen focused on "survival of the service" rather than on airpower theories, operational doctrine, and cooperation in a joint world with the other services. It persists to this day. It is the single overriding intellectual feature of Air Force thinking.

The airpower theories considered in detail at ACTS in the late twenties and early thirties led directly to the first true airpower doctrine ever developed in this country. The airmen at ACTS individually worked on ideas that, when brought together, produced a body of operational doctrine. This process is reflective of the "ad hoc" manner in which the Air Force has continued to write its basic and operational doctrine ever since.

In May 1929, Maj Walter H. Frank, the assistant commandant of ACTS, attended the Ohio air maneuvers and came away convinced that the "bomber would always get through" whatever air defenses were mounted against it.[28] This seemed to confirm the British experience with the German Zeppelins and Gothas of 1915–18.[29] He returned to ACTS, then at Langley Field, and discussed his observations with the faculty. Among these was 1st Lt Kenneth N. Walker, who picked up on the idea and soon reduced it to an article of faith.[30]

That same year, a young mathematically inclined captain named Donald Wilson joined the faculty to begin a decade-long affiliation with ACTS.[31] He brought his mathematical mind to bear upon the problem of hitting a target with a bomb, and as he worked over the next couple of years, he developed the concept of "circular error of probability," the now familiar CEP.[32] By about 1931, testing with the aircraft and facilities available to the ACTS faculty,[33] CEP was reduced to a calculable proposition, even with the bombsights then available. From this could be calculated the number of bombs that had to be dropped to theoretically destroy a target.[34] At the same time, industry was pressing on with technological exploration of new equipment and ideas while looking for markets.[35]

In 1932, as Walker and Wilson, among others, were developing and testing their ideas, the man who would synthesize all of this into the first real air doctrine arrived at Maxwell Field to join the ACTS faculty. Capt Harold ("Hal") L. George arrived to head up the Bombardment Section of the ACTS faculty, a job he held until he was promoted to head the Department of Air Tactics and Strategy in 1934. George consolidated the thinking of the school into an essentially unwritten operational doctrine articulating strategic attack as a war-winning weapon.[36] Specifically,

> the principal and all important mission of air power, *when its equipment permits*, is the attack of those vital objectives in a nation's economic structure which will tend to paralyze the nation's ability to wage war and thus contribute directly to the attainment of the ultimate objective of war, namely, the disintegration of the hostile will to resist. (Emphasis added)[37]

The operational heart of this doctrine, developed at the Air Corps Tactical School took the form of precision, high-altitude, daylight,

strategic bombardment.[38] Mass bombing of cities was simply not then acceptable, and the tone and temper of the nation and its military reflection thus necessitated eschewing Douhet's solution in favor of an argument for precision, even if that was not yet really possible.[39] By 1934–35 ACTS faculty turned their attention to the target sets against which this doctrine should be directed.[40] This led to the industrial web concept, upon which the 1941 procurement plan, Air War Plans Division-1 (AWPD-1), "Munitions Requirements of the Army Air Force," would be based.[41]

The Navy had commissioned a new bombsight in 1921. In 1927 Carl Norden delivered such a superior bombsight that it became a highly classified secret, which the Navy delayed sharing with the Air Corps.[42] This was a tachometric, electro-optical bombsight of extraordinary accuracy once it was fully developed, including an autopilot allowing the aircraft to be slaved to the sight. It was 1933 before the Air Corps ordered its first few Norden sights through the Navy. It was May 1935 before they began to distribute Nordens to a couple of operational units on a purely experimental basis. The sight remained highly classified. Even the ACTS faculty did not know of it in 1938![43]

The B-17 is the other piece of the strategic bombardment story. In 1939 the 49th Bombardment Squadron was the only one in the Air Corps equipped with B-17C aircraft. In the budget for 1940 there was originally no B-17 procurement money at all![44] By the time that B-17s began to enter the inventory in 1940–41, the ACTS faculty had long been urging crews to view all targets as precision targets because of the political unacceptability of area bombing, already mentioned, and the philosophy of the "heretics."[45]

It is important to recognize that basic and operational doctrine properly determine for the service what technology and equipment it should select, as occurred in this case.[46] Gen

Henry H. ("Hap") Arnold said at the end of the war that

> any Air Force which does not keep its doctrines ahead of its equipment, and its vision far into the future, can only delude the nation into a false sense of security.[47]

The other way around is what Builder points out has gotten the Air Force in so much difficulty in recent years: Letting "technology" drive everything else.[48]

Basic and operational doctrine properly determine for the service what technology and equipment it should select.

With the acquisition of the Norden-equipped B-17 in the offing in 1940, and with the doctrine of high-altitude, daylight, precision attack upon an industrial web seven years in the ACTS curriculum, the Air Corps had its first operational doctrine and a prototype force structure based on appropriate equipment. The fact that ACTS had been teaching this concept and doctrine for so long explains, in large measure, why the doctrine was so widely understood and accepted throughout the Air Corps by the time we entered the war. This feature of the doctrinal process, its effective transmission throughout the officer corps by education, is not well understood today. Merely reading the doctrine and hearing lectures on the subject is not nearly enough. At ACTS the students worked many problems revolving around the doctrine and its implementation, and through tough, frequent, hands-on efforts they learned the ideas very thoroughly.[49]

This doctrine, although described by Gen Haywood S. Hansell in his book as "basic" doctrine,[50] meets the test of being operational doctrine. It established the concept of a *sustained strategic bombardment campaign,* and the relationship between the objectives,
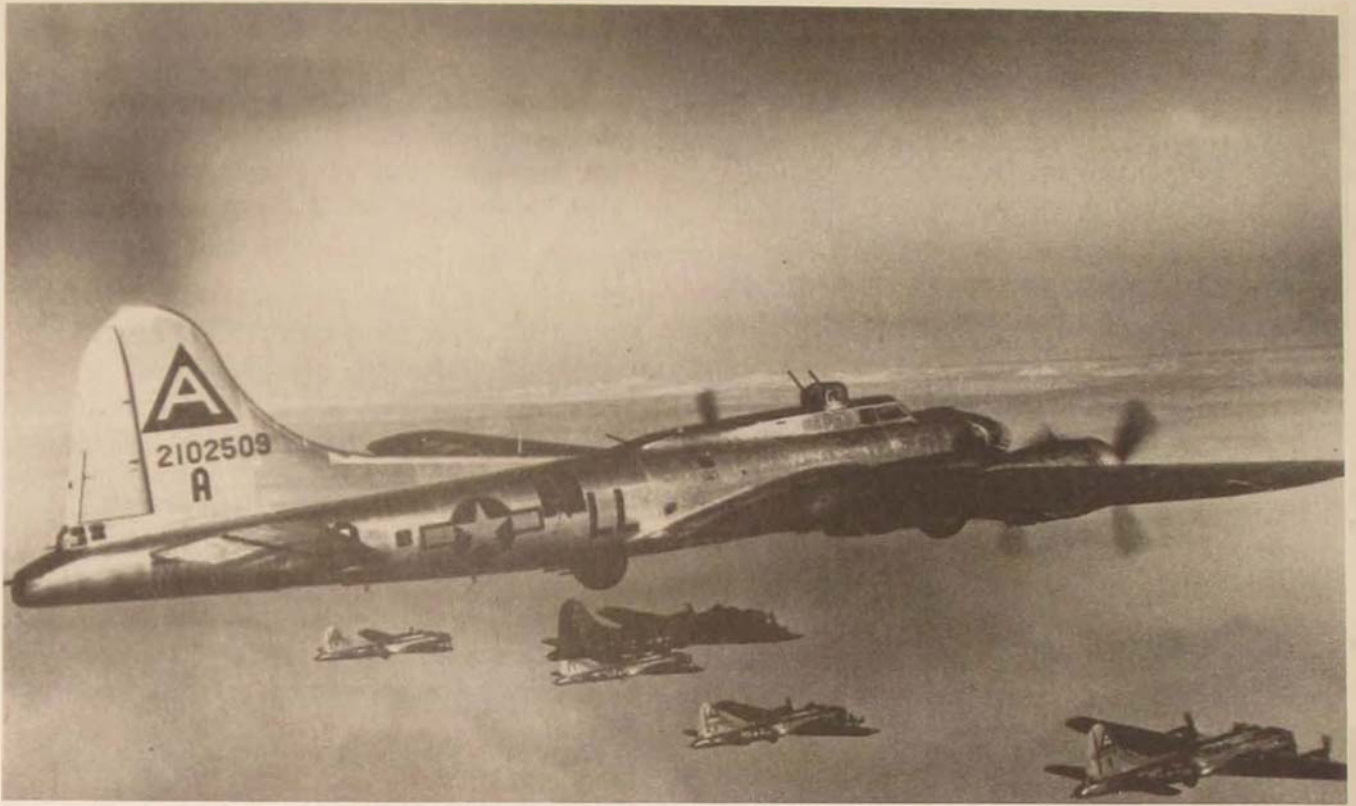
With the acquisition of the Norden-equipped B-17 and the doctrine of high-altitude, daylight, precision attack on an enemy's industrial web taught in the Air Corps Tactical School curriculum for seven years, the Air Corps had its first operational doctrine and a prototype force stucture based on appropriate equipment.

forces, and environments. The objective was the *destruction of the enemy's war-making capacity and national will*. The forces required were *heavy bombers equipped with a superior bombsight*. The environments in which these forces would operate were *high altitude over the enemy urbanized industrial heartland*. Lastly, the doctrine spelled out the requisite actions—*precision attacks upon selected targets in the industrial web*.

When the Air Corps published its first doctrine manual, FM 1-5, *Employment of the Aviation of the Army*, dated 15 April 1940, written under the guidance of Lt Col Carl Spaatz, one of the heretics, it was intended to be Air Corps basic doctrine.[51] This manual replaced interwar training regulations that had sufficed for doctrine publications from 1926 to 1940.[52] Regrettably, FM 1-5 was nothing more than an expanded version of the 1935 iteration of TR 440–15, and the Air

Corps's unwritten doctrine and commitment to strategic attack was, for all intents and purposes, not even mentioned.[53] It is apparent from this that the War Department was still in control of Air Corps doctrine and producing material in which the airmen had little or no faith.

The outstanding men at ACTS had this first operational doctrine ready in time for war. Albeit flawed, in part because it promised more than airmen could deliver at the time, it was not beyond remedy when tested and found wanting in combat. Doctrine development was purely an ad hoc arrangement. No institutional process appeared. This has plagued Air Force doctrine writing for 70 years. The logical conclusion is that many in the Air Force didn't take doctrine seriously. The saving grace in 1941 was that the men who would lead the AAF in war believed absolutely in their doctrine, and they

worked to implement it and finally to fix the faults as they appeared. ACTS had effectively transmitted the doctrine throughout the force before the war. The Air Corps officers, as we have seen, had become increasingly paranoid as a result of the War Department's treatment of them and their ideas. This doctrinal development sets out essentially all of the patterns that would be followed in succeeding years.

Doctrine Development in the Air Force, 1941–1955

The next doctrine development came during the North African campaign of 1942–43, when the AAF learned that in the tactical airpower arena it had gone to North Africa, to quote Gen Elwood R. ("Pete") Quesada, "with an abundance of ignorance!"[54] At Gen Dwight D. Eisenhower's direction, and with input from the Royal Air Force's (RAF) Air Vice-Marshal Arthur Coningham, AAF general Laurence S. Kuter and other senior airmen guided the development of FM 100-20, *Command and Employment of Air Power*, dated 21 July 1943. This publication, based on the experience of a single air campaign and written in the Army's field service regulations series of publications, would be the Air Force's basic doctrine manual through the Korean War.[55] This new manual was focused on the tactical air forces and on support of theater combat operations. What it did do, for the first time, was to establish in writing the priority order for the *major tactical air missions* of air superiority, interdiction, and close support.[56] To this day, the Air Force holds to these priorities in spite of the problems with making interdiction effective in most environments. FM 100-20 was another product of an ad hoc process and, as a result, failed to address the existing but unwritten strategic bombing doctrine beyond three short paragraphs on the subject.[57]

The most notable feature of this new man-ual to most Army officers was the firm announcement that *air and ground forces were coequal and interdependent.*[58] This was less a declaration of independence by the Air Force, as some have argued,[59] and more the announcement of the War Department's recognition of changed operational conditions imposed by the reality of war. It is also reflective of the only alternative to education as the transmission method for doctrine. This doctrine manual, addressing tactical air support for the Army while leaving strategic air doctrine unwritten for another decade, is suggestive of both the "split personality" of the Air Force and, perhaps more important, the fear of committing to more than it could realistically accomplish.

FM 100-20 got all of the attention as published doctrine, but it was the unofficial bombardment doctrine that earned the attention of the framers of *The United States Strategic Bombing Survey*. With the war over, they asserted correctly, based on the evidence, that Allied airpower was decisive in the war in Western Europe.[60]

The mid-fifties were not one of those times in which innovative thinking in the Air Force was very highly prized. The strategic airmen still owned the Air Force, body and soul, and they knew what the answers were.

Separated from the Army on 18 September 1947, the old Army air arm at last "stood up" as the United States Air Force.[61] Also of importance to future doctrine-writing efforts was the agreement by Eisenhower and Spaatz on a force structure that included the Tactical Air Command. This was an apparent reversal of earlier ideas that all combat airpower should be capable of both strategic and ground support missions.[62] It had to

A B-26 light bomber takes to the sky on another Operation Strangle mission against Communist targets in Korea as an antiaircraft crew watches. The entire doctrine effort after 1953 was influenced by the fact that airpower had not done very well in Korea in light of what it promised and could not deliver. Operation Strangle is the most notorious example of that failure.

survive an immediate threat from the Navy, which attempted to get a piece of the strategic bombardment role for carrier aviation.[63] But survive it did, and FM 100-20 remained the Air Force's only doctrine manual until 1953, when the service awakened to the fact that things in Korea had not gone favorably for the brand-new Air Force.

The entire doctrine effort after 1953 was influenced by the fact that airpower had not done very well in Korea *in light of what it promised and could not deliver*. Operation Strangle is the most notorious example of that failure. Interdiction was a bedrock Air Force belief from the first publication of FM 100-20 in 1943. What basic doctrine could not do, and what there was no operational doctrine to do, was to articulate what could be accomplished with interdiction efforts and what circumstances were required in order to get what results. To this day, the Air

Force remains essentially unwilling to reduce this to writing in the form of doctrine, in spite of evidence that it could do this very well indeed if it wished to do so.[64]

Nor had precision strategic bombing been able to make a very notable contribution to the ending of the Korean conflict either due to the absence of an appropriate strategic target set.[65] As a result of these failures in the Korean War, the Air Force seems to have concluded that published operational doctrine might do much to educate both its own officers as well as officers of other services.[66] The mid-fifties was not one of those times in which innovative thinking in the Air Force was very highly prized. The strategic airmen still owned the Air Force body and soul, and they knew what the answers were.

Even before the Air Force separated from the Army, it had formed Air University at Maxwell AFB, though some of its schools

were at other bases.[67] Air University was to be the doctrine development and education organization for the service in the postwar world. Three categories of doctrine, category 1, 2, and 3 instructions—that is, basic, operational, and tactical doctrine—were to be developed and taught by the Air War College, Air Command and Staff School, and the Air Tactical School, respectively.[68] The doctrine was to be simpler than the Army's field manual system and was to be modeled on the Navy's new doctrine series, which was called *United States Fleet (USF) Publications*.[69]

After extensive problems and numerous rewrites in the Air Staff, the first category 1 publication was pushed through the Air Force Council and emerged as AFM 1-2, *United States Air Force Basic Doctrine*, dated March 1953.[70] The chief, by then Gen Hoyt S. Vandenberg, expressed the view that

> basic air doctrine evolves from experience gained in war and from analysis of the continuing impact of new weapon systems on warfare. The dynamic and constant changes in new weapons makes periodic substantive review of this doctrine necessary.[71]

Maj Gen John DeForest Barker, deputy commander of Air University in 1953, understood the importance of the new service setting out its doctrine in writing. He said of the long, drawn-out, and frustrating exercise of writing AFM 1-2:

> I am disappointed with it . . . [the previous draft by AU presented] more clearly and more distinctly the why and wherefores of our doctrine . . . [and] It has taken the Air Force five tedious years to get an approved manual on basic air force doctrine . . . . [with essentially] no change of importance in the doctrine [over FM 100-20].[72]

This view contradicts Vandenberg's view of the relationship between basic doctrine and technology.

Barker opined that at the rate of progress of AFM 1-2, it would require 15 to 20 years to produce the proposed operational doctrine manuals. He pressed for approval for the Air University commander to publish Air Force manuals on operational doctrine. Gen Thomas D. White, speaking for the chief, assured Barker that reviews of operational manuals would be confined to substance, rather than the style and arrangement reviews which had plagued the development of AFM 1-2.[73]

On 12 March 1953, the same day that the chief of staff approved AFM 1-2, Air University forwarded four operational doctrine draft manuals to the Air Staff. Ultimately they were published on 1 September 1953 as AFM 1-3, *Theater Air Operations*; AFM 1-4, *Air Defense Operations*; and AFM 1-5, *Air Operations in Conjunction with Amphibious Operations*. After some discussion and changes in content, AFM 1-8, *Strategic Air Operations*, was published on 1 May 1954.[74] According to this manual, strategic air operations were designed to

> destroy or render ineffective the crucial portions of the enemy nation's structure— those elements within the enemy's homeland vital to its continued prosecution of the war. They also contribute directly and indirectly to gaining and maintaining control of the air.[75]

It sounded so much like the ACTS faculty of the 1930s that it might well have been written by them. It was the first formal doctrine on strategic air operations ever produced by the Air Force—and also the last!

Over the next two years, there were some revisions to the 1953 set of basic and operational doctrine manuals. AFM 1-2 continued to be the Air Force's basic doctrine publication, and all others were expected to follow its fundamental thought. It was revised in 1954 and again in 1955, with no significant changes in substance. Other operational doctrine manuals, such as AFM 1-9, *Theater Airlift Operations*, 1 July 1954, were published, and some were revised at least once. These seem to have been revised at Air University, but this is not absolutely clear.

AFM 1-3, *Theater Air Operations*, 1 April 1954, from which stemmed other operational doctrine manuals, established two arenas of aerial warfare. The first was "heartland" action,

clearly the arena of strategic air operations, as covered in AFM 1-8. The second, "peripheral" action, was the purview of theater air forces and the real subject of AFM 1-3. This manual reflected growing concern with electronic warfare, a phenomenon already a decade old and long a matter dealt with by unwritten operational and tactical doctrine. But in most respects, this manual resembled FM 100-20 more than it differed from it. It considered theater operations, theater air operations, employment of theater air forces, and command and control matters.[76]

These new and revised doctrine manuals were clearly an attempt to be ready for conventional theater warfare such as Korea and to give some thought to the subject before the next war came along. Although the Air Force wrestled with the problems manifest in Korea, including the development of precision guided munitions,[77] new navigation systems, night operations, and the development of interdiction, none of these efforts gave very good results at first.[78] Chief among the reasons were technological shortcomings and an unwillingness to address the conditions under which interdiction could be effective.

The Air Force was already beginning to divorce airpower theory, which had been the driver before World War II, and was becoming focused upon the hardware as a salvation formula. The war with the admirals over the B-36 and the subsequent procurement of the B-52 solidified the notion that all was well if the Air Force could do strategic attack. This struggle also reinforced the preexisting paranoia.[79] Technology, as evidenced by the treatment of nuclear weapons in AFM 1-8, was not driving the equation, in spite of Vandenberg's earlier remarks.

In summary, 1955 found the Air Force with basic doctrine that was little more than a derivative of FM 100-20. Written operational doctrine was brand new, and only in the strategic air operations arena did the advent of atomic weapons have much impact. And even there, the doctrine writers and the approving airpower operators were not very sure that nuclear weapons had changed air warfare all that much, aside from providing greater destructive power. The power of theory was still evident, if eroded, as was the unwillingness to commit to much in writing.

Air Force Doctrine, 1955–1978

The basic doctrine in AFM 1-2 was hardly changed over that of FM 100-20 of 1943. The context was the nuclear age. The developing single integrated operational plan (SIOP) from about 1960, nuclear strategy, the development of bigger and better nuclear weapons,[80] the rush towards the deployment of missile technology, and rapidly moving developments in the space arena[81] captured the Air Force's attention and moved it from airpower theory as the doctrine driver towards a budget-driven mentality.[82] Strategic deterrence had essentially become the raison d'être of the Air Force. This was reinforced by the paranoid mind-set driven by the recent separation struggle.

The original concept of Air University, as noted earlier, had been that doctrine would be written and taught at three levels: basic, operational, and tactical—the proposed categories 1, 2, and 3 publications. From about 1955, and for a decade thereafter, nothing more was done with this idea, nor did the Air Force pay much attention to its doctrinal house save to occasionally revise its basic doctrine, which remained AFM 1-2 for almost the whole decade.

On 15 July 1958, the Air Doctrine Branch was established within the new Air Policy Division of the Air Staff, with oversight of doctrine development.[83] However, basic doctrine was nominally still to be the responsibility of Air University for reasons of objectivity, while operational doctrine was now to be the responsibility of the major commands (MAJCOM).[84] So much for the stability and institutionalization of the

process. From here on doctrine would be the stepchild of whoever had responsibility for it at the moment.

Nevertheless, the new Air Doctrine Branch asserted itself and usurped the process of writing basic doctrine from Air University by revising AFM 1-2 in December 1959. The introduction of the term *aerospace power* in lieu of *airpower* in the 1959 version of AFM 1-2, including the idea that "aerospace" as an operational medium was everything above the earth's surface, was a major step by the Air Force towards "capturing" the new arena of space as its legitimate operational realm.[85] It goes to the heart of the issue of how the medium in which the Air Force operates is unlike that of either of the other services. Its environment is quite literally limitless.

The advent of the Kennedy administration, with new ideas about warfare and strategy, brought great pressure for change to bear on all of the services.[86] The Army's decision to press Congress for fixed-wing aircraft, the traditional preserve of the Air Force in the postwar world, forced the Air Force to begin to rethink its overall position. Once again, the Air Force's paranoia was reinforced by another service trying to grab a piece of its action.[87] And internal criticism from a new set of innovative thinkers, men like Maj Gen Dale O. Smith, drove a revisitation of doctrinal thinking.[88]

On 15 April 1963, General Smith submitted a scathing indictment of Air Force operational doctrine that had been committed to the MAJCOMs five years before:

> The idea of letting our doctrine drift from the whim of one operational leader to another, or from one *ad hoc* measure to the next, will never provide us with the comprehensive, dynamic, understandable, and salable doctrine necessary to save the Air Force.[89]

The specific attack by Smith on the "whim of one operational leader to another" addresses the matter of operational doctrine clearly and unequivocally. The expression "to save the Air Force" is symptomatic of the continuation of the driving paranoia of the Air Force, even

in the mid-sixties. The admission that the doctrine process was chaotic is reflective of the long-term problem created by the failure to effectively institutionalize its development and then to leave the process and the institution alone, except for fine-tuning.

In March 1963, with guidance from Air Force Secretary Eugene M. Zuckert,[90] Gen Curtis E. LeMay, chief of staff of the Air Force, set in motion the most far-reaching study and reconsideration of the Air Force that had been undertaken since the formulation of AWPD-1. This effort, headed by Gen Bernard Schriever of Air Force Systems Command, was identified as Project Forecast.[91] This was a thorough-going examination of the future of technology and its possible relationship to Air Force operations. The intention was to get out in front of technology and estimate where it might possibly go. Schriever ultimately summed up Forecast with the remark "that in a number of technical areas, such as materials, propulsion, flight dynamics, guidance, and computer technology, we identified many promising technological opportunities."[92]

Forecast laid the groundwork for the development of Air Force technology into the 1980s. It was the first of several major technology studies designed to keep the Air Force out in front of technology.

Even before Forecast was launched, however, Zuckert was already working to get the Air Force to change its conceptual approach to doctrine. He noted in late 1965 that the Air Force had far greater difficulty in adjusting to new ideas and new methods than it did to new hardware. Moreover, new ideas in the realms of strategy, concepts, and doctrine were very difficult to sell.[93] But sell them he did with the help of LeMay. Zuckert conceived the idea that Air Force doctrine must be written to support national policy and strategy, a different concept from a purely aerospace power doctrine based on airpower theory, rooted in operational experience, and reflective of the capabilities and limitations of aerospace forces in peace and

in war.[94] Thus, politics accelerated the divorce of doctrine from airpower theory.

In August 1964, the first AFM 1-1, *United States Air Force Basic Doctrine*, appeared with a clearly stated source for its content. The new manual held that "basic doctrine evolves through the continuing analysis and testing of military operations in the light of national objective and the changing military environment."[95]

In Zuckert's view, the Air Force was ready to divorce the old idea that airpower could win wars alone. He hoped that it was ready to see itself as part of the national military establishment in support of national policy objectives. This position, he argued, was buttressed by the notion that almost everyone now recognized that *wars could not be won without airpower!*[96]

The new manual introduced the idea of flexible response and suggested that total victory in even a conventional war might not be possible.[97] It further stated that while the Air Force was a deterrent force, it had to be prepared to fight general nuclear, tactical nuclear, conventional, and counterinsurgency forms of war. It spelled out the need for both manned and unmanned systems for offensive and defensive wars, and, in this respect, expressly acknowledged the impact of technology on basic doctrine for the first time. It further identified the traditional missions of air superiority, interdiction, close air support, reconnaissance, and airlift in all but general nuclear war. It was the first and last Air Force basic doctrine manual to omit the principles of war.[98] Doctrine was no longer based upon airpower theory, and only to a rather limited extent upon experience.

In 1965, just as the US became heavily involved in Vietnam, the Air Force began the issue of a new set of operational doctrine manuals, for the first time numbered in the 2-series, consistent with the original Air University recommendation of 1946. The first and most important of these was AFM 2-1, *Tactical Air Operations—Counter Air, Close Air Support, and Air Interdiction,* dated 14 June 1965.

There is some evidence that there was confusion about the level, if not the function, of the 2-series of manuals. It is manifest in the opening remarks:

> This manual describes the basic doctrines and capabilities of tactical air power and sets forth fundamental principles for tactical air force operations in three of the five combat air functions.[99]

The preparers appear to have been confused about what type of doctrine this was and where it fit into air operations! It is reminiscent of Hansell's argument that the ACTS bombardment doctrine was "basic" doctrine.[100]

The opening went on to describe a set of manuals that would follow the publication of AFM 2-1: AFM 2-4, *Assault Airlift;* AFM 2-6, *Tactical Air Reconnaissance;* AFM 2-2, *Air Operations in Conjunction with Amphibious Operations;* AFM 2-3, *Employment of Nuclear Weapons* (Secret); AFM 2-5, *Special Air Warfare;* and AFM 2-7, *Tactical Air Control System.* It also said that AFM 2-1 expressly superseded AFM 1-3 (1 April 1954) and AFM 1-7 (1 March 1954).[101]

This revision of the operational doctrine manuals of the Air Force was destined to be the last overhaul of that level of doctrine Air Force–wide. It would be the operational doctrine with which the Air Force would fight the Vietnam conflict and with which it would have to live for more than a decade.

AFM 2-1 introduced in writing the idea of sortie apportionment, a harbinger of later concepts about the employment of tactical airpower.[102] It addressed interdiction in enough detail to give operators some idea about how to plan those efforts.[103] Naturally, it addressed air superiority, just as had FM 100-20 of 1943, and along similar lines.[104] By the arrangement of its chapters on specifics, counterair, interdiction, and close air support, it confirmed the long-established priorities on what theater air forces should accomplish and in what order.[105] It still reflected the Air Force's unwillingness to spell

out what it could really do in war, a reflection of its now traditional fear of committing to more in writing than it could really deliver.

AFM 1-1 was revised in minor ways in 1971 and again in 1975 by the Air Doctrine Branch of the Air Staff. Air University's failure to effectively teach doctrine, among other things, was evident in the Clements Commission Report of 1973.[106] This made it clear that transmission of doctrine into the force, at least by PME, was seriously deficient.

While the Air Force was revising its basic doctrine, it had foundered in its efforts to write joint doctrine for close air support. This effort, authorized by the Joint Chiefs of Staff (JCS) on 13 February 1967, led to five different drafts, after which the Air Force gave up the ghost because it could not get the services to agree on "joint doctrine."[107]

In 1978, in the wake of the experience of the Vietnam War, there appeared an entirely new operational doctrine manual, Tactical Air Command Manual (TACM) 2-1, *Aerospace Operational Doctrine: Tactical Air Operations*, dated 15 April 1978.[108] This was issued because the Air Force, after repeated attempts to revise AFM 2-1 of 1965, had quit in frustration. United States Air Forces Europe (USAFE) was the chief culprit in this fiasco, according to the officers who were around then and who still remember the problem. Since the Air Force could not get service-wide agreement on the contents of a new manual, it let Tactical Air Command issue a manual on which agreement did not have to be as broad as on an Air Force manual![109] The new manual identified AFM 2-series publications as sources for "procedural detail for specific tactical missions . . . with tactics in the appropriate 3-XX series manuals."[110] Doctrine writing, especially at the operational level, was still in disarray— after nearly 50 years of trying—largely due to lack of institutionalization.

TACM 2-1 talked about apportionment, allocation, and allotment[111] as functions of different levels of command that ended in the air tasking order (ATO).[112] It set in doctrine ideas that had been refined in Vietnam. Tactical air control centers (TACC), airlift control centers (ALCC), and airlift control elements (ALCE), among other techniques, were "written down."[113] The Air Force continued to struggle to fulfill its promises of support to the Army.

TACM 2-1 was to be the last 2-1 manual published by the Air Force. Although much of it is now quite dated, most of the terms, tactics, and techniques it sets out are still employed in the management of tactical air operations, including the idea that "tactical" and "strategic" are missions and not assets.[114] And since Air University had ceased to be the focus of doctrine, it did not do much teaching of doctrine either.[115]

In 1979 AFM 1-1 was revised, with only minor changes over the two previous editions of the seventies. Thus, at the end of the seventies, the Air Force was essentially using an AFM 1-1 that was at least partly faulty in conception, and one from which operational doctrine had not been developed beyond a single major command manual, not binding in any sense on the whole of the service. There was only a partially institutionalized process for the development of doctrine at the basic level. Transmission of the doctrine to the force seems to have essentially disappeared.[116]

Operational doctrine was also in trouble because responsibility for writing it moved often; consequently, the personnel changed so fast and were so frequently new to the process, factors, and substance of doctrine that they—unlike the officers serving lengthy assignments at ACTS in the prewar period[117]— could hardly be expected to do the job well. As everyone today still remembers, the force, its doctrine, and its doctrine process were hollow—not to mention its education of the officer corps in what the service believed doctrinally.[118] And on this sad note the seventies ended.

The New Era in Doctrine: 1980–Present

With the issue of AFM 1-1, *Basic Aerospace Doctrine of the United States Air Force*, in 1984, a major effort to get back out in front of events occurred. The writing of basic doctrine was still lodged in the Air Staff. However, the lack of any meaningful continuity, historical knowledge and skill, or operational expertise above cockpit level remained serious problems in the absence of an intellectual environment such as that of ACTS. The principles of war, long since returned to the doctrine manual, were rewritten in a unique way that departed from the traditional nine to an historically unfounded set of 12.[119] The manual itself was a lengthy, rambling narrative. It departed from tradition and drew lengthy criticism over the next few years. It was, however, an improvement over the basic doctrine manuals that had gone immediately before it.

In the late 1980s the Air Force, in yet another attempt to get fully out in front of policy, strategy, and technology, launched the Todd Commission to look at the Air Force in space. Although most of that study is still classified, it targeted space as a place in which doctrine could and should apply.[120]

The Gulf War brought to the fore the technology, tactics, techniques, and operational methods on which the Air Force had been working since the Vietnam War. Precision guided munitions, precision navigation systems like the global positioning system (GPS), and day-night, all-weather operations allowed the Air Force to fly, fight, and win in the face of the worst weather in the Middle East in more than a decade.[121] That technology helped to win the fastest, lowest casualty, most devastatingly destructive one-sided war in recorded history. Air Force capabilities had come of age.

In the wake of the Todd Commission, and while the Gulf War was materializing and being fought, a new basic doctrine-writing effort was commissioned by the Air Force

The Gulf War brought to the fore the technology, tactics, techniques, and operational methods on which the Air Force had been working since the Vietnam War. Technology helped to win the fastest, lowest casualty, most devastatingly destructive one-sided war in recorded history. Air Force capabilities had come of age.

chief of staff. Since the chief was historical-minded, and perhaps had the intent of revitalizing ACTS, he removed this new doctrine-writing effort from the Air Staff. The new effort of 1989 was placed at Air University one more time.

However, the Air Staff, in a fit of distemper, started a revision of the 1984 manual at the same time that Air University's Center for Aerospace Doctrine, Research, and Education (CADRE) was undertaking this monumental new writing effort, at the direction of the chief, to produce a fundamentally different type of basic doctrine manual. Fortunately,
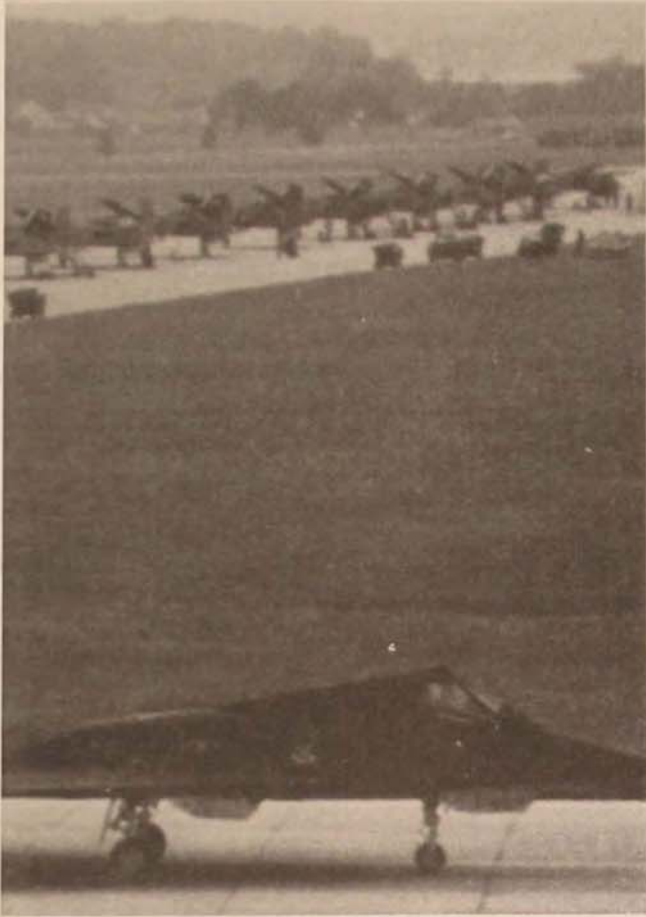
this duplication of effort was soon terminated, and the task remained with CADRE, in a group that had both historical knowledge and operational experience among its members.

The new AFM 1-1, *Basic Aerospace Doctrine of the United States Air Force*, March 1992, attempted to incorporate space in Air Force basic doctrine.[122] Volume 1 of this new doctrine manual contains a concise statement of basic doctrine. The much longer second volume is a set of essays tied to the doctrinal statements in volume 1, providing factual support for the Air Force's basic doctrine. It is experience-based, systematic, logically organized, and it encompasses all of the principal concerns of Air Force doctrine, including organizing, training, equipping, and educating the force.[123] General officers of the operational Air Force had a major voice in finalizing the document.[124]

One of the interesting aspects of this manual is the inclusion of matters clearly in the traditional category of "operational-level" doctrine. For example, the discussions of the tenets of aerospace power or airmindedness speak strongly to operational-level concerns. It appears that there was no hesitation in doing this—not because the differences weren't understood, but rather because it was not felt that operational doctrine would be forthcoming any time in the near future. After all, the Air Force had not had a published operational doctrine manual since 1965, aside from selected support fields like logistics.

As this is written, yet another research effort has been completed at Air University—to get out in front of technology and policy with SPACECAST 2020.[125] The intent is to give as much creative and innovative thought as possible to the future of space and space technology, and, like the first Forecast[126] effort of the early sixties, to get the Air Force back out in front across the board. In the forthcoming year, AIR FORCE 2025 will undertake to do the same thing for the whole spectrum of Air Force activity.

However, what is of even greater significance is the recent change in doctrine writing by the Air Force. The Air Force Doctrine Center stood up at Langley Air Force Base recently with a mandate to produce an entire set of doctrine publications set apart from all other Air Force publications. In the new policy directive on doctrine, Air University, for the first time since 1946, is charged with educating the entire Air Force in matters of doctrine. Among other things, operational doctrine is included in the new pubs to be produced!

The schedule for the production of an entire set of operational doctrine manuals is very short indeed. The problems that we have been looking at over nearly 70 years have still not been addressed, nor have some of the corollary problems. In each of the cases when the Air Force has published operational doctrine, the chief has apparently been instrumental. Arnold ensured the publishing of the ACTS doctrine in 1941 under the guise of AWPD-1 partly by whom he selected to write it. In the mid-1950s, Vandenberg ensured the timely publishing of the post-Korean War manuals. In the mid-1960s, LeMay saw to the publishing of operational doctrine before he left the chief's job. In the next few years, if the Doctrine Center is to have success in publishing operational doctrine, it will require the intervention of a strong and determined chief.

Still vexing is the fact that the doctrine process is not yet institutionalized. It has been moved one more time. The writing of basic doctrine is in its fourth location, and operational doctrine is in its fifth or sixth location. The Air Force is still plagued by a high degree of paranoia about its survival as a service in spite of its track record of success.[127] The Air Force is writing doctrine once again with no evidence that it is going to be rooted in any theory of aerospace power. If the new battery of doctrine writers is as chary about committing to writing what the Air Force believes it can deliver to other forces on the battlefield, the service

will be trapped in the same deadly closed loop that has plagued it for 70 years. Only time will determine how well these problems will be identified and dealt with.

Conclusion

There are individuals today who are talking about the need for the Air Force to reexamine its theoretical base and to develop new airpower theories for the present and future. Airpower theory will not serve the modern Air Force's future. *The Air Force is an aerospace force, and its future is now in space as certainly as it was in the air in 1926.*

What the Air Force must work towards is a first-generation theory of the integrated employment of aerospace assets for war fighting. Airplanes will not go away in the foreseeable future, but the required aerospace theory must be futuristic, not retrospective. The focus should not be on the current assets, but rather on the future theory. That theory must look far into the future, a future of war fighting in and from space. Nor should the Air Force think in terms other than the need to send military men into space, for we cannot see the future, and the theory must provide for unforeseeable contingencies. Men are as essential in space as they are within the atmospheric envelope. It won't be low-cost, but in terms of today's world and economy such requirements are no more unreachable than what Douhet was theorizing about when he saw airpower as a war-winning concept in 1922. The systems about which he theorized were feasible but were, as events demonstrated, more than 20 years in the future. The theory we require should be of the same type, a theory that evidence suggests can be carried out in the future, but one which is out in front of current capabilities.

What the Air Force needs now, above all else, is creative thinkers to work on a true aerospace theory upon which its future concept of warfare can be based. SPACECAST 2020 and the newer AIR FORCE 2025, if they are effectively pursued hereafter with proper intellectual integrity, might be a starting point for such a theory of aerospace power. In the interim, however, the Air Force may have to rely on a complete rethink of its theoretical underpinnings until new, forward-looking theories can be developed. It must, at least temporarily, reground itself in theoretical concepts of war winning through aerospace power. As Arnold pointed out much earlier, and as the high-altitude daylight strategic bombing doctrine developed in the interwar years shows, essentially sound doctrine can in fact be developed from a forward-looking theory. In time it must be tested in combat and revised appropriately if it is not found to be wholly sound.

The Air Force is an aerospace force, and its future is now in space as certainly as it was in the air in 1926.

As we have seen, the Air Force has been unable to institutionalize its doctrine-writing program in the manner of the Army. If the Air Force is able to institutionalize its doctrine-writing process at Langley with its new Doctrine Center and give the staff support, education, and longevity in the job and leave it alone for the next half century instead of moving the function every few years, it may get what it is paying for and desperately needs—sound and realistic operational doctrine to serve into the future of air-breathing air forces. And it may be creative enough to work the aerospace theory and future doctrine issues as well. But it will require a cerebral atmosphere, one not routinely turned upside down. The Air Force must give up its predilection to "ad hoc" its doctrine, and it must commit cerebral personnel on a long-term basis to the preparation of doctrine, particularly operational

doctrine so that it can talk to the Army and Navy at appropriate levels of endeavor.

In addition to institutionalizing the process, the Air Force must ensure that whatever doctrine it has is effectively transmitted into, and understood by, the officer corps that must fight with it. It should be taught routinely, effectively, thoroughly, and with hands-on, get-your-hands-dirty exercises to thoroughly familiarize everyone with the application of the doctrine in all possible situations from the cockpit to the JFACC level as determined by the officer's rank and experience. Every PME institution should be required to instruct its officer corps in such a manner.

In the immediate future, the Air Force must write operational doctrine that is accepted service-wide. The Air Force does not need another TACM 2-1 experience in which the service itself cannot agree on how it is to do its mission. In an increasingly joint world, the Air Force must commit with clarity and without equivocation to what it can do for the theater commander, the ground component commander, and the naval component commander, how effectively it believes it can do those things to which it does commit, and what factors will limit or im-

pair its ability to live up to those commitments. That is what operational doctrine should be about. It isn't easy, but it is almost certainly necessary at this point in time. And the Air Force can do it, and do it well, even as it works on new theories of aerospace power.

Central to doing these things is the elimination of the paranoia which still plagues the Air Force. *No country can win a war, or even stay on the modern battlefield, without its airpower in control of the skies overhead.*[128] Paranoia is simply wrong in this day and age, but it is rampant in the officer corps today, and at all levels. This is in part because we don't do a very effective job at any PME level of educating the officer corps about the modern realities of aerospace power. The service must work at putting the paranoia behind it. It is rooted in history that is no longer relevant. The Air Force must expend its energy on thinking about its theoretical and doctrinal underpinnings and its future as the dominant aerospace force—on the battlefield and in space.

In 50 years, space will be the core of the USAF—like SAC in the 50s and 60s.

—Gen Charles A. Horner, USCINCSPACE

Notes

1. For the sake of simplicity, the modern title is used throughout as a generic term for the Air Service, the Army Air Corps, and the Army Air Forces. The Air Force's titles historically were: the Aeronautical Division of the Signal Corps, 1 August 1916 to 21 May 1918; the Air Service, 21 May 1918 to 2 July 1926; the Army Air Corps, 2 July 1926 to 18 September 1947; the Army Air Forces coexisted with the Air Corps, which was the branch to which personnel were assigned, as a component of the US Army from 20 June 1941 to 18 September 1947; and since that date the service has been the United States Air Force.

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

3. Ibid., 76–79. Builder convincingly demonstrates this to be the case in the development of the high-altitude, daylight, precision, strategic bombing doctrine at the Air Corps Tactical School in the early thirties. It is a consistent and well-proven argument by the end of the book that airpower theory is the source of sound doctrine, coupled as LeMay noted, with experience.

4. The Air Force lost $46 billion in the late 1980s, while the other two service departments lost only about $22 billion each! Ibid., 8.

5. Robert Frank Futrell, *Ideas, Concepts, Doctrine: Basic Thinking in the United States Air Force,* vol. 1, *1907–1960* (Maxwell AFB, Ala.: Air University Press, 1989), 95.

6. Air Force Manual (AFM) 1-1, *Basic Aerospace Doctrine of the United States Air Force,* March 1992, vol. 2, 274.

7. Air Force Pamphlet (AFP) 5-1-1, *Joint Chiefs of Staff Dictionary,* 1948, 62. See also Woodford Agee Heflin, ed., *The United States Air Force Dictionary* (Maxwell AFB, Ala.: Air University Press, 1956), 359.

8. The USAF introduced the operational level of war to the American military community in 1976 when its Russian translation program produced Vasiliy Ye. Savkin, *The Basic Principles of Operational Art and Tactics* (Washington, D.C.: Government Printing Office, 1976). On page 119 one finds an early mention of the "conduct of battle, an operation, or a war as a whole." The whole book looks at the operational level of war, as indicated by its title. The Army appears to have picked

up on this and by 1982 had introduced the concept in its FM 100-5 (see note 9).

9. For which see the section titled "Doctrine Development in the Air Force, 1941–1955." There is a prevailing notion that the US Army first introduced the idea of operational doctrine to the American military community. In fact, a review of FM 100-5, *Operations*, change 1, 1 July 1976, states that "this manual sets forth the basic concepts of US Army doctrine," i. Its successor, dated 20 August 1982, states that it "describes US Army operational doctrine," i. This appears to be one of the first official uses of this term by the Army.

10. AFM 1-1, *Basic Aerospace Doctrine of the United States Air Force*, March 1992, vol. 2, 296. The definition from the *USAF Dictionary* of 1956 for "operational air doctrine" is simply "doctrine on how to use air power in particular operations."

11. Mitchell gave a speech to the Army War College on 22 November 1922 during which he discussed an impending doctrine publication that never materialized. The ultimate product was TR 440-15 of 1926, four years later.

12. Futrell, *Ideas*, vol. 1, 50.

13. Alfred F. Hurley, *Billy Mitchell: Crusader for Air Power* (Bloomington, Ind.: Indiana University Press, 1975), 112.

14. The Air Corps Tactical School (ACTS) was founded at Langley Field on 25 February 1920 as the Field Officers Course of the Air Service School and soon thereafter became the Air Service Field Officers School. In November 1922, it was redesignated the Air Service Tactical School (ASTS), and on the passage of the Air Corps Act of 1926 became the Air Corps Tactical School. Robert T. Finney, *History of the Air Corps Tactical School, 1920–1940*, USAF Historical Study 100 (Maxwell AFB, Ala.: USAF Historical Division, 1955), 6–7. Please note that a 1992 Air Force Historical Research Agency reprint of this work is much more widely available than the 1955 version, and is paginated very differently. For ease of reference, I will include the new edition's pages in brackets [9–12] for pages 6–7 in this case.

15. DeWitt S. Copp, *A Few Great Captains: The Men and Events That Shaped the Development of U.S. Air Power* (Garden City, N.Y.: Doubleday and Company, 1980), xiv–xix, gives an overview introduction to the problem, and the balance of the book is devoted to this long and complex tale. The events that created the Air Force's paranoia are self-evident and examined at some length, as are the divisions within the Air Corps itself.

16. Giulio Douhet, *The Command of the Air*, trans. Dino Ferrari (1942; reprint, Washington, D.C.: Office of Air Force History, 1983). Douhet's idea of strategic attack involved massed bombers striking cities and the associated industrial, communications, and governmental apparatus with high explosives, incendiaries, and chemicals.

17. Futrell, *Ideas*, vol. 1, 39, identifies a typescript translation of Douhet stamped "received" at the Field Officers School (ACTS predecessor) dated 23 May 1923. Futrell correctly makes the point that Douhet's ideas at the time were politically unacceptable in this country; that cannot, however, be construed to mean that Douhet had no influence. We just don't know for certain.

18. The author held many long conversations with Haywood S. Hansell, Jr., over the years of his visits to the Air War College from 1984 to 1988 about the curriculum, ideas, and personnel at the Air Corps Tactical School from 1934, when he was a student, to 1938 (hereafter cited as Hansell interviews); Finney, 59–61 [106–9], 73 [124]. Larry Kuter, in an interview in 1974, noted that he first heard of Douhet when he was a student at ACTS in 1934–35. Gen Laurence S. Kuter, USAF, Retired, interview by Hugh N. Ahmann and Tom Sturm, 30 September–3 October 1974, *USAF Oral History Interview K239.0512-810*,

appendix, 118, USAF Historical Research Agency, Maxwell AFB, Alabama.

19. Hurley makes it clear that during his 1921–22 trip to Europe, Mitchell had "frequent conversations" with Giulio Douhet. Hurley, 75.

20. My best source for this is the Hansell interviews reinforced by Builder, 53–54; and Hurley, 128. Futrell's discussion of the Federal Aviation Commission hearings on its creation in 1934 hints at how close Mitchell and the men of the faculty at ACTS were, in spite of their restraint at those hearings. Futrell, *Ideas*, vol. 1, 71–72.

21. Futrell, *Ideas*, vol. 1, 69, notes that George Kenney's translation of Douhet was used at ACTS from about 1933.

22. Finney, 12 [20], discusses briefly the "prejudice" of the other combatant branches against the Air Service in the mid-twenties. For the reasons behind the ground officers' viewing the airmen as radical, see 34–36 [69–73].

23. Copp, 36–51, identifies the disciples of Mitchell who dominated the Air Corps through World War II.

24. Lt Gen Ira C. Eaker, USAF, Retired, interview by Hugh N. Ahmann, 10–12 February 1975, *USAF Oral History Interview K239.0512-829*, 102–3, USAF Historical Research Agency, Maxwell AFB, Alabama. General Eaker makes it clear that the ACTS faculty members were not the mainstream Air Force officer corps and that their views were very different indeed.

25. Builder, 46–47.

26. *The Functions of Air Power in Our National Strategy*, 25 September 1935, 9, Air Force Course, 1935–1936, instructors' file, Air Corps Tactical School, Maxwell Field, Alabama.

27. Kuter interview, appendix, 107, reflects this clearly; the Mitchell Trial was the onset of the paranoid mind-set of the Air Corps. In 1926, Hap Arnold was exiled to Fort Riley, Kansas, by Maj Gen Mason Patrick, chief of the Air Service, for leaking anti-Navy and anti-War Department information to the press, a move forced on Patrick by Secretary of War D. F. Davis. Thomas M. Coffey, *Hap: The Story of the U.S. Air Force and the Man Who Built It, General Henry H. ("Hap") Arnold* (New York: Viking Press, 1982), 125–28. Andrews fought so hard for the B-17 that the War Department tried to bribe him with the chief of Air Corps job when Gen O. M. Westover was killed, and he refused to give up on the B-17, so Arnold got the job instead. Copp, "Frank M. Andrews: Marshall's Airman," 59, in John L. Frisbee, ed., *Makers of the United States Air Force* (Washington, D.C.: Office of Air Force History, 1987). These types of events are the source of the paranoia.

28. Futrell, *Ideas*, vol. 1, 64–65.

29. Builder, 46–47.

30. Futrell, *Ideas*, vol. 1, 64–65. Walker became so associated with the idea that his students always attributed it to him.

31. Finney, 22–23 [38–41] and 56–62 [102–12].

32. Hansell interviews.

33. Finney, 18–20 [32–33] discusses the presence of the 23d Composite Group at Maxwell Field in support of ACTS, but not the details of what it practiced.

34. Maj Gen Donald Wilson, USAF, Retired, interview by Hugh N. Ahmann, 10–11 December 1975, *USAF Oral History Interview K235.0512-878*, USAF Historical Research Agency, Maxwell AFB, Alabama, 30–33, says that the teaching of the strategic theory (of high-altitude, daylight precision bombardment) was inaugurated with the class of 1933–1934, and Wilson was the premier architect of the course. (In the interview, Wilson remembered that the Air Corps had a few B-17s. However, the specifications were only issued in 1934 and the prototype only flew for the first time on 28 July 1935.) *The course and the doctrine were ahead of the technology.*

35. Benjamin S. Kelsey, *The Dragon's Teeth? The Creation of*

United States Air Power for World War II (Washington, D.C.: Smithsonian Institution Press, 1982), 42–45. The whole book is an excellent study of interwar development and production problems.

36. Haywood S. Hansell, Jr., "Harold L. George: Apostle of Air Power," in Frisbee, 77–79 (hereinafter cited as Hansell, *Makers*); Hansell interviews.

37. Thomas H. Greer, *The Development of Doctrine in the Army Air Arm, 1917–1941* (1955; reprint, Washington, D.C.: Office of Air Force History, 1985), 53. This was a position statement of 1935, as is reflected further in the Air Force course that year in a faculty-prepared text, probably of a lecture given on 25 September 1935, "The Functions of Air Power in Our National Strategy," stating that the first priority of air operations in the strategical offensive were operations against the national structure (of the enemy nation). Note the reference in 1935 to "when its equipment permits. . . ."

38. Finney, 33–34 [67–68]; Kuter interview, 175–76; Hurley, 128.

39. Futrell, *Ideas*, vol. 1, 39.

40. Finney, 34 [69–70].

41. Wilson expressly uses the term *industrial fabric*, Wilson interview, 33; Haywood S. Hansell, Jr., *The Air Plan That Defeated Hitler* (Atlanta, Ga.: Higgins-McArthur/Longino-Porter, 1972), 30–48. Targeting is discussed at some length, especially on pages 47–48. Hereinafter cited as Hansell, *Air Plan*.

42. Maurer Maurer, *Aviation in the U.S. Army, 1919–1939* (Washington, D.C.: Office of Air Force History, 1987), 388.

43. Ibid., 388–89. It was 1938 or 1939 before the ACTS faculty members even knew that a much improved bombsight was in development, and even then they were given neither details nor access to the sight itself, for which see Kuter interview, 133–35.

44. Hansell, *Makers*, 80–81.

45. Maurer, 392–93, provides some discussion of this matter.

46. Futrell, *Ideas*, vol. 1, 180, quotes Arnold on this relationship of doctrine ahead of equipment. Builder, 83–87, discusses how the doctrine preceded the development of the technology, the classic example of the correct relationship between doctrine and technology.

47. Futrell, *Ideas*, vol. 1, 180.

48. Builder, 34–37.

49. Eaker interview, 96–106, discusses the ACTS curriculum and methods of instruction; Kuter interview, 143–45, notes that target studies, including details of target folder preparations, were taught along the lines used in the war.

50. Hansell, *Air Plan*, 30. Hansell called this doctrine basic simply because it was central to the concept of war winning through airpower, and in that sense it is used differently than it is today.

51. Futrell, *Ideas*, vol. 1, 95.

52. Ibid.

53. FM 1-5, *Air Corps Field Manual: Employment of the Aviation of the Army*, 15 April 1940, 9–13, speaks to "basic doctrine" and "air operations beyond the sphere of action of surface forces" with no real mention of strategic attack except in two whole sentences in par. 14b!

54. Lt Gen Elwood R. ("Pete") Quesada, USAF, Retired, was interviewed by Lt Col Roger Carter in 1987. A recorded videotape of the interview is available at the Air War College.

55. Futrell, *Ideas*, vol. 1, 137, lists the drafters of the manual in Washington, D.C., namely Col Morton H. McKinnon, Col Ralph F. Stearley, and Lt Col Orin H. Moore. The latter was from Headquarters AAF, which establishes the direct North African theater connection.

56. FM 100-20, *Command and Employment of Air Power*, 21 July 1943, 10–12.

57. Ibid., 8–9.

58. Ibid., 1.

59. Richard P. Hallion, *Strike from the Sky: The History of Battlefield Air Attack, 1911–1945* (Washington, D.C.: Smithsonian Institution Press, 1989), 173, argues that the use of all capital letters was a "hysterical" approach; that is hardly the case. When in the middle of a great war you decide to make a fundamental change in your doctrine and to communicate it worldwide, you must do something to get everyone focused on the salient changes.

60. *The United States Strategic Bombing Surveys (European War)(Pacific War)* (1945; reprint, Maxwell AFB, Ala.: Air University Press, 1987), 37.

61. It is worthy of note that Spaatz and Eisenhower had conversations about whether or not the new Air Force would support the Army, and Spaatz created Tactical Air Command as a definitive answer, even though he claimed Ike did not pressure him to do so! Futrell, *Ideas*, vol. 1, 206–8.

62. Ibid., 207.

63. Ibid., 191. For a contemporary view of the issue, see Cy Caldwell's "A Military Commentary: The Navy's Role in Strategic Bombing," *American Aviation* 17, no. 11 (26 October 1953): 54, 56.

64. This will be the subject of a forthcoming doctrine article by the author.

65. It is not widely realized that the "air pressure" campaign in the spring of 1953, which returned the Communists to the talks, was conducted by tactical airpower in the form of F-84Gs breaking the dams north of Pyongyang.

66. Futrell, *Ideas*, vol. 1, 349–51, discusses this period.

67. History, Air University, 29 November 1945-30 June 1947, vol. 1, 10; and Maj Gen David M. Schlatter, "Air University," *Air Force Magazine*, July 1946, 9–11.

68. Futrell, *Ideas*, vol. 1, 369.

69. Air War College, *Special Study 2*, 19 December 1947; and letter, Air University to Chief of Staff, USAF, subject: Air Force System of Publications, 5 February 1948.

70. Futrell, *Ideas*, vol. 1, 393; and AFM 1-2.

71. Futrell, *Ideas*, vol. 1, 393.

72. Ibid. Futrell discusses in detail the problems with the writing of this first doctrine after the creation of the separate Air Force.

73. Ibid., 393–94.

74. AFM 1-8, *Strategic Air Operations*, 1 May 1954.

75. Ibid., 1.

76. AFM 1-3, *Theater Air Operations*, 1 April 1954, iv.

77. Roger A. Beaumont, "Rapiers versus Clubs: The Fitful History of 'Smart Bombs'," *Journal of the Royal United Services Institute* 126 (September 1981): 45–50.

78. Robert Frank Futrell, *The United States Air Force in Korea, 1950–1953*, rev. ed. (Washington, D.C.: Office of Air Force History, 1983), 408–10, 135–36, 325–31, and 700–704. Hereinafter cited as Futrell, *Korea*.

79. For the continuation of this problem, see Futrell, *Ideas*, vol. 1, 197, 199, 220, and the "revolt of the admirals," 258.

80. Futrell, *Ideas*, vol. 1, 618–29, discusses the minimum deterrence versus counterforce issues on the table at the time; vol. 2, *1961–1984*, 87–98, discusses the driving nuclear strategy issues.

81. Futrell, *Ideas*, vol. 1, 477–637, deals with missile technology and the impact of missiles and space. The Air Force's preoccupation with technology is obvious in the quote from LeMay: "When something faster comes along I want it," ibid., vol. 2, 95.

82. Ibid., vol. 2, 230–31, demonstrates the extent to which the Kennedy administration drove this faulty line of doctrinal thinking.

83. Ibid., vol. 1, 10. This was a direct result, apparently, of the 1958 Defense Reorganization Act, which strengthened the role and influence of the Joint Chiefs in defense matters.

84. Ibid., vol. 2, 162–63.

85. AFM 1-2, *United States Air Force Basic Doctrine*, 1 December 1959, passim.

86. Futrell, *Ideas*, vol. 2, 171–96, gives an outstanding discussion of this period.

87. Ibid., 186–90, discusses LeMay's reaction to the Army's quest for fixed-wing aircraft.

88. Ibid., 172. In 1955, Smith, then a brigadier general in the USAF, had written a book entitled *U.S. Military Doctrine: A Study and Appraisal* (New York: Duell, Sloan & Pearce, Inc., 1955). By 1956 it was in its fifth printing, with sales perhaps helped by the fact that in the foreword, Gen Carl A. Spaatz, USAF, Retired, states, "The study of military doctrine and policy has been largely neglected in America."

89. Quoted in *Board of Visitors to Air University*, "Report of the Nineteenth Meeting," 19 April 1963, 7.

90. Futrell, *Ideas*, vol. 2, 228–35.

91. Ibid., 228.

92. Gen Bernard A. Schriever, "Forecast," *Air University Review* 16, no. 3 (March–April 1965): 3.

93. Eugene M. Zuckert, "Some Reflections on the Military Profession," *Air University Review* 17, no. 1 (November–December 1965): 5–6.

94. Futrell, *Ideas*, vol. 2, 230–31. Futrell's discussion of this approach is crucial to any understanding of Air Force thinking about basic doctrine after this point in time.

95. AFM 1-1, *United States Air Force Basic Doctrine*, August 1964, i.

96. Zuckert, 4.

97. It is interesting to reflect on the degree of change in Air Force thinking that this represents, since the original airpower theory had supported the idea that airpower could help avoid another bloody, protracted war like that of 1914–1918.

98. AFM 1-1, August 1964, passim.

99. AFM 2-1, *Tactical Air Operations—Counter Air, Close Air Support, and Air Interdiction*, 14 June 1965, i.

100. Hansell, *Air Plan*, 30.

101. AFM 2-1, 14 June 1965, i.

102. Ibid., 17; see for example the discussion below of the contents of TACM 2-1.

103. Ibid., 15–16.

104. Ibid., 9–14.

105. Ibid., 13, 15, and 17.

106. The Clements Commission was an objective attempt to reform PME DOD-wide in light of Vietnam and to head off an inane attempt to consolidate PME institutions.

107. Futrell, *Ideas*, vol. 2, 531–32.

108. Tactical Air Command Manual (TACM) 2-1, *Aerospace Operational Doctrine: Tactical Air Operations*, 15 April 1978.

109. This was the view held by many members of the Air Force, but I have not been able to document it as fact at this point.

110. TACM 2-1, i.

111. *Apportionment* is the specifying of percentages of available airpower to selected tasks, such as air superiority, interdiction, close air support, and so on; *allocation* is the specifying of the number of sorties, individual flights by one aircraft, to each task consistent with the apportionment; *allotment* is the change of assignment of aircraft to a commander to carry out the missions.

112. Ibid., 3–4.

113. Ibid., 3–11.

114. Ibid., 1–2.

115. In 1973 the Clements Commission would comment on this and try to turn it around.

116. Although in the last few years some improvement has been made, the knowledge of an officer coming to any level of Air Force professional military education program (school) indicates how little they have had in their previous educational exposure. We are simply not doing enough soon enough in an officer's career to make him an effective representative of his service's views of war fighting.

117. Finney, 53–65 [99–114], gives the complete faculty lists for the whole history of the school. That there was some real continuity is immediately apparent when these lists are examined.

118. James A. Winnefeld, Preston Niblack, and Dana J. Johnson, *A League of Airmen: U.S. Air Power in the Gulf War* (Santa Monica, Calif.: RAND, 1994), 8–11, discusses those years of the hollow force through which the Air Force had suffered.

119. The 12 that appeared there were the traditional nine plus three new ones: Timing and Tempo, Logistics, and Cohesion. AFM 1-1, 1984, 2-8 and 2-9.

120. Gen Larry Welch, then chief of staff, directed Maj Gen Harold Todd, commandant of the Air War College, to chair a commission to examine the Air Force in space. This was done at the secret and top secret levels, hence the reports are not available. However, the author was on the faculty of Air War College and remembers the commission very well indeed.

121. Thomas A. Keaney and Eliot A. Cohen, *Gulf War Air Power Survey: Summary Report* (Washington, D.C.: Department of the Air Force, 1993), 172–73.

122. AFM 1-1, March 1992, vol. 1, especially chapter 3.

123. Ibid., passim.

124. Maj Gen Charles Link, then commandant of Air War College, later commander of Third Air Force, and now on the European Command staff, was heavily involved in the final drafting of the work. Generals Charles G. Boyd, AU commander, and Merrill A. McPeak, chief of staff, handled the final coordination, touch-ups, final rewrites, and the task of getting the manual promulgated. It took a strong chief to get this manual adopted in a timely manner.

125. This forecast effort was launched at the express instruction of General McPeak, the chief of staff of the Air Force.

126. It is worth noting that the Air Force has commissioned several "forecasts" over the years. I have mentioned only the one or two of particular note from a doctrinal point of view; Futrell, *Ideas*, vols. 1 and 2, passim.

127. The author has been on the faculty of Air War College for 10 years, with ample opportunity to teach and talk with Air Command and Staff College students as well. This paranoia, albeit a fact of life for Air Force officers, is something very few will admit to publicly but will freely discuss privately. They admit that it is conveyed from one generation of officers to the next, almost as though it were the sacred legacy of the service.

128. Guerrilla wars may be an exception to this, but airpower in a variety of forms is indispensable for counterinsurgency forces.
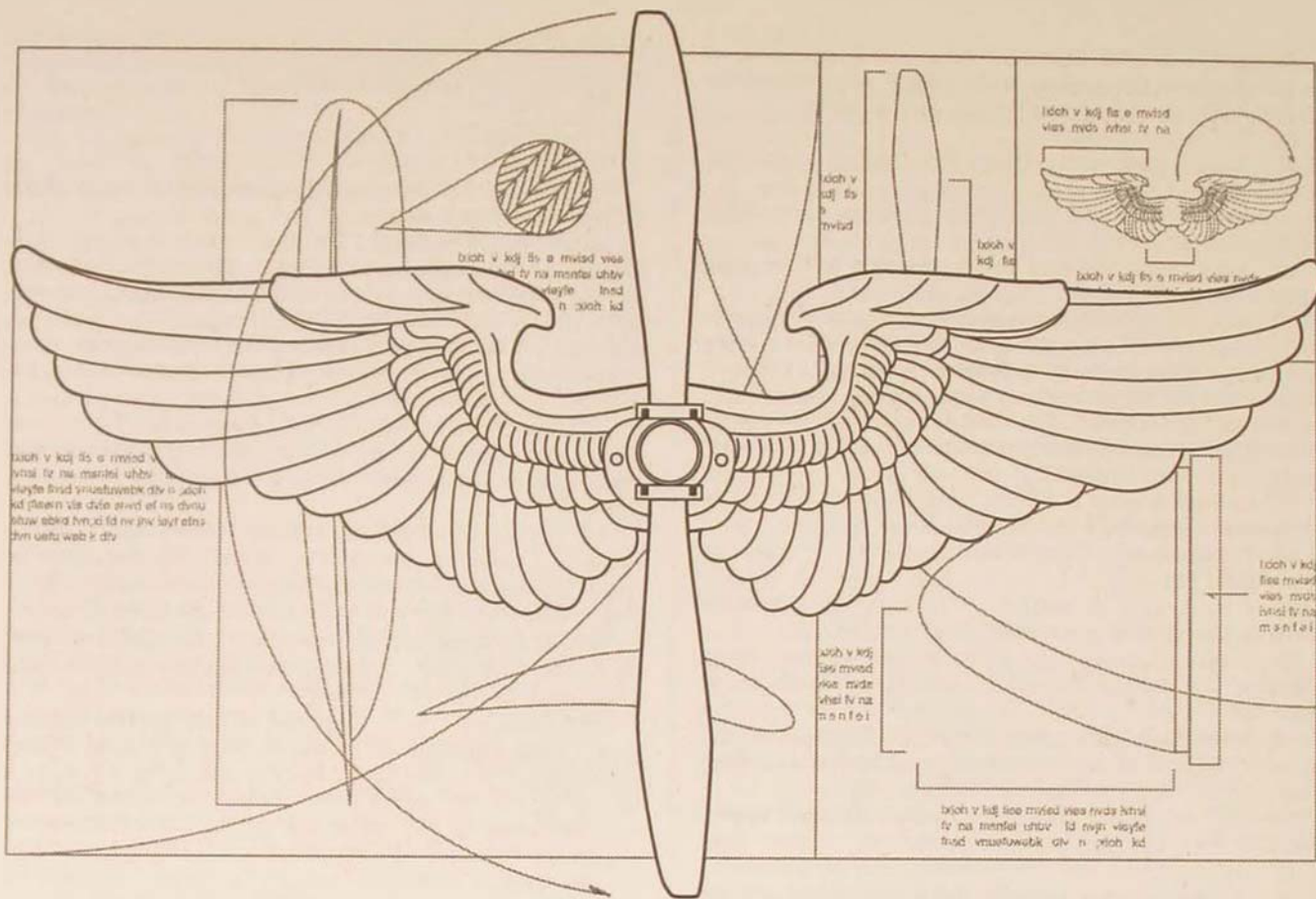
INVENTING A DOCTRINE PROCESS

COL DENNIS M. DREW, USAF, RETIRED

THE TRUTH OF THE matter is that the US Air Force does not have any sort of systematized process for developing its doctrine. Continuous pronouncements from the highest command levels over the past 50 years have trumpeted the importance of sound doctrine.[1] Yet, no system or organized intellectual process exists to capture and evaluate ideas and concepts and then formulate them into useful doctrine.

Of course, we do have an established bureaucratic process that produces official doctrine publications.[2] The Air Force has even gone to the trouble of establishing a Doctrine Center at Langley AFB, Virginia, to act as the focal point for all of its doctrinal efforts. Bureaucratic processes, however, are not intellectual processes—even though we all too often substitute the former for the latter. Bureaucratic processes cause things to

happen (or prevent them from happening) in some orderly manner. Determining whether the results (if they are allowed to occur) are good, bad, right, or wrong is measured by conformance to the process itself rather than by intrinsic qualities and values.

An intellectual process may indeed be imbedded within the bureaucratic process. One hopes that such would be the case. Further, one hopes that the bureaucratic process itself would systematically evaluate the subject or purpose of the process for its intrinsic value. Unfortunately, this is often not the case and is particularly not the case in the development of Air Force doctrine. Within the established bureaucratic process for producing doctrine, we have no organized system or process for gathering, consolidating, and analyzing historical and theoretical data. We have no ground rules for developing concepts and evaluating competing concepts. In short, no systematic intellectual process exists for the development of Air Force doctrine.

One can find the unfortunate results of this intellectual void in the manuals of Air Force basic doctrine from the early 1950s to the present. Three examples illustrate the point.

First, Air Force basic doctrine totally ignored protracted revolutionary warfare (insurgency) until 1964 and then referred to it almost as an afterthought. This omission was startling, given the fact that revolutionary insurgencies dominated much of the world scene from the late 1940s through the 1960s.[3] The Malayan emergency, the French struggle in Indochina, the Hukbalahap rebellion in the Philippines, and the French struggle in Algeria are the most obvious examples. By 1964, of course, the United States was already heavily involved in Vietnam.

Second, a less-than-subtle hint has it that Air Force basic doctrine is not the product of serious research and analysis. More often, it seems to reflect the opinion of the "senior officer present." It is probably much more than coincidence that during the 1950s and much of the 1960s, general officers whose careers were inseparably intertwined with strategic bombardment dominated Air Force leadership and that Air Force doctrine emphasized strategic bombardment. Also probably more than coincidence is the fact that after the US adventure in Vietnam, the "fighter Mafia" began to take the reins of senior Air Force leadership and that the strategic bombardment mission began to fade from prominence in basic doctrine.

Third, until the appearance of the 1992 version of Air Force basic doctrine, no one attempted to justify what doctrine said. Correct or incorrect, without any evidence, doctrine was nothing more than a collection of assertions. The fact that doctrine writers apparently required no evidence to bolster their assertions may explain how they managed to treat such fundamental subjects as the "principles of war" so cavalierly. That is, over the years, writers changed these principles almost at will and interpreted them differently—at times in very dubious ways.

Experience forms the foundation of doctrine.

These three examples do not provide any degree of confidence that Air Force basic doctrine is the product of thorough, systematic inquiry and reasoned synthesis. They do illustrate the consequences of not having a systematic intellectual process for the development of Air Force doctrine.[4]

This article outlines the basic elements of a notional, systematic, intellectual approach to the development of Air Force doctrine and proposes three fundamental steps that, if taken, can implement the approach. Basic doctrine provides the perspective for this investigation. However, similar approaches should prove useful and beneficial in the development of other levels and kinds of doctrine.

Elements of a Systematic, Intellectual Approach

A reasonable and proven outline for a systematic approach to the development of doctrine resides in the classic, structured steps of a research project: devise a research question; devise a research plan; gather the required data; analyze the data; in light of the data, formulate and evaluate potential answers to the research question; in light of the data, identify the best answer; and, finally, write and publish the research report. We use this basic process (with some minor variations) for everything from a staff study to a doctoral dissertation. The process also seems appropriate for the development of doctrine that responds to the fundamental research question, What is the best way to use airpower? If we begin with this question and translate the generalities of a classic research structure into more concrete operational terms, the process might well look something like figure 1.

Devise a Research Plan

Experience forms the foundation of doctrine, which is another way of saying that history—ours and others'—forms the primary source material for writers of doctrine.[5] Thus, the research plan—represented by the box in the upper-left corner of figure 1— must find a way to explore the relevant history for each subject treated by the doctrine.
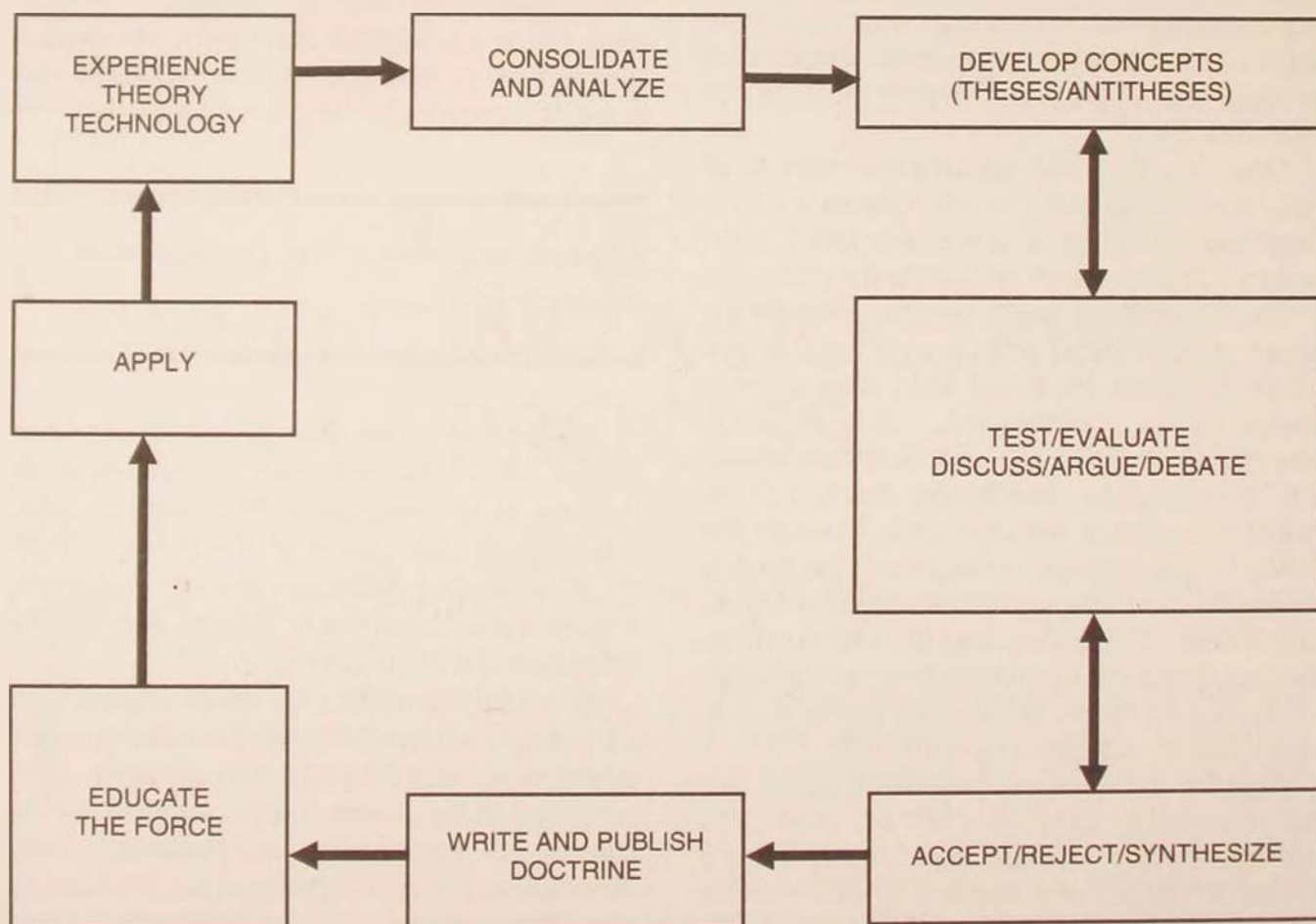
Figure 1. The Doctrine Process

This effort must go far beyond simple library research, extending into the often overlooked experience of exercises, maneuvers, and perhaps even computer war games and simulations. Finally, the historical research not only should look at "what happened" but also should weigh previous interpretations of "why" and "how," as well as the significance of "what happened."

Although doctrine's roots are primarily embedded in history, some subjects have no basis in empirical evidence. In these areas, the doctrine writer must rely on theory. Most subjects dealing with the use of nuclear weapons or deterrence, for example, fall into this category. Nuclear war has never occurred (notwithstanding Hiroshima and Nagasaki), and nuclear deterrence remains only a theoretical construct.

Finally, the doctrine writer's research plan must take into account advances in technology that may temper or perhaps even obviate the "lessons" of the past. The fact that the technology in question may be unproved in combat operations puts the doctrine researcher in a difficult situation. The latest gee-whiz gadget may offer great promise for overcoming previous problems or for providing revolutionary capabilities, may be highly touted by its manufacturer, may have great political sensitivity in terms of the budget, but may be absolutely unproved in the crucible of war. We have yet to devise practicable field-testing procedures that can accurately replicate the reality of combat. Although very "realistic" regimes for training and testing now exist, they are not "real." Obviously, this sort of situation presents serious dilemmas for the doctrine researcher.

Gather and Analyze the Data

Gathering the historical, theoretical, and technological data concerning each discrete subject within the doctrine is not only a massive task, but also one that—if performed incorrectly—can defeat the purpose of the entire process. The most common problem is predisposition—gathering only the evidence that supports preconceived concepts about the subject at hand. One suspects that preconceived concepts may often originate at higher levels of command. As a result, the researcher stacks the evidence and then "cooks the books." If the evidence is stacked in support of preconceived notions, the effort to evaluate and analyze the evidence becomes skewed at best—worthless at worst.

Once the evidence is gathered and consolidated in a usable format, the analysis must evaluate its pertinence. Certain pieces of evidence may no longer be relevant because of technological developments. For example, data on bombing accuracy from the strategic bombing campaigns of World War II and related information concerning tactical formations, damage expectations, requirements for subsequent strikes, and doctrinal notions derived from such experience may not be nearly as important to airpower operations in an era of precision guided munitions.

Formulate and Evaluate Potential Answers to the Research Question

Analysis of the gathered data should generate new concepts or reinforce existing concepts. For example, analysis of data concerning the success of stealth technology may change our concepts for organizing and "packaging" strike forces. Rather than employ large force packages of strike and support aircraft, we may now favor individual sorties by stealthy strike aircraft. Other people may disagree, perhaps arguing that the data is inconclusive or that stealthy penetration may be impracticable during daylight hours or that stealth capabilities may not be effective against certain opponents with advanced air defense systems. In short, competing concepts may emerge from analysis of the data.

Whether the concepts developed are new and/or competing and/or reinforcing, they need to be tested and evaluated. Actions can range from actual field testing (although such testing would probably be more com-

mon for tactical doctrine than for basic doctrine) to debate in forums such as professional journals, symposia, and the like. The objective is to examine concepts in depth, compare, contrast, identify strengths and weaknesses, and modify.

Identify the Best Answer to the Research Question

The testing and evaluation process should lead naturally to acceptance or rejection of concepts or the modification and synthesis of concepts that address the basic research question. If the process is robust, the evidence and interpretation to support accepted concepts or syntheses should be solid and defensible.

In figure 1, double-headed arrows connect the three boxes representing the development, evaluation, and acceptance or rejection of concepts. These arrows imply that the process is iterative and, although divided into discrete sections in figure 1, that all three sections are part and parcel of the same function.

Write and Publish the Doctrine

Although the physical acts of writing and publishing doctrine come late in the process, planning for this crucial step must come before the process of doctrine development even begins. Doctrine has many useful purposes and many potential audiences. Determining the primary purpose and the primary audience will affect not only how the doctrine is written, but to some extent what subjects are covered, how they are approached, and what data is sought. These decisions will, in turn, determine how concepts are developed and analyzed.

In the past, writers of Air Force basic doctrine have produced their manuals (perhaps unintentionally) for use within the Pentagon to fight both the budget and roles-and-missions battles. These manuals contained exhaustive lists of primary and collateral roles and mis-

sions, each with its own hair-splitting definition. Useful in the Pentagon, such information has little practical utility beyond the Washington Beltway and virtually no utility to deployed forces. The manual of 1992 broke with this tradition by seeking to educate airmen of all ranks about the fundamentals of airpower employment. Both of these approaches are legitimate, but deciding which to take (or perhaps selecting another approach) will have a major impact on how one writes, publishes, and distributes the manual.

Educate the Force

At this point, the normal research report/thesis/dissertation process ends. After a staff officer or scholar has published the report/thesis/dissertation, his or her job is complete. However, one cannot say the same for the publication of basic doctrine. If no one reads the doctrine manual, no one will understand or apply the doctrine, and the entire venture will have been for naught. Unfortunately, this scenario has generally held true in the past. The powers that be have left published doctrine to languish. Traditionally, even the Air Force system of professional military education gave doctrine only a passing glance.[6]

The 1992 edition of Air Force basic doctrine changed the landscape of doctrinal education considerably. The manual contains a strong, clear mandate from the chief of staff that all airmen should understand their doctrine; thus, doctrine education became much more important. Indeed, educational efforts have increased significantly, but much remains to be done. More about that later.

Apply the Doctrine

The obvious final step is to apply the doctrine. As noted earlier, the Air Staff has used basic doctrine extensively to fight the good fight over budgets, roles and missions, weapons systems, and so forth. Elsewhere, the

application of doctrine has been spotty at best. Such results are to be expected if one writes basic doctrine for use within the Pentagon, without any concerted educational program to teach it to the bulk of the force.

The application step yields a result, which adds to the body of data (experience), from which we develop doctrine—thus bringing the process of doctrine development full cycle. It continues as we add daily to the body of experience and generate new ideas. The *publication* of doctrine is episodic, but its development should be continuous. With this in mind, a slightly modified version of the doctrine process paints a more accurate picture.

Figure 2 displays a process of continuous development, but here the writing and publication of doctrine are episodic. At the same time, the illustration indicates that we accept, teach, and apply new concepts even though we have not published new doctrine. This is what we might call informal doctrine on the best way to use airpower—beliefs that evolve constantly but have not been written, published, and officially sanctioned.[7]

Implications of the Doctrine Development Process

Although the continuous cycle of doctrine development is the most obvious implication of the process, other implications are at least equally important. First, doctrine
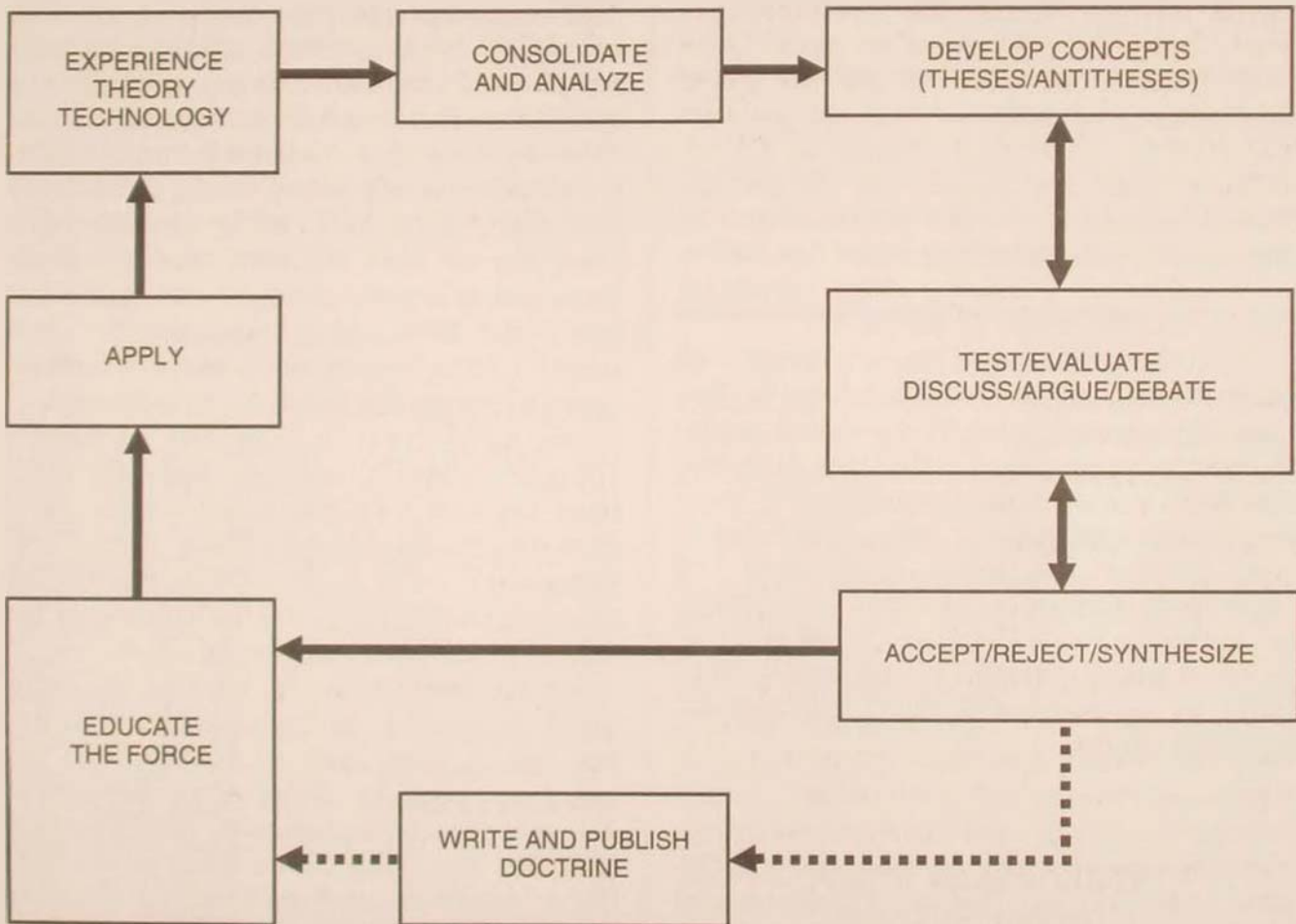
Figure 2. The Doctrine Process Modified

development is a large task. Locating, accessing, consolidating, and analyzing all of the pertinent data is a very large undertaking—as is the process of developing concepts and testing them. Finally, educating the force is a massive undertaking; at the least, it entails the entire system of military education.

> *The chief weakness of the current system of doctrine development is that there is no real system.*

The second implication is one of continuous change in the basis for doctrine (i.e., experience, technology, and—to some extent—theory). The foreshortened technological horizon brings new breakthroughs nearly every day. In terms of theory, new ideas bombard us daily. Some will prove useful; some we will cast into the intellectual dustbin. Continual changes in the experience base are particularly important. Because airmen have but a scant century of experience, every new experience can have a profound impact because it adds so much (at least in relative terms) to the base.

One other implication, already mentioned indirectly, is that a successful process of doctrine development must have a robust means of both generating and evaluating airpower concepts from the constantly changing experience-theory-technology base. This requirement implies the active involvement of many more·personnel than the limited number at the Air Force Doctrine Center or those people at major commands who handle (generally as an additional duty) bureaucratic doctrinal chores.

Weaknesses in the Current System

As mentioned earlier, the chief weakness of the current system of doctrine develop-

ment is that there is no real system. We have a bureaucratic structure and a bureaucratic process (responsibilities assigned, coordination paths delineated, etc.) but no systematized, intellectual process. We have bits and pieces of a process but nothing resembling a coherent whole. Several significant barriers to a systematic approach are obvious.

The first barrier is that the entire process—not just writing and publication—is episodic. Little evidence exists that any serious, organized, orchestrated work in gathering and evaluating evidence occurs until someone, somewhere, decides on some basis that we need a new doctrine manual. There seems to be almost no consistency in making those decisions. Note, for example, that during the 1950s, the Air Force produced basic doctrine in 1953, 1954, 1955, and 1959. Five years then elapsed before publication of the next manual in 1964, and then seven more years passed until the 1971 edition appeared, in spite of all that was happening and all that we were learning in Vietnam.[8] In the 1970s, a new doctrine manual appeared about every four years (1971, 1975, 1979), and then five years elapsed until the 1984 version. Eight years and enormous changes[9] intervened between the 1984 and the current 1992 versions.[10] Neither rhyme nor reason nor rhythm seems to inform our publication of doctrine.

Nor do we have an organized, systematic effort to generate, evaluate, and cast judgment on new concepts based on the ever-changing database of experience, theory, and technology. The only activity resembling such an effort is the coordination process for drafts of new doctrinal manuals.[11]

Finally, until recently, we had no organized, integrated, educational effort to imbue the Air Force with its doctrine. In the last few years, Air University's College of Aerospace Doctrine, Research, and Education (CADRE) has taken on the task of developing a comprehensive program of doctrine education. The effort has made considerable progress and developed some innovative tools, but it clearly has a long way to go to

produce a comprehensive, integrated program across the entire Air Force.

Inventing and Implementing the Process

Considering all of the foregoing, if the Air Force is to have effective and useful doctrine, it must invent and implement an intellectual process for its development. One of the most important steps in developing an intellectual process is a bureaucratic step already taken. The decision to designate an organization responsible for doctrine development apart from the hubbub, politics, deadlines, and other distractions of the Pentagon was crucially important. Virtually every step in the process of doctrine development requires quiet, concentrated study and attention over prolonged periods—commodities often in short supply in the Pentagon. Hopefully, the Air Force Doctrine Center will be the catalyst to improve doctrine. But creating the organization and staffing it with outstanding people is only the first step in the larger task. If we are to accomplish that task, three steps seem prudent.

Decide upon the Real Purpose of Air Force Doctrine

On the one hand, as noted earlier, the Air Force for many years wrote its basic doctrine with an eye toward interservice battles within the Pentagon. On the other hand, analysts developed and wrote the 1992 version as an educational tool. These two approaches are not necessarily mutually exclusive, but they can be. Writing only for Pentagon wars yields little of practical use in the field. Writing to educate the Air Force not only can accomplish that task, but also can benefit people who are fighting the good fight within the Pentagon.

Establish an Appropriate Division of Labor

It is difficult to conceive of one organization with sufficient staff and expertise to operate the entire system of doctrine development and do it right. The task is huge. For example, relevant information concerning military experience, theory, and technology exists in military and civilian sources, in all of the services, in all of the major commands, in joint and combined organizations, in domestic and overseas sources, in modern computer databases and the musty stacks of historical archives, and in academic and popular publications. Identifying the potential sources of information is no small task, and gaining access to their information may, at times, be difficult. We confront a mountain of information, with more flowing in all the time. The task of gathering, consolidating, and organizing the information in a form useful for analysis and the generation of concepts is monumental. Developing and

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If the Air Force is to have effective and useful doctrine, it must invent and implement an intellectual process for its development.

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evaluating concepts requires a broad base of expertise and interests. Educating the force at the appropriate level of understanding and analysis is another huge task.[12]

The appropriate approach seems to call for the Air Force Doctrine Center to manage the process as a whole and perform only those tasks for which it is suitably staffed. Clearly, the center must be in charge of accepting or rejecting new concepts and should actually write and publish the doctrine. Beyond that, the center's personnel can subdivide tasks into research projects—perhaps by the basic roles of airpower (aerospace control, force application, force enhancement, etc.), by the classic missions of airpower (counterair, strategic attack, interdiction, etc.), or even by more specialized

topics (ballistic missile defense, command and control, etc.).

The Doctrine Center could allocate individual topics to subject-matter experts, who would actually do the research, consolidate and analyze the information, and generate concepts.[13] One might find such people at the major commands—but those folks rarely have the time or resources for the task described in this article. RAND's Project Air Force might be able to provide some assistance. Professional faculty members at Air University offer a considerable talent pool and some of the best expertise available, in addition to the considerable resources of the Air University Library and the archives of the Air Force Historical Research Agency. Individual subjects could also become research projects for students at Air University's Air War College and Air Command and Staff College. CADRE, the organization responsible for the 1992 version of basic doctrine, would also seem a prime candidate to provide research, consolidation, analysis, and concept generation. However, the focus of that organization has shifted considerably over the past few years, and it is now much more involved in education (including doctrine education) than it is in research.

> *The intellectual process of developing doctrine should be continuous. Only the publication of doctrine is episodic.*

Adequate testing of concepts requires appropriate forums for argumentation and rebuttal.[14] The Doctrine Center can organize this effort by publishing the results of research and analysis in professional journals or as stand-alone products distributed widely for comment. Further, the Doctrine Center could sponsor a series of recurring conferences/symposia at which researchers could vet their analyses.

The division of labor will produce a manageable task for the Doctrine Center. Specifically, the center will have more extensive results of research and concept generation than it could have generated internally. Center personnel will also have the critiques, caveats, and modifications of new concepts resulting from publication and/or presentation, from which they can make decisions about what concepts to include as they actually write the doctrine manual.

The final point concerning a division of labor has to do with educating the force. Much good work has already been accomplished since the delegation of the task to CADRE, but much remains to be done to produce a comprehensive program of doctrine education. The Air Force should allocate more emphasis and more resources. If we do not propagate our doctrine to the force, the doctrine becomes meaningless—gathering dust on the bookshelf.

Make the Process Continuous

The world does not hold its breath between publications of doctrine. New experiences accrue constantly. New technologies emerge and mature constantly. New theory and new interpretations of existing theory are the constant fodder of the military-academic community. Thus, the intellectual process of developing doctrine should be continuous. Only the publication of doctrine is episodic.

If we recognize the continuous nature of doctrine development, the implications become very clear. Allocation of research topics to subject-matter experts should not be forced to fit within a publishing schedule. Rather, the schedule should be forced to fit the acceptance of new concepts as doctrine. Research and the development of concepts should be continuous and open-ended. Spirited discussion of concepts in professional journals should never abate, and conferences/symposia should be sponsored on a

regular, recurring basis. In short, the process of doctrine development should not be episodic. Instead, it should be a continuous, self-renewing flow.

As the process of doctrine development constantly flows, with no real beginning or end, the question then becomes when to publish and when to get a "snapshot in time" that temporarily answers the fundamental research question, What is the best way to use airpower? One way to finesse the problem would be to publish doctrine in a loose-leaf format that would facilitate interim page changes. Another approach would schedule publication only when a certain percentage of the entire doctrine manual clearly requires significant change. The worst solution would put doctrine publication on a time-based schedule with no regard for the significance of changes required.

Conclusion

Success in war depends more on mental than physical capabilities. Even the most sophisticated military establishment can be outsmarted by people with greater mental acuity. Roughly paraphrasing and turning the tables on Voltaire, history is replete with examples of God smiling on the side with the smarter divisions.

Our doctrine represents (or should represent) the apex of our thinking about the best ways to use airpower. It is our theory of victory.[15] As such, it deserves our best intellectual efforts and our utmost attention. In the past, our doctrine has received neither. The first step in correcting this unacceptable situation is to treat the development of doctrine as a profoundly important and continuous intellectual process rather than simply a bureaucratic requirement. □

Notes

1. One of the most famous quotations concerning the importance of doctrine came in 1968 from Gen Curtis E. LeMay, former Air Force chief of staff: "At the very heart of warfare lies doctrine. . . . It is the building material for strategy. It is fundamental to sound judgment." Quoted in Air Force Manual (AFM) 1-1, *Basic Aerospace Doctrine of the United States Air Force*, 1984, [i]. In the 1990s, Gen Merrill A. McPeak, Air Force chief of staff, continued to mark the importance of doctrine in his foreword to the 1992 version of basic doctrine: "This manual is one of the most important documents ever published by the United States Air Force. Doctrine is important because it provides the framework for understanding how to apply military power. . . . The contents of these two volumes are at the heart of the profession of arms for airmen." AFM 1-1, *Basic Aerospace Doctrine of the United States Air Force*, vol. 1, March 1992, v.

2. Organization, responsibilities, and tasking for doctrine development and education are specified in three Air Force publications: Air Force Policy Directive 10-13, *Aerospace Doctrine*, 4 February 1994; Air Force Instruction 10-1301, *Aerospace Doctrine*, 5 January 1994; and Air Force Instruction 10-1302, *Air and Space Doctrine Education*, 19 July 1994.

3. Such terms and concepts as limited war, protracted revolutionary war, insurgency, and guerrilla war were not even mentioned in the 1953, 1954, 1955, and 1959 versions of Air Force basic doctrine. Finally, in the 1964 version, a short chapter appeared that addressed the subject of insurgency. In 1971 this short chapter was changed to address special operations rather than insurgent warfare. After 1971, the concept disappeared altogether. AFM 1-2, *United States Air Force Basic Doctrine*, 1953, 1954, April 1955, December 1959; AFM 1-1, *United States Air*

Force Basic Doctrine, 14 August 1964, 28 September 1971, 15 January 1975; and AFM 1-1, *Functions and Basic Doctrine of the United States Air Force*, 14 February 1979.

4. The lack of any sort of a systematic intellectual process for the development of doctrine became very apparent to me when, beginning in 1988, I led a 10-person team of doctrine analysts at Air University's Airpower Research Institute in the project that eventually produced the 1992 version of Air Force basic doctrine. This article has its genesis in our efforts to invent a systematic intellectual process that would produce sound basic doctrine.

5. For a more complete discussion of the sources of military doctrine, see the author's "Of Trees and Leaves: A New View of Doctrine," *Air University Review* 33, no. 2 (January–February 1982): 40–48. Also note Gen Merrill A. McPeak's foreword to the 1992 version of Air Force basic doctrine, in which he notes that doctrine "is what history has taught us works in war, as well as what does not." In the general introduction to the same manual, the authors state that doctrine "is based on experience, our own and that of others. Doctrine is what we have learned about aerospace power and its application since the dawn of powered flight." AFM 1-1, vol. 1, March 1992, v and vii.

6. In private conversations with the author, Gen Michael Dugan, former Air Force chief of staff, once expressed his frustration over the Air Force's inability to educate its forces on doctrine. Dugan noted that if someone questioned an Army officer on his doctrine, he or she could quote chapter and verse from Army doctrine. Asked the same question, an Air Force officer could tell you when the bar opened at the Officers' Club.

Dugan went on to assert that the Air Force was producing what were, in effect, "illiterate truck drivers."

7. Informal doctrine exists for better or for worse. We all have personal opinions about the best way to do things, whether or not they are codified in official doctrine. The danger in informal doctrine is that it has not been put through the rigors of critical examination. It is limited by our personal experience and personal knowledge, which may be quite narrow.

8. In truth, this might be a misstatement. Very little in the 1971 version of basic doctrine reflects what was happening in Vietnam. Perhaps we were learning very little.

9. Examples of such changes include reinterpretations of the Vietnam experience, which exploded on the scene in the mid-1980s; a vast pool of new experiences derived from operations in Grenada, Libya, Panama, and Iraq/Kuwait; the collapse of the Soviet Union and Warsaw Pact; the proliferation of precision guided munitions; and the advent of stealth technology.

10. This eight-year gap in the face of enormous changes is not as odd as it might first appear. Serious work on two competing versions of a new manual of basic doctrine began almost simultaneously in 1988 at the Air Staff and at Air University. The Air Staff effort eventually abdicated in favor of the more radical Air University revision. By January 1990, the manual was essentially in final form, but publication was delayed by bureaucratic "turf" struggles and "tweaking" at the margins of the document.

11. The only minor exception occurred during the production of the 1992 manual of basic doctrine at Air University. In that effort, a 10-person team worked to gather and evaluate concepts from all previous doctrinal efforts and from a broad spectrum of professional and academic literature. Further, they hosted a conference attended by representatives from every major command and the Air Staff to examine and revise an early draft of the manual line-by-line and concept-by-concept. This was a one-time effort and clearly not of the scope proposed in this article.

12. It is instructive to note that the development of the 1992 version of AFM 1-1, which arguably came the closest to emulating the process of doctrine development, required a team of 10 field-grade officers working nearly full time for almost two years. An estimated 7,000 man-hours were spent on research alone. This effort was possible only because the task was performed at Air University's Airpower Research Institute within CADRE. Most of the extensive resources of the institute were devoted to doctrine development during that period. In contrast, the new Air Force Doctrine Center has only 21 total billets (including leadership, administrative, and editorial positions) and is responsible for the pressing demands concerning all levels of Air Force doctrine and airpower issues in joint doctrine. It would be nearly impossible for the Doctrine Center to mount an effort of the magnitude required to produce the 1992 version of AFM 1-1, let alone an effort of the much greater magnitude proposed here.

13. This concept of "outside referral" for doctrine development is a practice already sanctioned in paragraph 2.1.4 of Air Force Instruction 10-1301. However, reading the entire instruction, one quickly realizes that it visualizes such referrals as episodic—a practice that clashes with the continuous nature of the process of doctrine development.

14. At the level of basic doctrine, "testing" concepts generally occurs more in terms of argumentation than in terms of physical field testing. The same may not be true at other levels of doctrine.

15. This concise yet apt description of doctrine was, to the author's knowledge, first used by Dr Larry E. Cable in his groundbreaking book *Conflict of Myths: The Development of American Counterinsurgency Doctrine and the Vietnam War* (New York: New York University Press, 1986), 113.

The Balkan War
What Role for Airpower?

Col Roberto Corsini,
Italian Air Force

THE FIRST thought that came to mind at the outbreak of the war in Bosnia was that its capital city, Sarajevo, has been a theater of important events in this century. It was there on 28 June 1914 that Archduke Francis Ferdinand, heir to the Austro-Hungarian throne, was assassinated while on a state visit. The assassi- nation was the spark that touched off World War I. Believing the assassination to be of Serbian origin, Austro-Hungarian officials sent an ultimatum to Serbia with a list of demands. When the Serbian government refused to accept all the demands of the ultimatum, Austria-Hungary declared a state of war against Serbia.[1]

Since the primary objective of nations at the time was to establish a balance of power through a system of alliances, the Austro-Hungarian initiative was seen as a threat to global stability, which was a sufficient reason for provoking a world war between the two power blocks.

In the end, the Austro-Hungarian empire was dissolved, while Serbia and Bosnia still exist. That fact seems to raise the issue of the paradox of power: Big countries lose small wars. Indeed, World War I was not a small war, but it began with the Austro-Hungarian objective of defeating a small country.

Even if it is possible to find some similarities between the situation in Bosnia today and on the eve of World War I, the current international political situation is completely different. The balance of power is no longer at stake. On the other hand, the risk of widening the crisis with the involvement of other countries is no less than it was in 1914. Hence, there is a need to look at the Bosnian crisis with particular attention and shrewdness.

The main problem with unconventional wars such as the Bosnian conflict is that in most cases the political objectives are not clear or exactly defined. Each situation is different and unique, and, in many cases, conventional military powers are not capable of dealing with those situations. Insurgency, guerrilla warfare, terrorism, and sometimes operations other than war (OOTW) are different forms of violence with the real difference between them and war being only a problem of terminology, definitions, or political opportunity. When the situation (threat) and the national or multinational objectives are not properly addressed, the tasks, duties, limits, and rules of engagement (ROE) for soldiers are hard to understand and to follow, especially when those rules change during the operations. When tasks are not clear, training, readiness, equipment, procedures, and strategy probably are not adequate. In such situations, it is even

difficult to find appropriate definitions to understand the situation, causing confusion among the decision makers and consequently leading to the misuse of force (military power).

Without any doubt, the transformation of the international environment has produced an evolution in the way states and nations see and understand the use of force. In my opinion, that does not mean that conventional wars such as the Gulf War will never occur again; it just means that the scenario is becoming more and more complex.

Even if the primary mission of the armed forces is, and probably will remain, that of fighting and winning wars (conventional), there is no doubt that there will be a wider and wider spectrum of possible situations in which the armed forces could be employed. There is therefore a need for the armed forces to be prepared for many different situations (conventional and unconventional) and to adequately develop their tools, tactics, training, and doctrine in that direction.

This article examines the differences that characterize the conflict in Bosnia in order to understand whether it is just an episode or whether it represents a trend for future wars. After presenting a background that describes the evolution of the crisis/war in Bosnia and Herzegovina, it examines the main operations carried out by the North Atlantic Treaty Organization (NATO) forces. It then looks at some relevant aspects of airpower in this and similar situations. Finally, it touches on some aspects regarding the need and the importance of "jointness" in such operations (doctrine, tactics, training, and so forth).

Background

The former Federal Republic of Yugoslavia was formed at the end of World War I (4 December 1918) from several Balkan states, regions, and territories. Some of those states

were already independent (Serbia and Montenegro); others were previously administrated, jointly or independently, by Austria and Hungary (Bosnia, Herzegovina, Croatia, Slovenia, Vojvodina, and Kosovo); and some of them had been under Ottoman Turkish rule until the nineteenth century.[2] Yugoslavia was not a nation-state but a country composed of six "constituent nations"—Slovenes, Croats, Serbs, Macedonians, Muslims (in the political sense), and Montenegrins—with different cultures, traditions, religion, and ethnology.[3]

Despite the several struggles among these states during the period between the two world wars, the cohesion in the Federal Republic at the end of World War II was strengthened by the work and the charisma of Tito (Josip Broz), the Yugoslavian prime minister. But after Tito's death in 1980, it was suddenly clear that the multiple nationalities and the old rancor against Serbian dominance had not disappeared. On the contrary, they were still present and more vivid than before because of the political dominance of Serbia over the other states in the period after World War II.[4]

In the 1980s, ethnic Albanians in Kosovo started demonstrations against Belgrade, the capital city of Serbia. In June 1991, Croatia and Slovenia declared their independence. The Serbian army first tried unsuccessfully to keep Slovenia in line with one month of fighting and then Croatia with a war that lasted six months (1992). In December 1991, Bosnia and Herzegovina declared their independence from Yugoslavia.

In the attempt to carve out some enclaves for themselves, the Serbian minority (Bosnian Serbs), with the help of the large Serbian army (Belgrade), took the offensive with the aim of creating a Great Serbia from territory occupied by Muslims in Bosnia-Herzegovina. To a lesser degree, Croatia also had plans for annexing the territory of Bosnia-Herzegovina.

The European Community itself was partly responsible for the wars in the Balkans by prematurely recognizing the independence of Slovenia and Croatia before arrangements were made to protect the Serbian minority.[5] That gave an opportunity for Serbia to occupy parts of Croatia and Bosnia-Herzegovina and to indulge in the ethnic cleansing of areas to be resettled by Serbs.

Since 1992, the United Nations (UN), supported by the European Community (Western European Union—WEU) and NATO, has played an active role in trying to halt the war in Bosnia-Herzegovina. Naval operations such as Maritime Monitor (UN) and Sharp Vigilance (WEU), merged later into Sharp Guard (NATO), were the international community's attempts to enforce the embargo against the former Yugoslavia in the Adriatic Sea (United Nations Security Council Resolutions 713 and 757).

But an embargo, as already demonstrated in other situations (Iraq and Libya, for example), doesn't produce any remarkable result, at least not in the short or medium run, especially when it is enforced against lesser-developed countries. As a matter of fact, after the embargo was enforced, the situation in Bosnia-Herzegovina deteriorated to a point that the UN Security Council (UNSC) established a no-fly zone over Bosnia-Herzegovina to preclude flight activity not authorized by the UN (UNSC Resolution 781, 9 October 1992). Notwithstanding Operation Sky Monitor, conducted with NATO airborne warning and control system (AWACS) aircraft, there were numerous confirmed violations of the no-fly zone, especially by the Bosnian Serb air force against the Muslim enclaves (military and civilian targets). Thus, the UNSC gave NATO, which in the meanwhile agreed to support UN resolutions, the authorization and the mandate to enforce the no-fly zone (Operation Deny Flight). The mission was, and still is because it has not changed in the meanwhile, that of conducting combat air patrols (CAP) and air policing to enforce compliance with UNSC Resolution 781 over the territory of Bosnia-Herzegovina.

At the same time, the UN has created a standing International Conference on the

former Yugoslavia to negotiate an overall peace settlement. In January 1993, the Vance-Owen peace plan attempted to secure Bosnian sovereignty with a decentralized government composed of 10 provinces, but it didn't work as well as a second Vance-Owen peace plan and the Owen-Stoltenberg plan that attempted to create a confederation in Bosnia-Herzegovina from three exclusive ministates.[6]

Despite all the efforts of the international community (Vance-Owen and Owen-Stoltenberg peace plans, economic sanctions, mediation for a cease-fire by former US president Jimmy Carter, and the military measures already taken), a solution to the Bosnia-Herzegovina crisis/war is still far from being found.

The Different War

The Bosnia-Herzegovina crisis/war is more complex than many other situations for two main reasons: (1) there are more than two parties involved (all against each other); (2) there is no geographic line that divides the different factions. At the same time, it is both a conventional war and an unconventional war (civil war, ethnic war, religious war) and a humanitarian relief operation.

Actually, in Bosnia-Herzegovina the ethnic distribution is more mixed than elsewhere in Yugoslavia. In the same geographic region, there are, on opposite sides, two main ethnic groups (Bosnian Serbs and Bosnian Muslims) and minorities (Bosnian Croats, Croat Muslims, Chetniks, and Albanians), all of whom field partisans and rebels). Also, the neighbors have an active role in the ongoing war: the Serbs (Belgrade), the Croats (Zagreb), and even supporters from a number of different countries (for example, Muslim fundamentalists from Iran). All the people involved have different objectives (annexation of territory, religion, destabilization, adventure, money, and so forth).

A quite similar situation can be found also in Croatia and in Macedonia. So far, there is no war in these two states because the Croatian Serbs are involved in the Bosnia War, while the presence of the United Nations Protection Force (UNPROFOR) in Macedonia has been successful in preventing another conflict. Moreover, there was a need to prevent conflict from spreading southward and possibly embroiling two NATO allies.[7] But the instability of the situation makes it quite likely that there will be war in these two states. In this regard, Secretary of State Warren Christopher, explaining the reason why the US has become actively engaged in Bosnia-Herzegovina (1993), stated that "if one did not try to solve the problem in Bosnia, you may well have the entire Balkans involved. . . and it could draw in Greece and Turkey."[8] In the middle of all this mess, there is the UNPROFOR, which has the objective of restoring peace, and more and more NATO forces that are becoming more involved.

Looking at this century, it is possible to identify two eras of distinct international relationships between states: (1) the bipolar system (during the cold war) and (2) the unipolar or multipolar system (at present). This change of the international order has also produced a change in the way the use of force is seen in solving economic, ideological, or ethnic problems. The vacuum created with the dissolution of one of the two superpowers (USSR)—a vacuum not covered by the remaining superpower—has de facto opened the way to a proliferation of small wars. But even if small wars probably do not represent an immediate threat for most Western countries, prolonged small wars can jeopardize the international order. In this respect, the Bosnian War is just one of a number of examples (Chechnya could be another one), but Bosnia has unique characteristics.

The Bosnian War offers what we can consider a good example of "4th generation war": regional and niche warfare,[9] war that is unconventional, infrastate, protracted, and low tech. As a matter of fact, what we are

witnessing in Bosnia is, at the same time, a "first-wave" war form[10]: a fight among ill-armed, ill-trained, ill-organized, and undisciplined irregulars (agrarian age); a "second-wave" war form[11]: mass production, mass destruction armaments, levée en masse (industrial age); a "third-wave" war form[12]: high-tech, precision guided missiles (PGM), low collateral damage, and other features that are not possible to identify in the previous "waves."

All the typical destabilizing factors are present in Bosnia-Herzegovina: (1) strong ethnic, regional. and factional strife and virulent nationalism exist side by side; (2) religious extremism (present in the same area are Catholics and Orthodox Christians, Muslims, and Jews); and (3) disease and famine that cause migration of refugees. In this situation, the "enemy" is less vulnerable to traditional power (conventional warfare). That traditional power is itself less effective since there is an increment of political interference even at tactical level. For instance, the political authority can dictate the rules of engagement (ROEs) without paying much attention to the military concerns.

NATO Commitment

NATO in the Bosnia-Herzegovina War is playing the role of the UN military force. So far, it is engaged in two different operations: Deny Flight and Sharp Guard. Moreover, NATO has planned an operation able to enforce the peace plan whether or not it will be accepted by all of the factions in the struggle (Operation Disciplined Guard). Finally, NATO is planning an operation to support the withdrawal of all the UNPROFOR from former Yugoslavia in case of the failure of all the efforts for a peaceful resolution of the crisis/war (Operation Disciplined Effort).

For all operations, the main body of the command and control chain is the NATO command and control (C^2) structure; nevertheless, the basic structure has been modi-fied in order to interact with the UN authority that retains the power to authorize and veto all military interventions. As a matter of fact, when enforcing the no-fly zone, NATO can decide to intervene autonomously, notwithstanding the connections between the OPCON/TACON authorities (NATO and the UN), especially for CAS/CAP (close air support/CAP, or push CAS). This has proved to be a major downside of the whole system.

Following is a description of some of the aspects of all of these operations, including such things as the concept of operations, risk assessments, assets employed, operational downsides, and other relevant aspects.

Operation Deny Flight

The concept of operations is as follows:

- NATO will conduct air operations to prevent any flight not authorized by the UN inside or outside of Bosnia-Herzegovina by establishing CAP stations under the control of NATO airborne early warning (NAEW) aircraft.

- CAP aircraft will normally operate from air operating bases in Italy and from aircraft carriers.

- CAP aircraft will police the no-fly zone in the area of operations.

- Aircraft not authorized by the UN entering/approaching the no-fly zone will be interrogated, intercepted, escorted, monitored, turned away or engaged if necessary in accordance with the approved ROE.

Operational control has been transferred from the Supreme Allied Commander, Europe (SACEUR) to the Commander in Chief, Southern Europe (CINCSOUTH), the theater mission commander. From them it is delegated to the regional air commander (COMAIRSOUTH) for the land-based assets, and to the regional strike forces commander (COMSTRIKEFORSOUTH) for the carrier-based assets. Tactical control is the same for all the assets (land-based and carrier-based).

NATO was given the authorization and mandate to enforce the no-fly zone. In order to carry out the 24-hour combat air patrols (CAP) required by Operation Deny Flight, many different assets with different roles/missions are employed.
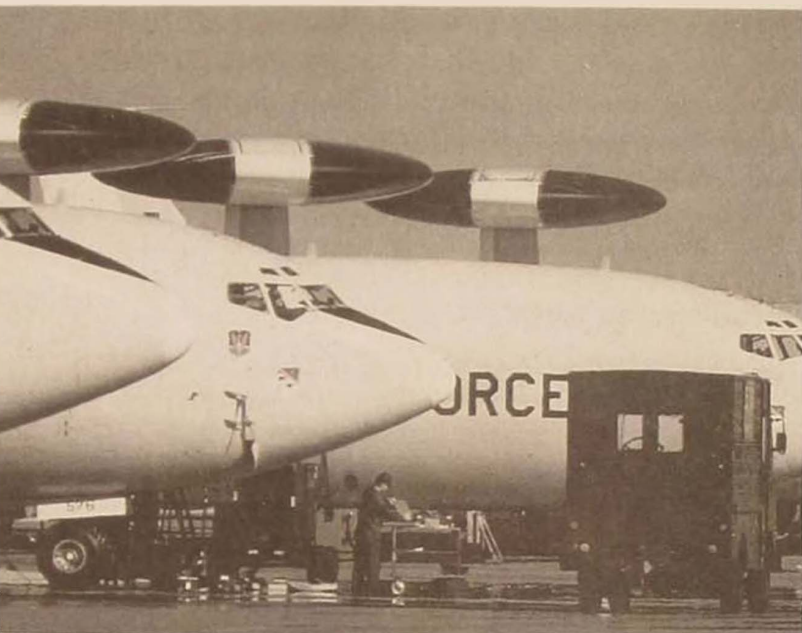
It is exercised by the commander of Fifth Allied Tactical Air Force (COMFIVEATAF), who runs all operations from the Combined Air Operations Center (CAOC) in the commander's headquarters in Italy. The two regional operations centers (ROC) that normally exercise tactical control in that specific area have turned back their responsibility to COMFIVEATAF. Now they provide support for air traffic control, search and rescue operations (SAR), and air defense activity on Italian territory and over the Adriatic Sea.

In order to carry out a 24-hour CAP operation, different assets with different roles/missions are employed. In particular, the following assets (land and carrier-based) are involved:

- All-weather interceptors (AWX) and clear-weather interceptors (CWI).
- Tankers (air-to-air refueling).
- NAEW (AWACS).

- Suppression of enemy air defense (SEAD) assets.
- Combat search and rescue (CSAR).
- Reconnaissance assets.

The overall assessment of the risk given to this operation is from medium to low. Older-generation surface-to-air missiles (SAM) pose a low threat to CAP aircraft operating at high altitudes (above 15,000 feet). The risk increases during medium- to low-altitude intercepts as aircraft become vulnerable to antiaircraft artillery (AAA) and handheld SAMs.

In spite of the operation's effectiveness against tactical aircraft, which has been considered good, the number of violations of the no-fly zone that go undisputed still is considerable, mainly because of operational limitations and political concerns. From an operational point of view, even if the weapon systems employed are really sophisticated, it is still difficult to detect and intercept low-speed, low-signature aircraft and helicopters flying close to the ground. The weather also continues to represent a limitation. Moreover, since the geographic boundaries are very close and the distances relatively short, it is quite difficult to react in time to any of those violations.

But the political concerns are even more serious for the following reasons: (1) retaliation against the UN patrols, humanitarian relief convoys, or flights within Bosnia-Herzegovina can be expected; (2) the possibility that the Serbs in Bosnia-Herzegovina will fire SAMs and AAA against CAP aircraft enforcing the no-fly zone is more likely; (3) there is a likely possibility that the Serbs will hamper UN efforts to conduct their operations into Bosnia-Herzegovina; and (4) the different perceptions of the Bosnia-Herzegovina War among the international community can be exploited by the Serbs, or by the Muslims blaming the Serbs.

In this regard, there are different assessments even inside NATO. Having different views inside the same organization can be

considered deplorable—for example, showing a more friendly attitude for one party (for instance the Bosnian Muslims)—but in such a situation where the UN and NATO must be neutral, it is an even bigger mistake.

All these concerns and limitations, well known by NATO before accepting the enforcement of the no-fly zone, have caused trouble for the UN and NATO. The AAA has been used against humanitarian flights, and the SAMs have been used to shoot down both humanitarian relief flights and CAS/CAP flights. Several times humanitarian operations have been hampered and the UN-PROFOR have suffered ambushes and violence. Those actions against the UN and NATO have been conducted not only by the Bosnian Serbs (as may be expected), but also by the Croatians, the Chetniks, and even by the Bosnian Muslims, all for different reasons (to protest against the embargo, to blame their opponents, and so on).

In spite of the fact that four Bosnian-Serb aircraft have been shot down, the violations of UNSC Resolution 781 continue. From a military and political point of view, therefore, Operation Deny Flight has been quite unsuccessful and certainly not cost-effective. Deny Flight is a very expensive operation in terms of flight hours, logistical support, and attrition (so far, at least six NATO aircraft have been lost during transfer flights). To assure 24-hour CAP operations, a large number of assets (tactical fighter, tanker, NAEW, and combat search and rescue [CSAR] aircraft) and flight hours are required. A force of more than 160 NATO military aircraft continue to fly 80 to 100 sorties a day over Bosnia-Herzegovina. The daily Bosnian military flying operations involve more than 4,500 personnel from 12 countries.[13] From the beginning of Operation Deny Flight, such a large number of hours have been flown that it is not affordable for some participant nations. On the other hand, Operation Deny Flight represents the only concrete answer that the international community (NATO) has been able to find in order to protect the civilian population from the ongoing aggression.

CAS/CAP (support CAS or push CAS)

The CAS/CAP mission is part of Operation Deny Flight (phase III, step 4). The concept of operations is as follows:

- When requested by the UN authority through an air operations coordination center (AOCC), CAS assets may be employed in Bosnia-Herzegovina to support UNPROFOR.

- All CAS operations are limited to the degree, intensity, and duration necessary to achieve the specific objective with the minimum collateral damage that is militarily feasible, avoiding any damage to friendly forces (UNPROFOR).

- All CAS missions must be conducted under the control of a forward air controller (FAC) on the ground or airborne; weapons can be released only when the target has been positively identified by the aircraft crew and after the FAC clearance.

Unlike enforcement of the no-fly zone, CAS interventions cannot be decided by NATO autonomously. From the UN-designated ground commander, the request goes to the COMUNPROFOR (responsible to the secretary general of the UN) in the AOCC (in former Yugoslavia), and from the AOCC it goes to the NATO C^2-CAOC (in Italy).

The following land- and carrier-based assets are involved for CAS/CAPs:

- Visual flight rules (VFR) and all-weather attack aircraft.

- Tankers (air-to-air refueling).

- NAEW (AWACS).

- Suppression of enemy air defense (SEAD) assets.

- CSAR aircraft.

- Reconnaissance assets.

- Electronics-jamming aircraft.

Despite all the efforts to create a communication connectivity between NATO and the UN authorities that is suitable for near-real-time passing of information, the solution that has been found is too complicated and intricate to meet the operational needs. In other words, in the time the request is processed, the threat disappears. On the other hand, all NATO allies agreed that the United Nations must retain the final say on whether or not air strikes are launched by NATO planes and when they will be launched.[14]

Another important operational limitation is that CAS/CAPs cannot be conducted at night or in poor weather conditions. That is because it is absolutely mandatory to have a positive (visual) identification of the target in order to avoid collateral damage or damage to friendly forces. Of course, these limitations can be exploited by the "enemy" forces.

As an overall assessment, other than to show our will by reacting in some way, CAS/CAP operations with those limitations have a very limited operational value. Moreover, the possibility of Serbian retaliation against the UNPROFOR is even more likely than in the enforcement of the no-fly zone. For that reason (the fear of Serbian reprisals against peacekeepers) the UN commanders have been reluctant to approve anything other than limited strikes.[15]

Operation Sharp Guard

On 29 May 1993, the Supreme Headquarters, Allied Powers, Europe (SHAPE), worried about a possible (even if quite unlikely) surface threat against the navy units (NATO and WEU) enforcing the embargo in the Adriatic, requested the availability of air assets from NATO countries for an operation called Sharp Guard. This 24-hour operation has been carried out by land- and carrier-based tactical fighter-bombers and maritime patrol aircraft (MPA) equipped with air-to-surface weapons. The command and control chain is the NATO C^2 (CAOC-FIVEATAF), with the only difference being that the scramble of the land-based assets is technically ordered by the competent ROC.

For this operation, the term *Surface CAP* (SUCAP) has been adopted because the tactical fighter bombers are normally on quick readiness alert (QRA) on the ground. Of course, this is an operational limitation, but, on the other hand, a CAS/CAP for 24 hours to meet this requirement would have been unaffordable and not cost-effective.

Even if this is a 24-hour operation, there are many doubts about the effectiveness and the opportunity of using air assets against a surface threat during night or poor weather conditions, or even in daylight. The Adriatic Sea is relatively small and the concentration of friendly ships is very high. Most of the SUCAP assets are equipped with standoff weapons. For obvious reasons, NATO does not foresee the overflight of targets. The likely targets are small coastguard cutters and speedboats, but their high speeds and low signatures make them inappropriate targets for costly standoff missiles. In such an environment, the launching of a standoff missile against a radar signal, confirmed as an enemy by a friendly ship, could be ineffective and probably quite dangerous.

Operation Disciplined Guard

Operation Disciplined Guard, or peace plan, is already defined and will be implemented, with the consensus of the UN and NATO authorities, as soon as the peace conditions are accepted by all the parties involved in the Bosnia-Herzegovina War. It foresees four different phases during which NATO forces will be deployed in the contingency area to restore normal operations (peace). The plan foresees deploying troops and logistical support to staging bases in Italy. The initial operations (deployment of the first units) will be conducted by air operations, then troops and logistical support will be transferred via sea and surface (railroad). So far, the plan

has been implemented only in regard to the predisposition of the staging areas for hosting the large number of personnel and the huge amount of logistical support.

For this operation, no one foresees any combat operations or the involvement of air assets other than airlift missions.

Operation Disciplined Effort

After the failure of all the efforts to establish peace in Bosnia-Herzegovina, many nations participating in the UNPROFOR operations have started to discuss the possibility of a quick withdrawal of their troops from the former Yugoslavia. These discussions concern considerations of cost, the risks involved, and the effectiveness of the mission.

NATO is now planning an operation to support and protect the UNPROFOR troops during the possible withdrawal (Operation Disciplined Effort). The so-called "exit point" represents the most vulnerable aspect of this operation. As former US Secretary of State Lawrence Eagleburger stated, "If you have a clear exit point in a place like Bosnia, it is like telling the parties that when our people get killed we will leave. And that is exactly what the opponents of our presence would like. Instead of reducing the danger to our forces, it invites attack."[16]

This plan foresees two possible environments: permissive or hostile. It foresees four phases to be accomplished in about six months. In the first phase, the forces involved will be deployed in Italy and will operate under NATO command and control. The second phase is dedicated to specific training in order to execute the operation. In the third phase, the forces will be deployed in the area of operation. In the fourth phase, NATO forces will support and protect the UNPROFOR withdrawal.

Even if the withdrawal operations should start in a permissive environment, a quick change to deep hostility towards the UN troops is considered quite likely. Therefore,

the disposition of NATO troops must be appropriate for the worst eventuality. Actually, involved in this operation will be three brigades in Bosnia (UNPROFOR troops converted); one brigade in Croatia (UNPROFOR troops converted); one brigade on ship ready to intervene (US Marines); three brigades in strategic reserve on Italian territory; about 130 tactical and support aircraft for SAR and CSAR operations; and about 130 attack helicopters and three carrier groups in the Adriatic Sea.

As an overall assessment from military and political points of view, the NATO involvement in the Bosnia-Herzegovina crisis/war has not produced any remarkable result so far. Moreover, what the Balkan crisis highlighted was that NATO had a function that it has not yet been able to fulfill in the 1990s and also that the other potential peacekeeping forces (UN, WEU) have been unable to fill this need.[17]

Bosnia can be considered also as an arena outside the borders of NATO for an all-European action, but the WEU patrols in the Adriatic revealed demonstrably that the union has neither the political will nor the military resources to conduct a policy independent of NATO. Nevertheless, NATO and WEU intervention in the Balkan crisis represents the only concrete answer that the international community has been able to find.

Airpower Doctrine

The US National Security Strategy of Engagement and Enlargement stresses three primary objectives: (1) enhance security, (2) promote domestic prosperity, (3) advance democracy. These objectives put a priority for national security on assisting failed states.[18] That is the scenario of unconventional wars and OOTW. The implication for the US armed forces is that they need to be prepared for those contingencies as well as for conventional wars. Operations and missions

for these contingencies are addressed in the doctrines of the Army,[19] Navy,[20] and Marine Corps.[21] As matter of fact, Navy doctrine specifically addresses the Bosnian War as an example of peacekeeping operations.[22] Air Force doctrine addresses the issue in a marginal way without mentioning any specific role for airpower.[23]

Air Force Manual (AFM) 1-1, published in March 1992, can be considered without any doubt an outstanding document when regarding conventional wars. Indeed, AFM 1-1 provides a sound doctrinal basis for conventional theater conflicts such as Desert Storm in which new technology, techniques, and tactics represent the evolution of the airpower coming from the experience of the Vietnam War. This new version of Air Force doctrine, to some degree, does recognize that technology has changed the nature of war. The doctrine that is based on theory and experience sometimes is driven by technology rather than by vision. That is commonly considered a mistake,[24] but when new technology is ahead of its doctrine, an updating of the doctrine is absolutely inevitable. If new technology has changed the war, the nature of war itself has also changed (different forms and rules). For a better understanding of this point, it is enough to simply compare the Gulf War with the Bosnian War.

AFM 1-1 takes into consideration only conventional wars, which penalizes the Air Force when it is called to plan and assess possible scenarios and the spectrum of intervention in wars such as the one in Bosnia-Herzegovina. If theory must look far into the future, there is no need of great vision to understand that scenarios such as the one in Bosnia-Herzegovina will proliferate in the future.

The British army is presently seeking to develop a tactical doctrine based on the Bosnia experience in order to reflect new operational realities.[25] In this first step, the operational and strategic levels of operation are not addressed, but it still is a step in the right direction.

Airpower Role and Mission

Notwithstanding the political failure of the NATO mission in Bosnia, the experience provides some "lessons learned" that can be useful for similar situations in the future and even for validating doctrine at the tactical and operational levels.

The lessons learned for airpower can be grouped in three distinct areas: (1) what has proved to be valuable and useful, (2) what must be avoided, (3) what needs to be improved or better exploited.

In spite of some concerns about the cost-effectiveness of maintaining aircraft in CAP for 24 hours a day and for 365 days a year to deny certain armed forces the use of combatant aircraft, the system has proven to be effective. On 28 February 1994, F-16 fighters under AWACS control downed four J-1 Jastreb[26] aircraft that were attacking ground targets inside the no-fly zone.[27] In this mission, F-16s have proved to be adequate for such situations. The AWACS, as in the Gulf War, has provided surveillance and targeting information essential for enforcing no-fly zones.

> *US armed forces . . . need to be prepared for [unconventional wars and OOTW] as well as for conventional wars.*

The will to support at any cost the Army and Navy and the need to see or look for a role and a mission for airpower in any situation can be responsible for a misuse of airpower itself. That is the case of the air support for the Navy in the Adriatic Sea against an unlikely threat (Operation Sharp Guard) and the request for close air support in Bosnia-Herzegovina for 24 hours a day. In both situations, the clear and sure identification of the target is paramount. It cannot be accomplished in poor weather conditions or during the night. Moreover, the conditions for a so-called surgical air strike that could solve a contingency situation (defense or

support to the UNPROFOR), or that could help to win a victory at minimal cost, are not present in the former Yugoslavia. The heavily armed Serbs can defeat an invader, as did the Chetniks and partisans in World War II.[28] Finally, the surgical air strikes can be seen by Bosnian-Serbs as the preparations for direct military intervention, therefore resulting in an immediate escalation in fighting, with significant civilian casualties.

On the other hand, whether or not CAS/CAPs have demonstrated operational limitations in particular situations, they have validated the Air Force role for this mission. In the long debate between the Air Force and Army about the effectiveness of using aircraft or attack helicopters for the CAS mission, the present trend, even if unconfessed, is to believe that attack helicopters probably are more adequate and suitable for this requirement. That could be true in a conventional war in which there are well-defined lines such as the fire support coordination line (FSCL), the forward edge of battle area (FEBA), and so on. In that situation, the friendly troops have their helicopters close to the enemy troops. But in contests such as the one in Bosnia-Herzegovina, where the friendly troops are spread out in many small spots surrounded by potential enemies, the aircraft are without any doubt more appropriate for such CAS missions.

What must be absolutely avoided in the future are the complications of the command and control system (C^2). NATO, as it has demonstrated with the creation of a new command and control structure (CAOC), cannot rely on structures already in place for all the contingencies. Moreover, NATO C^2 cannot be mixed with other C^2 structures (UN). When NATO accepts the mandate from the UN, the ROE must be clear and the authority to implement those ROE must be delegated by the UN to the NATO C^2. Other solutions can only lower the operational effectiveness.

In such situations, as generally is the case in peacekeeping operations, command and control arrangements find many objections and opposition from the participating states. All states are reluctant to place their troops under UN command. Gen John Shalikashvili, the chairman of the Joint Chiefs of Staff, stressed that "US troops participating in international peacekeeping will still report ultimately through their US chain of command, even though they may be deployed under the 'operational control' of a foreign commander leading a UN or NATO coalition." He emphasized in September 1993, however, that "the US views such operational control authority as limited and only acceptable under specific conditions for short periods of time."[29] It means that a significant improvement in the command and control chain which represents the most delicate area, is even more difficult to find than is a solution to the problem of transferring the authority from the UN to NATO. Progress can be made in the following areas to improve the effectiveness of airpower in contests such as OOTW and unconventional war.

J-STARS

The joint surveillance target attack radar system (J-STARS) is an airborne system intended to provide joint Air Force and Army management of the battle area. In other words, J-STARS does for the ground battle what AWACS does for the air battle. The capability to provide near-real-time battlefield surveillance and targeting information for both the Air Force (surgical strikes) and the Army (UNPROFOR in this case) is essential also in contests such as the one in Bosnia-Herzegovina

After its Bosnia-Herzegovina experience, NATO is interested in the acquisition of J-STARS assets.[30] The aircraft would be as much a political instrument as a military asset in NATO's peacekeeping role. J-STARS data on troop movement violations or shifts of weapons from storage areas would be reported to the appropriate international bodies such as the UN. In this way, there will be
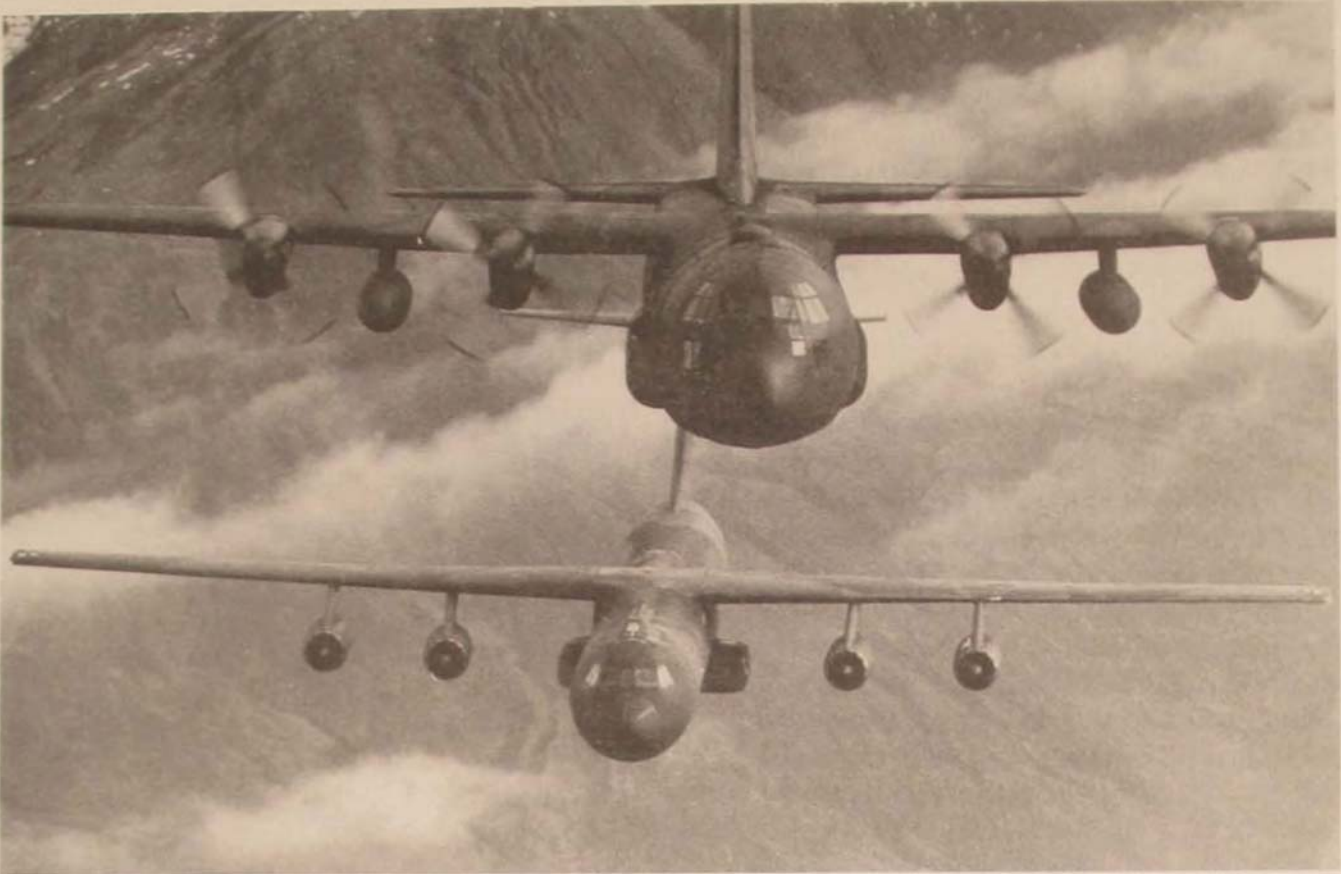
The Balkan War has dramatically shown us that our airlift fleet will now be called upon to operate in hostile or potentially hostile areas. Crew tactics, training, and doctrine must address when and how to use airlift assets in such scenarios.

no need for 14-hour CAS/CAP since push CAS could be ordered more in advance.

Nonlethal Weapons

In unconventional war and OOTW, the collateral damage to the economic and social infrastructure—as well as casualties to noncombatants, the civilian population, and peacekeeping forces—must be limited to the maximum degree. In this contest, the right avenue to follow is to develop weapons, munitions, and nonlethal or disabling systems capable of avoiding or minimizing the loss of life and associated damage.[31]

Airlift Fleet

The airlift fleet (tactical and strategic) is now called on to operate in different scenarios. Unlike the cold war period, when the fleet operated inside and between friendly countries only, it is now called on to carry out airlift for humanitarian and relief operations inside hostile or potentially hostile countries. There is a need, therefore, to make the airlift fleet more survivable in operations such as those conducted in Bosnia.[32] Not only tactical aircraft are involved in those operations (C-130s, for example), but also strategic assets such as C-5s and C-141s. All these assets need self-defense devices; the crews need special training, for example, in such matters as how to be less exposed to AAA and handheld SAMs during takeoff and landing; and doctrine must address the airlift issue in the proper way (when and how to use airlift assets in such scenarios).

Joint Doctrine and Joint Operations

If jointness has ever represented the challenge for all the armed forces in the world, budget reductions have turned this challenge into a survival issue. Its capabilities and effectiveness can be maintained only with multiservice synergy.

Each service has come a long way to make joint force a reality, but the real difficulty remains in the area of command and control and in joint doctrine. Since the chairman of the Joint Chiefs of Staff was committed in 1986 to develop a doctrine for the joint employment of the armed forces, many joint publications are now available (*Joint Warfare of the US Armed Forces, Unified Action Armed Forces, Doctrine for Joint Operations, Doctrine for Planning Joint Operations*, etc.).[33] The problem with all these publications is that they are not always in compliance or coordinated with those of the other services. For this reason, multiservice interoperability has never been achieved.

While multiservice interoperability is a problem at home, the multinational and multiservice interoperability with NATO allies is even further away. In spite of this fact, the United States should increasingly expect to operate with ad hoc coalitions rather than alliances.[34] Of course, the other NATO countries suffer from the same problems.

Moreover, the NATO joint doctrine itself is not applicable. NATO naval doctrine for operations in brown water is not coordinated with NATO air force doctrine, and NATO joint doctrine is not coordinated with either document. The three documents use different terms, definitions, and procedures. For instance, the same area of responsibility for air defense operations can fall simultaneously under carrier group and air force responsibility. And that is precisely the case concerning the Adriatic Sea in the Bosnian War. Only because there is no air threat has the problem never been raised.

In joint operations, the role of the joint force air component commander (JFACC) is considered indispensable. But since the JFACC is more than a coordinator, its presence can sometimes be seen as a command that violates unity of command and interferes with the theater commander's role.[35] In situations such as the Bosnia War, there is no need for a JFACC. Rather than exploiting structures already in place, it seems that any situation needs "ad hoc" structures. That was the case in the Gulf War, but it is also the case in the Bosnian War (CAOC in Italy and AOCC in the former Yugoslavia). That may mean that it is better to maintain the maximum flexibility rather than to focus on specific structures.

Conclusion

Since NATO accepted the mandate to enforce UNSC Resolution 781, 66,917 Deny Flight sorties[36] (close-air-support and no-fly zone missions) have been flown, but not any of the political and military objectives have been achieved. At this point, despite all the efforts of the international community (UN) to protect the rights of the minorities, the Serbs have won the war in Bosnia.[37]

As the Austro-Hungarian empire became the Balkan's victim in 1918, NATO could be Yugoslavia's next victim (not only because the military success in Bosnia is under discussion, but also because the relations among some allies are in danger). The relations between Greece and Turkey have worsened, but other disagreements are growing inside and outside the alliance. The reluctance to launch air strikes because of the fear of Serbian reprisals against UN peacekeepers has caused friction with some NATO allies, particularly the US, who believes that if Serbian violations go unpunished, the alliance's credibility will be at stake.[38] It is useful to notice that Russia has already signed a new military-cooperation agreement with the government of Serbia, to become effective when sanctions are lifted.[39]

Even if what is going on in Bosnia will not shape the world of tomorrow,[40] we can

expect small regional conflicts (niche wars) to spread abroad with a significant impact on the armed forces of those countries that want to be engaged in peacemaking and peacekeeping operations. In this regard, the United States, because of its strategy of enlargement and engagement, is in a "pole position." In my opinion, it is not only a matter of budget but also of what shape (size and force capabilities) to give to the armed forces. That is a problem of doctrine, procedures, weapons, and, despite different notable opinions,[41] it is a problem of specific training.

Trying to find a role for airpower at any cost could be a mistake, especially when collateral political or military (tactical and strategic) implications are not well considered. The use of air assets in Operation Sharp Guard to protect NATO and WEU ships in the Adriatic Sea (an environment where there is no way to use standoff weapons without danger for the friendly forces) is an unnecessary and useless forcing that shows, at the least, a lack of doctrine.

Operation Deny Flight has shown the capabilities of allies to fight a "third-wave"[42] war form, but what are the political and military outcomes when the enemy is only able to fight wars such as "first- and second-wave" forms? There are opinions that the NATO's decision on the use of airpower (air strikes) substantially eased the pressure on Sarajevo, prevented the fall of Gorazde, and provided the foundation for last spring's agreement between the Bosnian Muslims and Bosnian Croats to end their conflict in spring 1994.[43] In my opinion, nothing is further from reality. Every time the Serbs, as well as the other minorities, declare to accept something (peace plans, ultimatums, agreements, cease-fires, and so on), it is just because they need some rest or breath to reorganize their troops or to get and exploit the international consensus. That has happened every time and will occur again. The Serbs are not scared by air strikes at all. They know very well that a few air strikes against a bunch of old tanks could not affect their military capabilities; they are only smoke in the eyes of the international community that wants to do something to prevent the ethnic cleansing, the massive refugee flows, and so on. On the other hand, the fear of retaliations against the UNPROFOR is a heavy binding factor for NATO air strikes.

Moreover, the "dual key" command system in Bosnia requires both UN and NATO commanders to approve any military action by NATO forces.[44] This complication is against the principle of unity of command, a principle that finds more reasons in CAS operations where the need of a command and control system suitable for near-real-time passing of information is essential.

What Deny Flight has proved in a positive prospective is: (1) close air support still remains a mission for the Air Force (in such environments attack helicopters make less sense); (2) the weapon system F-16 is sophisticated enough and appropriate for the requirement; and (3) timely and accurate information represents the real power, the challenge for the future (AWACS, J-STARS, and satellites).
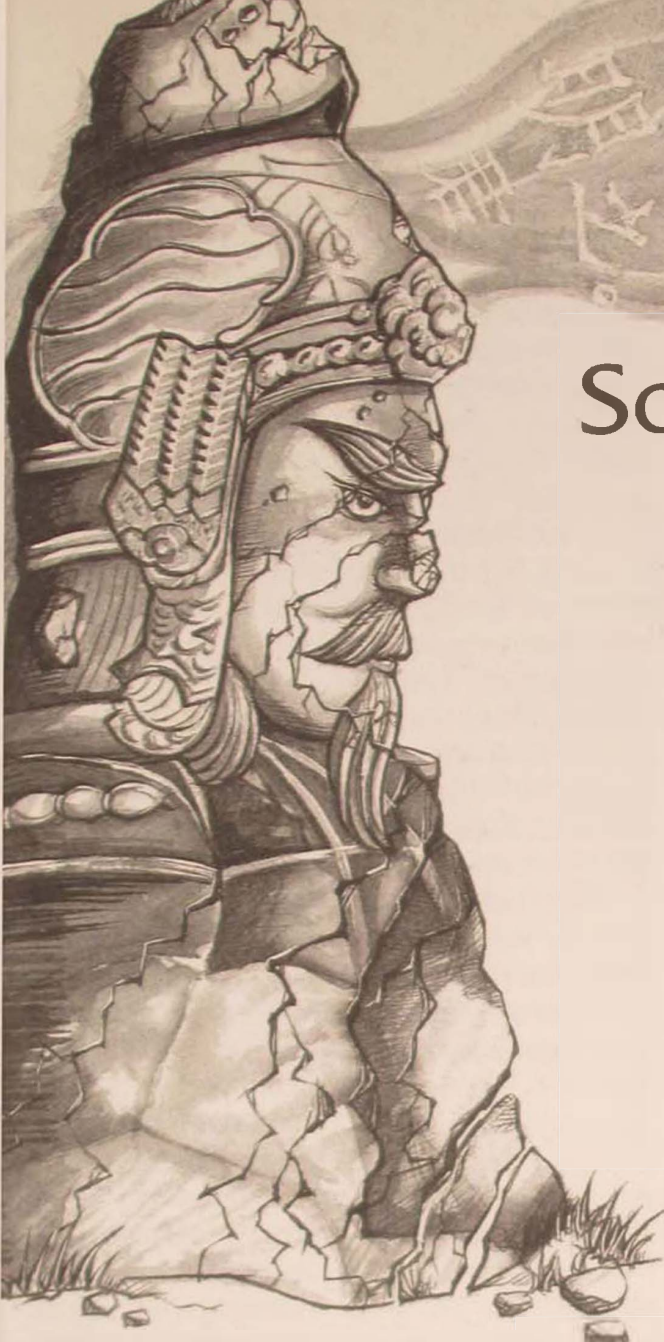
Whether the war is an expression of the Society,[45] the transformation of the Society is the main cause of the transformation of war. The Bosnian War represents a good example of this transformation—a war where the Clausewitzian concept of trinity doesn't have much sense. That doesn't mean that conventional wars (third-wave wars or previous) will not occur any longer, the point is that the armed forces have to expect to be employed in very different contingencies.

The message coming from Bosnia-Herzegovina for the Air Force is that there is a need of: (1) an updated doctrine; (2) specific training; (3) high-tech weapon systems; (4) an advanced and integrated command and control system; (5) a more sophisticated information system; and (6) improved self-defense systems (passive and active) for airlift fleet (both tactical and strategic).   □

Notes

1. Larry H. Addington, *The Patterns of War since the Eighteenth Century* (Bloomington, Ind.: Indiana University Press, 1984), 123.

2. "Yugoslavia: Introductory Survey," *The Europa World Year Book 1994* (London: Europa Publications Limited, 1994), 3346-51.

3. Susan L. Woodward, "Conflict in Former Yugoslavia," *Great Decisions* (Ripon, Wis.: Ripon Community Printers, 1994), 3-14.

4. "Yugoslavia: Introductory Survey," 3346-51.

5. Lawrence S. Kaplan, "NATO in the 1990s: An American Perspective," *Paradigms: The Kent Journal of International Relations* 7, no. 2 (Winter 1993): 13. The article mentions the recognition of the independence of Croatia, but the same thing happened to Slovenia.

6. Woodward, 3-14.

7. Mats R. Berdal, "Fateful Encounter: The United States and UN Peacekeeping," *Survival* 36, no. 1 (Spring 1994): 38.

8. Ibid., 36-37.

9. Alvin and Heidi Toffler, *War and Anti-War: Survival at the Dawn of the Twenty-first Century* (Boston: Little, Brown & Company, 1993), 89.

10. Ibid., 33-37.

11. Ibid., 38-43.

12. Ibid., 64-85.

13. Craig Couvalt, "Joint-STARS visit tied to NATO surveillance needs," *Aviation Week & Space Technology,* 3 October 1994, 30.

14. Charles Aldinger, "Beefed-up Enforcement of Resolutions is Sought," *Washington Times,* 30 September 1994, 17.

15. Ibid.

16. Berdal, 39.

17. Kaplan, 16.

18. Hans Binnedijk and Patrick Clawson, "Assessing US Strategic Priorities," *Joint Forces Quarterly,* November 1994, 15.

19. Field Manual (FM) 100-5, *Operations,* chapter 2, "Operations Other than War," 14 June 1993, 2-0.

20. Naval Doctrine Publication 1, *Naval Warfare,* chapter 2, "Naval Operations—Other Than War," 28 March 1994, 21.

21. Fleet Marine Forces Manual (FMFM-1), *Warfighting,* 6 March 1989. Indeed, the issue is only marginally touched on in chapter 2, "The Spectrum of Conflict," 21.

22. Naval Doctrine Publication 1 states that naval doctrine in the peacekeeping operations in the former Yugoslavia and Adriatic Sea is as follows:

> Supporting United Nations Security Council resolutions, NATO Standing Naval Forces and other US and Western European Union naval forces in a cooperative effort joint to form combined task forces. In the Adriatic Sea, destroyers, frigates, attack submarine, and support ships from 11 nations conduct maritime patrols for Operation Sharp Guard. In the airspace over the Republic of Bosnia-Herzegovina, five nations support Operation Deny Flight - enforcing a No-Fly Zone with shore and carrier-based fighter and attack aircraft. (Page 23)

23. Air Force Manual (AFM) 1-1, *Basic Aerospace Doctrine of the United States Air Force,* March 1992 , vol. 1, chap. 1, par. 1-5b, 3. Peacekeeping functions, support for insurgencies and counterinsurgencies, and combating terrorism often involve activities short of war. American military forces may be called on to perform specific peacekeeping functions.

24. Gen Henry H. ("Hap") Arnold at the end of World War II said, "Any air force which does not keep its doctrines ahead of its equipment, and its vision far into the future, can only delude the nation into a false sense of security." Quoted in Robert Frank Futrell, *Ideas, Concepts, Doctrine: Basic Thinking in the United States Air Force,* vol. 2, *1907-1960* (Maxwell AFB, Ala.: Air University Press, 1989), 180.

25. Berdal, 44.

26. The J-1 Jastreb is a light single-seat attack aircraft with limitations in maximum speed, range, and payload. It can be compared to the US AT-37, but with less performance and more limitations (avionics, pressurization, etc.).

27. Department of the Air Force, *Air Force Issues Book 1994* (Washington, D.C.: Government Printing Office, 1994), 2.

28. Kaplan, 13-14.

29. Berdal, 41.

30. Couvalt, 30.

31. *Air Force Issues Book 1994,* 11.

32. Ibid., 21.

33. *Joint Doctrine Capstone and Keystone Primer* (Washington, D.C.: Joint Chiefs of Staff, 15 July 1995).

34. Binnedijk and Clawson, 17.

35. J. L. Whitlow, "Who's in Charge?" *Joint Forces Quarterly,* July 1994, 64-70.

36. Gen. George Joulwan, SACEUR/CINC EUCOM, address to the Air War College, Maxwell AFB, Ala., 11 April 1995.

37. Sen Orrin Hatch, "Strategic Misfires over Bosnia's Plight," *Washington Times,* 7 December 1994, 21. The article reports that Defense Secretary William Perry has announced that, despite the efforts of the international community, the Serbs have won the war in Bosnia.

38. Aldinger, 17.

39. William Pfaff, "Yugoslavia's Next Victim: NATO," *Baltimore Sun,* 6 March 1995, 7.

40. Gen John Shalikashvili, chief, Joint Chiefs of Staff , address to the Air War College, Maxwell AFB, Ala., 16 March 1995.

41. Ibid. In his address, General Shalikashvili said that it is enough to be well trained for the primary mission (fight and win conventional wars) since no special training is required.

42. Alvin and Heidi Toffler, 64-80.

43. Anthony Lake, "American Power and American Diplomacy," address at Harvard University, Cambridge, Massachusetts, 21 October 1994.

44. "US Commander Speaks on New Role for NATO on Its Southern Flank," *Christian Science Monitor,* 14 March 1995, 7.

45. Alvin and Heidi Toffler.

Some Cautionary Thoughts on INFORMATION WARFARE

R. L. DiNardo and Daniel J. Hughes

ONE OF THE most curious characteristics of the United States military establishment since World War II has been its tendency to become slavishly addicted to fads. In the immediate aftermath of World War II, fascination with nuclear weapons to the exclusion of almost everything else led the Army to such unhappy experiments as the "pentomic division" and the "Davy Crockett."[1] The Air Force, not to be outdone, put nuclear weapons on fighters. All of this had the result of leaving the services poorly prepared to fight a limited conventional war in Korea and a limited unconventional war in Vietnam.[2] Then during the late 1970s and the heyday of the military reform movement, *maneuver warfare* and *mission-oriented tactics* became the buzzwords. The new enthusiasts held up the German army of World War II as a military paradigm, its capabilities misunderstood by many people who had little or no knowledge of the primary German sources.[3]

Now, in the aftermath of the Gulf War, the United States military is once again awash in such catchphrases. Perhaps the first to weigh in was John Warden III, a USAF colonel who even before the war had posited the idea that air forces could essentially win wars alone by conducting "parallel war." This notion, combined with the apparent success of the air campaign in the Gulf and some very dubious historical interpretation, has given lots of ammunition to those who would accuse air forces of engaging in muddled thinking.[4] Another even more amorphous term is *information war*. Although it has been defined in

several different ways, the term has appeared increasingly in books, articles in professional military journals, and official publications.[5]

This article proposes to investigate this notion and its validity, at least as manifested in the open literature. We are well aware that there is much additional material, including the very definition of information warfare, lurking beneath the shroud of official secrecy. This article, therefore, will deal with basic concepts and assumptions instead of specific capabilities and vulnerabilities that remain classified.

For many true believers, the foundations of information war can be found in a book by Alvin and Heidi Toffler entitled *War and Anti-War: Survival at the Dawn of the Twenty-first Century.*[6] The Tofflers describe human history as going through a series of waves. Each wave and its wars are based on the means by which wealth is created. Thus, the first wave, starting at the beginning of civilization and lasting to some time in the nineteenth century, was based on agriculture. The second wave, beginning as early as the Renaissance and lasting through today, was based on manufacturing. Finally, the third wave, which we are now entering, is based on information. The Tofflers' book, although not widely reviewed in the scholarly literature, has received tremendous attention and acclaim within the government, gaining the approbation of people as influential as the Speaker of the House of Representatives.. The Tofflers have been most successful in getting the military, especially the Army and the Air Force, to accept the basic premises of their "wave" theory.[7] Alvin Toffler has been a guest lecturer at Army War College and at the Air War College for two years running. Students at both institutions, as well as the Naval War College, read *War and Anti-War* as part of the curriculum. At the Air Force Academy, an elective course is offered on information war, with a set of readings including large sections of *War and Anti-War*, as well as some other readings dis-

article. Although the Army is somewhat more skeptical of the Tofflers' notions, the wave theory was essentially adopted officially in *Army Focus 94: Force XXI.*[8]

The rise of the Toffler book to prominence within the country's military hierarchies at the same time that the academic world gives it little notice is a strange phenomenon. The very simplicity of the Tofflers' theory makes the book highly attractive. However, *War and Anti-War* is a book full of mistakes. Any historian seeking to bring out these errors would find *War and Anti-War*, to use an Air Force term, a *target-rich environment*. The Tofflers' theory, a neo-Marxist concept combining economic determinism with an overarching chronological framework, is reminiscent of elements of *The Communist Manifesto.*[9] In order to make history fit into their theory, the Tofflers are willing to reduce all societies (not to mention all wars between societies) to one of their simplistic broad characterizations and to rearrange certain chronologies so that events develop in the proper sequence. Unfortunately for those seeking comfort in the uncertainties of the ages, any system that seeks to grossly simplify something as complex and nuanced as the entirety of human history is bound to founder on those immovable obstacles, the facts.

This leads them into some erroneous notions. Here are a few examples. The depiction of the second-wave, industrial North overrunning the first-wave, agrarian South is an idea that serious scholars of the Civil War have long abandoned. No Confederate army was ever compelled to surrender because it lacked the means to fight. Even at Appomattox, the Army of Northern Virginia had plenty of small-arms ammunition for the infantry, plus an ample supply of artillery ammunition.[10] Likewise, to imply, as the book does, that Napoléon's armies were a product of second-wave mass production is simply contrary to every established fact about the period. The book's account of the origins of AirLand Battle is largely incorrect, neglecting

the most important elements of the new doctrine, ignoring the purpose of change, and attributing the substance of change to the wrong people.[11]

Equally flawed is the notion advanced by the Tofflers that "nationalism is the ideology of the nation-state, which is a product of the industrial revolution."[12] Nationalism is hardly an ideology, although it can be an important component of one. Here too their facts and chronology are wrong. Nation-states became clearly recognizable entities during the seventeenth and eighteenth centuries, well before the industrial revolution took hold across Europe or the world; and to attribute something as complex as nationalism to a single factor distorts the past. The Tofflers are no more successful when they venture into the realm of intellectual history. Two of the most consequential ideologies to emerge from the nineteenth century were Marxism and Nazism. Marxism was avowedly antinationalist; and the intellectual progenitor of Nazism, German *völkisch* ideology, was based on the notion of the agriculturally based, racially pure community rather than a nation-state governed by a liberal constitution.

Two streams of thought have emerged on the nature and uses of information war. The most common, tied directly to recent technological innovations and the experiences of the Gulf War, stresses digitization of the battlefield and incremental improvements to smart weapons, improved intelligence devices, deeper and even more precise strikes, and so forth. This view is particularly dominant in the Army's literature, though it finds its advocates in the Air Force as well.[13]

The more radical and speculative view is that information warfare is becoming an alternative to more traditional forms of war, a theory that would therefore discard much of the information-based weaponry of the first interpretation.[14] This notion, based on the Toffleresque idea of the third-wave, information-based society, holds that information can be used as a weapon. By wielding information as a weapon through the use of computers, the Internet, satellite communications, and so on, one could influence the decisions of an enemy.[15] Some writers have suggested using subtly altered images broadcast over television as a means of undermining a nation's will or the perceptions of its leaders, a process described rather opaquely as "neocortical warfare."[16]

This approach to information war has several problems. Although imaginative, most of the suggestions on potential measures, enemy reactions, and ultimate consequences are speculative beyond plausibility. The accompanying conclusions, sometimes given only by implication, are generally favorable to the author's thesis. In many cases, the author suggests that electronic measures taken against certain military or civilian targets would result in catastrophic and irreparable damage to key "information systems." These suggestions almost invariably lack any technical foundations and fail to consider countermeasures while assuming total system vulnerability. The various authors frequently advocate actions that allegedly might paralyze or confuse an adversary, but they fail to consider that the same measures might just as easily lead to entirely unanticipated results or even to consequences that would be inconsistent with or counterproductive to the original intent.

It's odd that the proponents of "third-wave" and "information" war should find inspiration in the writings of Sun Tzu, a "first-wave" thinker.

This is especially important when one considers that if these types of measures are to be undertaken to influence the thinking and behavior of foreign leaders, it would require, at the very least, a level of understanding of a country's history, culture,

politics, and mind-set that seldom exists in government and even in academe. Consider, for example, if we had decided to undertake these kinds of measures against the Soviet Union during the cold war. Whose advice should we have taken on how to implement these measures and what might have been the anticipated reaction of the Soviet leadership? Many "experts" on the Soviet Union, including Strobe Talbott, who currently is in charge of administration policy on Russia, made a great many pronouncements about the reaction of the Soviet leadership to Reagan administration policy in regards to the Soviet Union. The course of the 1980s and the collapse of the Soviet Union proved many of these prognosticators were wrong. We should also remember that the Soviet leadership was comparatively stable. How can one predict the behavior of such unstable characters as Muammar Qadhafi, Kim Jong Il, or Saddam Hussein? If academe cannot provide the kind of expertise needed to wage this kind of "information war," what can we expect from the government?

For all the technological wizardry and intelligence at our disposal, the coalition forces probably failed to find and kill a single mobile Scud missile launcher.

Accompanying this speculation is the search for supporting statements from distinguished military writers. In that group, Sun Tzu has suddenly become more quotable for those seeking ways to avoid traditional warfare rather than ways to conduct it more effectively. Sun Tzu's argument that "to subdue the enemy without fighting is the acme of skill" by attacking his strategy is perhaps the favorite aphorism.[17] Of course, this assumes that your enemy is willing to allow himself to be subdued without fighting. History tells us that governments are seldom so cooperative. Sun Tzu aficionados also seem unconcerned that he wrote these words in the context of ancient Chinese society, something of which we have only a limited knowledge and which may have no relation to us.[18]

Further difficulties appear when we take a more extended look at Sun Tzu. As a perceptive critic noted in a review of a book on Sun Tzu, Carl von Clausewitz, and Antoine Henri Jomini, all of Sun Tzu that comes down to us amounts to about 100 pages, as opposed to 600 pages of Clausewitz's writing and some 20 separate volumes published by Jomini.[19] In addition, if one reads Sun Tzu with care, it reads more like a series of aphorisms, some of which are relevant and many which are not, as opposed to the more systematic treatment of war in all its facets afforded by Clausewitz. One could perhaps speculate that it is the aphoristic style of Sun Tzu that makes him more attractive to readers who lack the patience to deal with the more sophisticated Clausewitz. Someone has suggested that Sun Tzu should be studied instead of Clausewitz because, among other things, Sun Tzu is shorter.[20]

A more serious problem in the ideas of those who would substitute information war for traditional conflict concerns the issue of what constitutes war and what this implies for politico-military relations. In an article in a recent *Airpower Journal*, Col Richard Szafranski defines warfare as "the set of all lethal and nonlethal activities undertaken to subdue the hostile will of an adversary or enemy."[21] Although Szafranski is thoughtful enough to attempt to differentiate between warfare and war, his definition still causes problems. If warfare includes all nonlethal activities, does this include means such as diplomacy and policy? Perhaps policy would become the continuation of war by other means. The idea that war is the normal state of affairs and that all actions of state and society must serve that master is a discredited notion.[22]

Equally unsettling is the internal aspect of this redefining of the relationship between

politics and war. The danger of reversing Clausewitz's ideas on civil-military relationships clearly emerges in the writing of another "information war" advocate, who argues that one of the promises of information war is that "at last, our military planners can be freed of political constraints."[23] This concept of information warfare is very dangerous from a civil liberties point of view. In an article in a recent issue of *Airpower Journal*, Col Owen E. Jensen wrote that in order to ensure our survivability in an information war, the military should make use of all "national assets and use all sectors of society." This would include, he said, all privately owned computers, fax machines, computer bulletin boards, and so on, including even the assets of international corporations. In fighting low-intensity conflicts against second-wave or first-wave opponents, Jensen advocates the use of bugging and various means of electronic surveillance.[24]

This notion is both impractical and dangerous. It is impractical because the vast differences in privately owned computer equipment and software make interoperability highly unlikely. In addition, the inclusion of so many computers would make the insertion of viruses a virtual certainty, since not all owners are as meticulous about the condition of their software as they should be. By contrast, a military system, unable to interface with any other computer system and to which only limited access is allowed, would be virtually impervious to the kinds of attacks envisioned by the proponents of information war. Even if the government mobilized all these computers, who would operate them? To press their owners into service would be ridiculous, as they have neither the training nor experience to allow them to operate in a military environment. You cannot take the designers of the latest computer version of "Dungeons and Dragons" and set them to work on creating a new battlefield simulation.

Given the impracticality of this from a military point of view, about the only thing that would come of it would be a massive intrusion on the part of the federal government into people's privacy. Any attempt by the government to mobilize the nation's privately owned computer assets, as Jensen advocates, carries with it a whole range of civil liberties questions that must be addressed. We should think very seriously about the possibility of surrendering some of our precious freedoms for a set of theories based on a concept of history unsupported by facts.

Unfortunately, *information war* has become so expansive a term that it now threatens to become a tautology by encompassing nearly everything beyond the most primitive forms of combat. Some include traditional intelligence as information warfare, while others include the capabilities inherent in certain weapons systems. Others see the decision to interfere in Somalia as an example of successful information war, presumably by the administration's internal foes who preferred that we intervene there rather than in Sudan, the site of much worse disasters.[25] This logic could be extended to acts of politics, advances in weaponry, and uses of propaganda. Indeed, the use of high-tech propaganda, some quite fanciful, is a major theme of some information war advocates.

This reliance upon new and old forms of propaganda, while attractive for those who wish to substitute a new form of mind control for violence, is yet another weakness of information war. Propaganda, unfortunately, has frequently been of only limited utility. It has been used since the dawn of organized warfare in both a positive and negative sense. It has always been designed to inspire confidence in one's own people and leaders and to alternatively ridicule, frighten, or demonize one's enemy. As such, it has always occupied a supplemental place in war, but that is all. The US decision to enter World War I, for example, was not influenced by British-inspired stories about Germans bayoneting Belgian babies as much as it was by the simple fact that the United States could not tolerate German domination of Europe. For all of Stalin's hypocritical appeals to Russian pa-

triotism, a much greater compelling factor for Russians to fight against the Germans was the brutal behavior of the German occupation authorities. The ultimate problem with even the slickest propaganda is that it does not always work, and even when it does, its effectiveness is limited.

The second approach to information warfare is often dismissed by some proponents as merely "digitizing the battlefield."[26] This concept of information war concerns the importance of information in conventional war. In this regard, perhaps the most significant statement comes from Alan D. Campen, in the preface to the book he edited, *The First Information War: The Story of Communications, Computers, and Intelligence Systems*: "The outcome [of the Gulf War] turned as much on superior management of *knowledge* as it did upon performance of people or weapons."[27] A number of articles have also emphasized this. The coalition forces, aided by superb communication networks, data links, satellite intelligence, and so on, were able to defeat the Iraqi forces, which had been rendered informationless by high-tech allied weaponry aimed at taking out Saddam Hussein's communications and early warning systems. This view, too, conceals more than it reveals. The expanding and improving scholarship on the Gulf War is rapidly undercutting the simplistic, optimistic views that were prevalent immediately after the war.[28]

The raising of information to the place of highest performance in war has dominated military thinking in recent years. Some advocates of the new theory have sought historical examples to justify their position and have proved quite able to oversimplify or play loose with the facts. Consider, for example, the following passage from *Army Focus 94: FORCE XXI* explaining how Robert E. Lee was able to defeat Joseph Hooker's Army of the Potomac at Chancellorsville:

> Subsequently, Lee's cavalry brought him the information that Hooker's right flank was three miles east of Chancellorsville. Lee acted on this information and inflicted a resounding

defeat. Lee won his information war, and it led to victory on the battlefield.[29]

It would be an understatement to say that this kind of oversimplification is intellectually dangerous. It overlooks the many factors that determined why Lee won and Hooker lost. Hooker, for example, was as well-informed of Lee's movements as Lee was of Hooker's. The Union commander simply misinterpreted the Confederate movements as a retreat. He did, however, alert Maj Gen Oliver O. Howard, commander of XI Corps and defender of Hooker's right flank, and ordered Howard to be prepared for a Confederate move against him, an order which Howard ignored.[30] The Confederate reconnaissance party looking for the end of Hooker's flank included both Stonewall Jackson and J. E. B. Stuart, the two senior Confederate leaders charged with delivering the attack. While reconnoitering, the group came under artillery fire from a masked Union battery. Although the reconnaissance party took some significant casualties, both Jackson and Stuart remained unscathed.[31] How would the course of the battle have been different if some lucky shells had disabled both Jackson and Stuart? If any of these factors had gone in Hooker's favor, what good would Lee's "information advantage" have been to him? The reduction of an event as complex and uncertain as Chancellorsville to information warfare should stand as an example of one-sided thinking. The *FORCE XXI* document, in which the Army formally adopts the Toffler wave theories of history, is equally off base when it implies that the United States and its Allies won World War II because of the intelligence advantages stemming from Ultra.[32]

The dangers of embracing this technical version of information war are fairly obvious to anyone with an appreciation of history. One of the developments hailed by some adherents of information war concerns the improvements in communications and the advantages they confer.[33] Yet every improvement in communications has always carried

with it the dangers of micromanagement, a peril that generally gets only lip service from information war advocates.[34] The recent literature on information warfare offers a particularly instructive example of distorting the historical record in the search for examples to support the new ideas. In a recent article, George Stein, using a lengthy paraphrase and quotation from a speech by Speaker of the House Newt Gingrich, cites Prussian general Helmuth von Moltke as someone who was able to harness the emerging technologies of railroads and telegraphs in the nineteenth century and create a new General Staff system accordingly.[35] Along the way, Moltke conveniently uses words that any information warrior would be proud to utter. It is highly doubtful that Moltke ever actually spoke the words attributed to him in this case. This question aside, these "statements" represent a very one-sided view of Moltke's opinions.[36] Moltke designed his system of giving orders not because information was readily dispatched over the new telegraph lines, but because it was not. Thus, he stressed subordinate initiative rather than the transfer of information. Moltke was in fact very suspicious of excessive reliance upon communications and fully understood the dangers posed by a capable telegraph system. He warned that the "most unfortunate commander of all" was the one with "a telegraph wire attached to his back."[37] Stein has misquoted Gingrich, who paraphrased Moltke's talks with himself. Evidently, neither Gingrich nor Stein checked the possible sources or placed Moltke's alleged statements in their historical context. Meanwhile, the readers of the professional literature have two new sets of erroneous "facts" ready to be mobilized in the war for information warfare.

The improvement of communications at the disposal of political leaders and military commanders has always carried the danger of disrupting the chain of command. Adolf Hitler, Joseph Stalin, and most recently Saddam Hussein have been held up as models of this. Lest one think that this applies only to dictators, the facts show that it goes for democracies as well. In the Civil War, both Jefferson Davis and Abraham Lincoln interfered with the conduct of military operations. So did Secretary of War Edwin Stanton and Ulysses S. Grant as commander in chief of the army, often driving commanders in the field such as William S. Rosecrans and George Thomas almost to distraction.[38] During World War II, the combination of wireless radio, a fertile imagination, and a stubborn personality made Winston Churchill almost as dangerous at times to the Allies as he was to the Axis powers.[39] Who can forget the image of Lyndon Johnson essentially conducting the defense of Khe Sanh from a sand table in the White House basement? Thus, every improvement in communications always carries this danger, which can be averted only if the higher commanders show the discipline required to avoid micromanagement.

All the information in the world will not help poorly motivated, badly trained, and undisciplined soldiers led by indecisive leaders fighting without a sound doctrine.

Another danger posed by this emerging version of information war is data overload, again something that has only been given lip service. The danger now is that commanders will be so bombarded by a blizzard of largely extraneous or even unessential data that it will obscure the real issues that have to be dealt with. One of the important distinctions that some information war advocates fail to make here is that between data and information. In order to be information, to have content, data must be interpreted and thus is subject to the imperfections of human beings. For example, the matter of the accuracy of bomb damage assessment is one of the hottest arguments still raging concerning the Gulf War. In addition, all the

intelligence data collection in the world could not solve some problems. For all the technological wizardry and intelligence at our disposal, the coalition forces probably failed to find and kill a single mobile Scud missile launcher.[40] For all of the data collection undertaken by the Stasi, the East German intelligence service, the East German authorities never had the slightest clue that their whole system would come crashing down so quickly.

One does not base grand theories on false facts; nor does one prepare for the future by distorting the past.

The reverse of data overload is also a problem. What should commanders do if they do not have all the data or information they want or think they need or have learned to depend on in peacetime training? If information is the most important thing in modern warfare, does its absence give an irresolute commander the excuse to do nothing? History tells us that the great captains have always sought information concerning their opponents. Ultimately, however, they had to make decisions in the "fog of uncertainty," to use Clausewitz's phrase.[41] The real factor of importance here is that all commanders must share a characteristic, moral courage, something that all the information in the world cannot replace. What would all our technology have meant to us in the Gulf if George Bush had taken counsel of his fears even before humanitarian concerns halted the allied offensive?

There are several other things that information cannot replace. In this regard, Campen's claim that the Gulf War victory was as much the result of the management of information as the performance of people and weapons grossly overstates the importance of information. The allied victory was due to the superior training, planning, and execu-

tion of all the components involved in Operation Desert Storm. All the information in the world will not help poorly motivated, badly trained, and undisciplined soldiers led by indecisive leaders fighting without a sound doctrine, particularly under the unique circumstances of the Gulf War. The Tofflers, for example, extol the Russian Nomad satellite surveillance system's capability of imagery resolution down to about five meters.[42] How much good did it do the poorly motivated conscripts fighting in Chechnya?

When asked why the Confederates lost the battle of Gettysburg, George Pickett is said to have answered, "I think the Union Army had something to do with it."[43] In looking at the Gulf War, Pickett's alleged comment is worth remembering. It should be borne in mind that for the coalition forces, largely based on those of the North Atlantic Treaty Organization (NATO), Iraq was the perfect enemy in the perfect environment. What essentially happened was the military equivalent of "wish chess" against an opponent accurately described by a perceptive critic as a "third-class Soviet clone."[44] More formidable, better-trained armies have often been able to fight on when their communications were inoperative. During the Normandy campaign in 1944, for example, the Germans often had to fight under conditions of radio silence.[45] Yet sound tactical doctrine, good leadership at the lower levels, and sheer rock-ribbed toughness allowed them to fight the numerically vastly superior Allies to a stalemate for almost two months before attrition finally ground the German forces down. In the Pacific, the Japanese were able to refine their tactics late in the war to a point where they were able to inflict serious losses on American forces at Peleliu, Iwo Jima, and Okinawa.[46]

Information war has been subsumed into a somewhat broader notion, the revolution in military affairs (RMA). Briefly put, this concept holds that advances in technology, especially information technology, have rendered existing methods of warfare as obso-

lete.[47] Although the term was introduced before the publication of *War and Anti-War*, some believers in the RMA have completely adopted the Tofflers' framework. Now many articles on this subject are loaded with references to "second-wave" and "third-wave" warfare.[48] Proponents of the RMA such as Andy Marshall, head of the Office of Net Assessment, argue that the period we are now in is similar to that between the world wars, when developments in aviation, internal combustion engines, radar, and radio led to the creation of strategic bombing in the United States and blitzkrieg in Germany.[49] Some authors, reading the current theory backward into history, now see military revolutions everywhere. This has led to some rather odd linguistic formulations such as "Napoléon took full advantage of the evolving revolution in military affairs."[50]

History, however, again exposes the weaknesses in this kind of simplistic thinking. Before strategic bombing could be executed in World War II, its theoretical foundation had been laid prior to the advent of the required technology. Likewise, the tactical concepts the German army used in World War II had really been developed in the later stages of World War I. These concepts were then wedded to the strategic theories and related ideas of Clausewitz, Helmuth von Moltke, Alfred von Schlieffen, and Sigismund Schlichting. In no way did Hitler impose any ideas on the German army in the interwar period, as some have alleged.[51] In fact, taking the long view that history provides, we can see that the nature of war is far more evolutionary than revolutionary.

All of this is not to say that we are mindlessly against technology.[52] If emerging technology can be harnessed to enhance our ability to defend the nation, it should be. History has shown repeatedly, however, that technology is best incorporated in the context of enhancing such methods that have already proven successful. This can only be accomplished through a rigorous and integrated study of military affairs. In their excellent book on military disaster, Eliot Cohen and John Gooch write that

> military organizations should inculcate in their members a relentless empiricism, a disdain for a priori theorizing if they are to succeed. The "learners" in military organizations must cultivate the temperament of the historian, the detective, or the journalist, rather than the theoretical bent of the social scientist or philosopher.[53]

What is so disturbing about information warfare and the RMA is that some of its adherents have done precisely what Cohen and Gooch properly warn against. If the facts get in the way of a theory, then the theory should be discarded, not the facts of history. Some have privately expressed to the authors their defense of the inaccuracies of the works cited here with the argument that the facts are unimportant. This is, of course, nonsense. One does not base grand theories on false facts; nor does one prepare for the future by distorting the past. □

Notes

1. See Gen Maxwell Taylor, *The Uncertain Trumpet* (New York: Harper and Brothers, 1960); and Andrew F. Krepinevich, *The Army and Vietnam* (Baltimore: Johns Hopkins University Press, 1986). The Davy Crockett was a hand-fired tactical nuclear weapon with a range of 1,500 meters and a blast radius of 3,000.

2. Earl H. Tilford, Jr., *Setup: What the Air Force Did in Vietnam and Why* (Maxwell AFB, Ala.: Air University Press, 1991), 1–44.

3. See, for example, Lt Col Paul Tiberi, "German versus Soviet Blitzkrieg," *Military Review* 65, no. 9 (September 1985): 63–71; and Maj George A. Higgins, "German and US Operational Art: A Contrast in Maneuver," *Military Review* 65, no. 10 (October 1985): 22–29. William S. Lind and Richard S. Moore, *Maneuver Warfare Handbook* (Boulder, Colo.: Westview Press, 1985) was of the same genre. A cautionary voice in this matter is to be found in Daniel J. Hughes, "Abuses of German Military History," *Military Review* 66, no. 12 (December 1986): 66–76.

4. For his pre-Gulf War thinking, see John A. Warden III, *The Air Campaign: Planning for Combat* (Washington, D.C.:

National Defense University, 1988). A sample of his postwar writing is in his "The Enemy as a System," *Airpower Journal* 9, no. 1 (Spring 1995): 40–55.

5. See, for example, Alan D. Campen, ed., *The First Information War: The Story of Communications, Computers, and Intelligence Systems* (Fairfax, Va.: AFCEA International Press, 1992); George J. Stein, "Information Warfare," *Airpower Journal* 9, no. 1 (Spring 1995): 31–39; Col Owen E. Jensen, "Information Warfare: Principles of Third-Wave War," *Airpower Journal* 8, no. 4 (Winter 1994): 35–43; and Department of the Army, *Army Focus 94: FORCE XXI* (Washington, D.C.: Department of the Army, 1994), 17–22.

6. Alvin and Heidi Toffler, *War and Anti-War: Survival at the Dawn of the Twenty-first Century* (New York: Warner Books, 1993).

7. Ibid., 27–87. Such reviews of the book that have appeared are not impressive. See, for example, the reviews by Eliot A. Cohen in *Foreign Affairs* 73, no. 3 (May/June 1994): 156; and by Frank C. Mahncke in *Naval War College Review* 47, no. 3 (Summer 1994): 132–33. See David Jablonsky, *The Owl of Minerva Flies at Twilight: Doctrinal Change and Continuity and the Revolution in Military Affairs* (Carlisle, Pa.: Army War College, 1994), 7–10; and *Army Focus 94*, 9–15. Although the Tofflers claim that American generals were influenced by Alvin Toffler's earlier book, *The Third Wave* (New York: Bantam Books, 1984), a check of military periodical literature reveals a distinct dearth of citations. Alvin and Heidi Toffler, 10–11.

8. This is based on personal knowledge and observations and on information obtained by telephone calls to other institutions. *Army Focus 94*, 9–15.

9. On this point, note Hendrik Hertzberg's commentary "Marxism: The Sequel," *The New Yorker*, 13 February 1995, 6–7.

10. Alvin and Heidi Toffler, 20, 39. Instead of running into a supply train with food, they met an ammunition train by mistake. The Army of Northern Virginia had more ammuniton than their underfed horses could haul. See James M. McPherson, *Battle Cry of Freedom: The Era of the Civil War* (New York: Oxford University Press, 1988), 847.

11. For a more realistic overview of the origins of AirLand Battle doctrine, see John Romjue, *From Active Defense to AirLand Battle: The Development of Army Doctrine, 1973–1982* (Fort Monroe, Va.: Historical Office, US Army Training and Doctrine Command, 1984). For an account of the previous doctrine, which introduced the term *AirLand Battle* in 1976, see Paul Herbert, *Deciding What Has to be Done: General William E. Depuy and the 1976 Edition of FM 100-5* (Fort Leavenworth, Kans.: Combat Studies Institute, Command and General Staff College, 1988), especially page 9.

12. Alvin and Heidi Toffler, 23.

13. See, for example, Gen Gordon R. Sullivan and Col James M. Dubik, "Land Warfare in the 21st Century," *Military Review* 73, no. 9 (September 1993): 13–32; idem, "War in the Information Age," *Military Review* 74, no. 4 (April 1994): 46–62; and Col Gary B. Griffin, "Future Foes, Future Fights," *Military Review* 74, no. 11 (November 1994): 56–60. Note also Col Edward Mann, "Desert Storm: The First Information War?" *Airpower Journal* 8, no. 4 (Winter 1994): 4–14.

14. Col Richard Szafranski, "Neocortical Warfare? The Acme of Skill," *Military Review* 74, no. 11 (November 1994): 41–55; idem, "A Theory of Information Warfare: Preparing for 2020," *Airpower Journal* 9, no. 1 (Spring 1995): 56–65; and Stein, 31–39.

15. See, for example, Alvin and Heidi Toffler, 237–38; and Stein, 32.

16. Szafranski, "Neocortical Warfare?" passim.

17. Sun Tzu, *The Art of War*, ed. Samuel B. Griffith (London: Oxford University Press, 1963), 77. It's odd that the proponents of "third-wave" and "information" war should find inspiration in the writings of Sun Tzu, a "first-wave" thinker.

18. In a speech to National Defense University on 3 May 1994, Speaker Gingrich argued that Clausewitz is outdated because he is tied to the concepts of Napoleonic warfare, while omitting the fact that Sun Tzu came from a society that has no relation to us in any way, shape, or form. Rep Newt Gingrich, "Information Warfare: Definition, Doctrine and Direction," speech, National Defense University, Washington, D.C., 3 May 1994, 5.

19. See the review by Arden Bucholz of Michael Handel's *Masters of War: Sun Tzu, Clausewitz and Jomini* in *War in History* 1, no. 3 (November 1994): 355–56.

20. Gingrich speech, 3 May 1994, 5.

21. Szafranski, "A Theory of Information Warfare: Preparing for 2020," 57.

22. Briefly stated, Leon Trotsky held that in order for Russia to go forward, it had to be part of world revolution. In addition, if a country were to avoid the dangers of "bureaucratization," it had to remain in a permanent state of revolution. Leon Trotsky, *Permanent Revolution* (Calcutta, India: Gupta, Rahman, and Gupta, 1947). General Ludendorff's ideas of "total war" fall into the same category. Erich Ludendorff, *Der totale Krieg* (Munich: Ludendorffs verlag, 1935). The English version, *The Nation at War*, translated by A. S. Rappoport (London: Hutchinson, n.d.) clearly presents Ludendorff's views that everything must be subservient to war. Hitler's thinking on this subject can be found in his sequel to *Mein Kampf*, published in the United States as *Hitler's Secret Book*, translated by S. Attanasio (1961; reprint, Avenal, N.J.: Outlet Book Co., 1966), 5–7.

23. Jensen, 42. Jensen's article, packed with historical inaccuracies, is a classic case of the dangers of applying the Tofflers' neo-Marxist framework to real problems. The phrase "industrial-age Napoleonic France" should suffice as an example.

24. Ibid., 39. See also Alvin and Heidi Toffler, 239.

25. Stein, 34.

26. Ibid., 39.

27. Campen, vii.

28. Some examples of the more optimistic view are Campen, *The First Information War*; and Richard P. Hallion, *Storm over Iraq: Air Power and the Gulf War* (Washington, D.C.: Smithsonian Institution Press, 1992), 240–68; and most recently Brig Gen Robert H. Scales, *Certain Victory: The U.S. Army in the Gulf War* (Washington, D.C.: Office of the Chief of Staff, US Army, 1993). More skeptical views are Thomas A. Keaney and Eliot A. Cohen, *Gulf War Air Power Survey Summary Report* (Washington, D.C.: Department of the Air Force, 1993); Michael R. Gordon and Gen Bernard E. Trainor, *The Generals' War: The Inside Story of the War in the Gulf* (Boston: Little, Brown and Co., 1995); and H. R. H. Gen Khaled Bin Sultan and Patrick Seale, *Desert Warrior: A Personal View of the Gulf War by the Joint Forces Commander* (New York: HarperCollins, 1995).

29. *Army Focus 94*, 17.

30. United States War Department, *Official Records of the War of the Rebellion* (Washington, D.C.: Government Printing Office, 1888–1902), series 1, vol. 25, pt. 2, 360–61.

31. G. F. R. Henderson, *Stonewall Jackson and the American Civil War* (1919; reprint, New York: DaCapo Printers, Inc., 1988), 658.

32. A good study on the use and limitations of Ultra in World War II is Ralph Bennett, *ULTRA in the West: The Normandy Campaign, 1944–45* (New York: Scribner, 1979). The ghastly losses suffered by the German army and air force on the Russian Front may also have had something to do with Germany's defeat in World War II.

33. Most of the articles in the Campen book deal with this issue. In fact, an uncharitable reader might be inclined to dismiss *The First Information War* as nothing more than an encomium designed to serve the agenda of the Army Signal Corps.

34. David Jablonsky, "US Military Doctrine and the Revolution in Military Affairs," *Parameters* 24, no. 3 (Autumn 1994): 28.

35. Stein, 36.

36. Stein's quotation relies on the speech by Gingrich given at National Defense University on 3 May 1994, for which no transcript was available at the time. Through the assistance of Professor Daniel T. Kuehl at National Defense University, we were able to obtain a transcript. A study of the transcript leads these authors to two conclusions. First, it is quite clear that Stein, in attempting to quote from memory, accidentally misquoted Gingrich. Compare Stein, 36, with Gingrich speech, 3. The second conclusion is that Gingrich distorted the historical record on Moltke. Although Moltke was a prescient individual, he did not possess the Nostradamus-like vision Gingrich attributes to him. Also, although Moltke did make some money by investing in railroads, he certainly did not become wealthy by doing so. He gained much more wealth through the donatives he received from the government after the Franco-Prussian War.

37. Daniel J. Hughes, ed., *Moltke on the Art of War: Selected Writings* (Novato, Calif.: Presidio Press, 1993), 77.

38. Wiley Sword, *Embrace an Angry Wind: The Confederacy's Last Hurrah* (New York: HarperCollins, 1992), 311.

39. See Correlli Barnett, *The Desert Generals*, 2d ed. (Bloomington, Ind.: Indiana University Press, 1981), 138; and David Fraser, "Alanbrooke," in John Keegan, ed., *Churchill's Generals* (New York: G. Weidenfeld, 1991), 91–92.

40. Hallion, 245.

41. Carl von Clausewitz, *On War*, trans. and ed. Michael Howard and Peter Paret (Princeton, N.J.: Princeton University Press, 1976), 101.

42. Alvin and Heidi Toffler, 185.

43. The most commonly cited source for this quote by Pickett is his widow, LaSalle Corbell Pickett. Carol Reardon, "Pickett's Charge," in Gary W. Gallagher, ed., *The Third Day at Gettysburg and Beyond* (Chapel Hill, N.C.: University of North Carolina Press, 1994), 84.

44. "Wish chess" occurs when one's opponent makes exactly the move that one wishes he would make. Col Richard M. Swain, USA, Retired, "Adapting to Change in Times of Peace," *Military Review* 74, no. 7 (July 1994): 58.

45. A combination of Ultra intercepts and direction finding allowed the Allies to pinpoint the location of the headquarters of Panzer Group West, which was knocked out in an air raid. Bennett, 68. A good account of the Germans fighting under tactical radio silence is in John Keegan, *Six Armies in Normandy: From D-Day to the Liberation of Paris, June 6th–August 25th, 1944* (New York: Viking Press, 1982), 154.

46. Larry Addington, *The Patterns of War Since the Eighteenth Century* (Bloomington, Ind.: Indiana University Press, 1984), 244.

47. Campen, vii, for example, considers the Gulf War to have been fundamentally different from any previous war. See also Michael J. Mazarr, *The Revolution in Military Affairs: A Framework for Defense Planning* (Carlisle, Pa.: Strategic Studies Institute, Army War College, 1994).

48. See Mazarr, 23; and Jablonsky, 10. For an examination of the RMA without the Toffler style "wave" framework, see Eliot A. Cohen, "Come the Revolution," *National Review* 47, no. 14 (31 July 1995): 26–30.

49. Bradley Graham, "Revolutionary Warfare," *Washington Post National Weekly Edition* 12, no. 18 (6–12 March 1995): 6. Some cautionary thoughts can be found in Antulio J. Echevarria and John M. Shaw, "The New Military Revolution: Post-Industrial Change," *Parameters* 22, no. 4 (Winter 1992–1993): 78.

50. Mazarr, 1.

51. Jablonsky, 34.

52. In the interests of being absolutely honest, however, we do admit that one of the authors wrote his portion of this article with a fountain pen.

53. Eliot A. Cohen and John Gooch, *Military Misfortunes: The Anatomy of Failure in War* (New York: Vintage Books, 1991), 236–37.

A Pacific Sampler

FODDER FOR PROFESSIONAL DEVELOPMENT

Dr David R. Mets

AN ANCIENT MODEL for scientific problem solving includes steps to gather the facts, define the problem, establish a set of criteria, formulate a hypothesis, test the hypothesis, and then draw the conclusion. To qualify as valid research, such a program must be repeatable. That model has worked again and again in the laboratories of the world: electrical, optical, mechanical, chemical—whatever. One of the things that prevents the study of war from being a science is the laboratory difficulty. Clearly, testing hypotheses about the way that war works cannot be done on an experimental basis. Thank God that wars are no more repeatable than they are!

The military profession, then, must find a substitute for laboratory experiments. Military history is a pretty poor substitute. For sure, the Pacific war will never happen again. Equally sure, its historians are like Thomas Jefferson's blind men—each goes out to touch the elephant and comes back with a different description, depending not only upon his own biases, but also upon that part of the elephant he happened to encounter. Poor substitute that it is, military history is the only real-world laboratory available to you, as Air Force professionals. War games and maneuvers can help, but no one who ever went through the USAF survival school ever feared being bashed in the teeth with a rifle butt—and there was no guarantee like that in the Hanoi Hilton. So you must use

the poor laboratory you do have, knowing that concrete "lessons" are unlikely to leap from its pages. Maybe only an enhanced perspective, or worldview, will emerge to improve the odds that your guesses will be correct when your moment of truth comes. The purpose of this article, then, is to evaluate three new books on the Pacific war as potential additions to your "laboratory" database.

Before turning to those books, however, I must mention that if you don't know Roger Nye's *Challenge of Command: Reading for Military Excellence*, you should. In it, he outlines what he perceives to be a proper professional reading program for Army officers—and the same idea applies to officers of the other services as well. He is a leading expert on George Patton, Sr., and the model he offers is doubtless drawn from the history of that man. Nye divides the attributes of a good commander into eight categories, which become chapters in *Challenge*. At the end of each chapter, he gives the prospective professional a list of 10 good books on the subject, two of which are singled out as the first to be read. He suggests that professional education is not an event but a lifelong, self-powered process. If your commander does not push you into such a great books process (as did Gen Fox Conner with Maj Dwight Eisenhower in the 1920s), then perhaps you should power yourself into it.

I offer 10 books on the Pacific war in my "sampler" (see sidebar), which includes only

A 10-Book Pacific Sampler

Works for USAF Professional Development*

Two for the Macroview

Alan J. Levine, *The Pacific War: Japan versus the Allies.* The best single, short volume on the subject, covering the war with a much better perception of the Japanese side of things than is usual. The author is unafraid of challenging the conventional wisdom and is so erudite that most of his judgments seem sound indeed.

Thomas E. Griess, ed., *The Second World War*, vol. 2, *Asia and the Pacific.* A readable summary view written by competent West Point professors, complemented with good illustrations. When used with its companion atlas, it can give Air Force officers a quick baseline from which to develop their professional knowledge of World War II in the Pacific.

Eight for More Detailed Knowledge

George C. Kenney, *General Kenney Reports.* A first-person account of the tactical side of the air war in the Pacific—though with some of the usual flaws of memoirs.

Haywood S. Hansell, Jr., *Strategic Air War against Germany and Japan.* A first-person account with some of the usual limitations but yielding important insights about the B-29 campaign and the mind-set that has controlled many things in the USAF ever since.

Clay Blair, *Silent Victory.* A readable account of the submarine war described by the *Strategic Bombing Survey* as one of the decisive elements in the victory.

Clark G. Reynolds, *The Fast Carriers: The Forging of an Air Navy.* A classic on the subject.

Richard Hewlett and Oscar Anderson, *The New World: A History of the United States Atomic Energy Commission, 1939–1946.* A sound view of a field buried in ideologues of every stripe: The coming of the atom bomb.

Ronald Lewin, *The American Magic: Codes, Ciphers and the Defeat of Japan.* An authoritative treatment of the subject—increasingly timely in view of the current emphasis on information warfare and a possible revolution in military affairs.

Gordan Prange et al., *Miracle at Midway.* Another recent and readable account of the Battle of Midway in June of 1942, considered by many authorities to be the great turning point of the war.

Richard B. Frank, *Guadalcanal.* Account of the battle that began the Solomons Campaign, which completed the gutting of Japanese airpower. Although Midway got rid of four of the largest Japanese carriers, Japan recovered more expert pilots than is commonly supposed.

One for Good Measure

United States Strategic Bombing Survey, *Summary Report: Pacific War.* Only the Holy Bible and *Das Kapital* are more widely cited to justify diametrically opposed partisan arguments. It is therefore imperative that the young Air Force professional read this report and the companion summary report (of the hundreds produced) on the European war to find out what the survey really said.

*This sampler provides a baseline for the generalist professional officer; it is not for the specialist in military or airpower history. A bibliography for the specialist would necessarily include hundreds of titles.

one of the three books under review here. Why the Pacific war? On the eve of the twenty-first century, what is the relevance to the Air Force professional of a conflict a half century past in a theater where no immediate military threat seems to exist?   In the first place, one of the ancient axioms of the military art is that we are always prepared to fight the last war rather than the next one. But some historians have argued that that principle is an oversimplification. In their minds, the problem is that we far overemphasize the history of our own times and underemphasize the history of times antedating our own conscious memories. Don't kid yourself that the results of Operation Desert Storm have enabled us to put the "Vietnam syndrome" behind us. Not so. Both are within modern memory, and both are very much with us—and that is especially true of the highest leaders of the land. An 18-year-old drafted in 1950 would be only 63 today; President Reagan was in his seventies when he became commander in chief. Any 63-year-old who survived the agonies of Korea would certainly still carry vivid images of that war. All of those wars occurred in a bipolar world—a cold war world. One has to go all the way back to World War II to find one that was otherwise.

The point is that though the next war probably will be much different than the last, it may not be so different from the one before that. In some ways, Korea resembled the trench stalemate of World War I more than it resembled the blitzkrieg of World War II. In other ways, it resembled the limited wars of the eighteenth century more than it resembled either world war.

The Pacific War: Japan versus the Allies by Alan J. Levine.   Praeger Publishers, 88 Post Road West, P.O. Box 5007, Westport, Connecticut 06881-5007, 1995, 200 pages, $49.95.

I have often heard it said that good history cannot be written for 50 years after the fact. That may be a bit much, but Alan J.

Levine's *The Pacific War* offers good support for the idea. He deals in a multipolar world and shows more clearly than most writers the interconnectedness of things. Without the European war and the *Wehrmacht* rattling the gates of Moscow, there is no Pacific war.

Levine is a native of New York City and has a PhD in Russian history from New York University. His erudition is accompanied by a fine writing style, making his prose a pleasure to read. For the past 50 years, the preponderance of "authorities" has had some sort of ax to grind—institutional, personal, or nationalist. Levine is too young for that, yet he has done his homework to the point that he understands the context of the times and does not try to project the New Left values of the Vietnam generation back into a context alien to that set of values.

Too, Levine casts a wide net indeed. He covers the campaign history in an authoritative way. He speaks of military technology in understanding terms. He comprehends the social and economic dimensions far better than many authors now capitalizing on the 50th anniversary of World War II. Without any sentimental nonsense that tends to turn the Japanese into victims, he nonetheless shows a much more thorough understanding of the Japanese side of things than do the modern *Enola Gay* bashers. His treatment of the decision to drop the atom bomb is as sensible as any I have ever seen. In the context of the times, according to Levine, bombing Hiroshima was the only practical choice. At the end of the day, he adds, it really did save many Japanese lives, as well as American. Though the Japanese were not quite as brutal as the Nazis, they were far from innocent victims and brought much of their agony on themselves. They were neither as dumb as most prewar Americans thought nor as brilliant as others have argued (e.g., Levine shows that Yamamoto was rather dull at the time of Midway).

Levine's work is timely. At least as much as the European war, the outcomes of Pacific battles, campaigns, and the war itself (see my

"shoestring primer") were conditioned by an enormous information advantage on the Allied side. The centrality of this information advantage—along with the fact that the Pacific war was even more an air war than the one against Germany (both being a part of the first real conflict in the third dimension)—arguably helps make that experience a revolution in military affairs. If, indeed, another so-called revolution is at hand, then the current spate of 50th-anniversary books is a blessing.

The Pacific War is as fine a summary view as has come along for a while. It is not footnoted in the authoritative fashion of Levine's *The Strategic Bombing of Germany* (1992), but internal evidence and one of the best short bibliographies available suggest that the author is remarkably well read and that his good judgments are founded on a solid base of scholarship. If you read any book at all on the Pacific war, make it this one. Unhappily, if you are senior enough to afford the list price, you probably have a very high command and not much time for professional reading these days. Still, the book is certainly worth a trip to the library. While you are there, don't forget to check out an atlas. Notwithstanding the high price of *The Pacific War,* it contains no maps. Better yet, if you take Roger Nye's suggestion to start a personal professional reading program, acquire Avery Publishing's Pacific volume of *The West Point Military History Series Atlas for the Second World War* for your desk reference set.

Victory at Sea: World War II in the Pacific by James F. Dunnigan and Albert F. Nofi. William Morrow and Co., 1350 Avenue of the Americas, New York 10019, 1995, 612 pages, $25.00.

Victory at Sea covers much the same ground as does Levine's work, but I do not include it in my sampler. It is not that it is unreadable or inaccurate. Nor do I dismiss it as more conventional wisdom. It is far from politically correct in the story of the Japanese-American internment, to cite one example, and Levine does give a more or less conventional view of that subject. Rather, for our purposes, the work is more a reference book than one for a professional reading program.

Both of the authors base part of their expertise on extensive experience in war gaming. Albert A. Nofi was once the editor of the leading war-gaming magazine *Strategy and Tactics.* James F. Dunnigan, like Nofi, is a New Yorker born during World War II. Nofi was educated at Fordham University—Dunnigan further downtown at Columbia. The latter's work is highly concentrated on war gaming and military writing for the popular market; Nofi has substantial experience in public school teaching. Having recently been involved in the evaluation of several electronic tool books, I find the origins of the work at hand clear enough.

The book's title is a misnomer; further, the work itself has an odd history. *Victory at Sea* is a misnomer in that it covers much more than the naval dimension of the conflict. The text has an odd history because, according to Dunnigan and Nofi, it first was assembled in an electronic format and only afterwards was transformed into hard copy—a reversal of the usual process, they argue. They also argue that you can read (or use) their work three ways: examine it cover-to-cover as a conventional book, use it for a potpourri by dipping into it here or there, or consult it as a reference book. They cite the latter function as the least useful; I think that it is the most useful.

The format of *Victory at Sea* resembles that of a reference work or handbook because it has no particular theme or organization that encourages you to read it as a conventional history book. Dunnigan and Nofi are blessed with a readable writing style and have an interesting way of presenting material. As noted, neither they nor their publisher seems to have slaved their output to political correctness. It is a good book for browsing. One of their chapters, "The Boring Stuff: Policy, Politics, and Strategy," is

A Shoestring Primer on the Pacific War

Prewar: America generally favored the Japanese in their war against the Russians in 1904-5, but the deterioration in relations started soon after and grew much worse after the onset of the depression and the resumption of Japanese imperialism. It is a perversion to make the United States the aggressor in this relationship, but the US did not react to the point of risking combat until the Japanese began to threaten European Allies.

Pearl Harbor: Many people in the Japanese navy, including Yamamoto himself, did not favor war with the US. But Yamamoto persuaded his colleagues that if they were to have any chance at all, they had to reject their traditional defensive strategy of waiting for the American Navy in the western Pacific in favor of a preemptive strike on the fleet at its lair in Hawaii. In a narrow sense, the strike succeeded—but the Japanese lost more than they gained.

Midway: Ever since June 1942, this battle has been considered *the* great turning point of the war against Japan, and certainly its carrier fleet was badly bent by the loss of four carriers (the US lost only the *Yorktown*). But fewer Japanese carrier pilots than was then supposed went down with their ships.

The Solomons: Beginning with Guadalcanal in the summer of 1942 and extending well into 1943, this campaign completed the work started at Midway by killing many of Japan's remaining naval pilots and yielding a general air of superiority for the rest of the struggle.

New Guinea to the Philippines: From the dark hours of the spring of 1942, MacArthur's campaign complemented that of the Solomons into 1943 and then, via a series of northwestward leaps up the coast and through the southern Islands, reached the Philippines in October 1944. Largely conducted with Kenney's land-based airpower, this story is particularly important to the modern USAF professional.

Central Pacific: Admiral Nimitz got a late start on the Navy's traditional War Plan Orange because he had only avoided the loss of the command of the sea at Midway—he had too few flattops to do any more. Near the end of 1943, he began to get the new *Essex*-class carriers and launched his thrust across the Central Pacific, culminating in the great battles of the Philippine Sea and Leyte Gulf. That action yielded command of the sea for the American side and merged his thrust with MacArthur's in the Philippines.

Okinawa: Fulfilling Adm Alfred Thayer Mahan's dream did not produce an easy road ahead because of the coming of the kamikaze threat. In the spring of 1945, kamikazes turned what was supposed to be the penultimate battle on and off Okinawa into the bloodiest of the war—and helped put American leaders in a frame of mind to make the choice of dropping the atomic bomb a nondecision.

Nukes: So it happened that though some Army Air Forces and Navy officers were thinking that Japan might be brought down without another bloody invasion of the home islands, in August 1945 President Harry Truman nonetheless decided to use the nukes, precipitating the surrender that Winston Churchill called the "Miracle of Deliverance."

not at all boring—and is sound enough to boot. Sections on planes and ships are usable and generally accurate, though not authoritative. Another chapter is a Who's Who of the Pacific war (such efforts are always subject to criticism with regard to who is included and excluded). Airmen, on the whole, are much underrepresented: Jimmy Doolittle and Curtis LeMay are included, but George Kenney is not. King George VI is included. The authors spend many pages on a chronology that does no more than duplicate something found in many other places. They devote four pages to a bibliography so superficial as to be wasteful, though it does include one good work that could not be squeezed into our sampler—Edward S. Miller's *War Plan Orange*.

Victory at Sea, then, is useful as a potpourri for browsing and perhaps as a companion to Pacific war simulations. If you need authoritative references, however, you would have to go to sources like Jane's for the last word and more detail (herein a knot becomes a measure of distance instead of speed; VT becomes variable telemetry instead of variable time; and the B-17 comes on the line in 1939 instead of 1937 or 1935). The price of the volume is more reasonable than Levine's, and it does include a very few maps; however, they are on such a large scale that you will nonetheless need to have an atlas to accompany this work also.

The War in the Pacific: From Pearl Harbor to Tokyo Bay by Harry A. Gailey. Presidio Press, 505-B San Marin Drive, Suite 300, Novato, California 94945-1340, 1995, 534 pages, $29.95.

Harry A. Gailey must be a remarkable man. *The War in the Pacific* shows him to be knowledgeable and articulate; he must also be very industrious. He entered the Army Air Forces at the tail end of World War II and got out in 1946. He received his PhD 12 years later from the University of California. In the interim he worked as a civil engineer for six years, maintained his officer status in

the US Army Reserves for nine years, got a bachelor's degree in 1953, a master's degree in 1955, a history teacher's job in 1957—and got married in 1951. *The War in the Pacific* seems to be his 16th published volume. Many of his books have been on sub-Saharan Africa, but the last several were on the Pacific war—all produced by a wide variety of publishers. Through it all, he has maintained his status as a professor and as the father of five children.

At the very least, *The War in the Pacific* includes more and better maps than our previous two works—on a scale adequate enough that you can read the words. Gailey justifies the addition of another tome to the current spate of works on World War II with the plea that most of the others on the conflict with Japan include a treatment of the struggle in Asia as well as the Pacific. That inclusion, he argues, has caused an inadequate treatment of both. By concentrating on the Pacific, he asserts that *The War in the Pacific* will fill a needed void. Be that as it may, Gailey's strong suit is his writing style; additionally, his understanding of the war is sound and supported by a generally accurate grasp of details. Moreover, though his book costs more than *Victory at Sea,* you probably can afford it even if you have not yet become a general.

A straightforward chronological narrative, *The War in the Pacific* is in a more traditional format than Dunnigan and Nofi's work. The stamp of Gailey's previous work is apparent in that his facts are generally accurate, though stronger in land and sea topics than airpower, notwithstanding the fact that he is an Air Force veteran (of long ago). Further, the book is more focused on the operational history of the war than is Levine's book.

I like Professor Gailey's approach: he is not afraid to take a stand on cases whose facts are available. He contributes to the correction of the record in the famous case of Marine general Holland Smith's firing of Army general Ralph Smith—clearly favoring

the latter. Yet, Gailey does not run off half-cocked in assigning blame if the facts are unclear. He avoids convicting either Douglas MacArthur or Lewis Brereton for the disaster at Clark Field on 8 December 1941, allowing for Clausewitzian chance as the determinant of that dismal outcome.

Dr Gailey is a landlubber, so one has to forgive him for calling cruisers *capital ships* and using *heading* when he really means *bearing*. One might also be inclined to forgive the landlubbers in the editorial shop at Presidio were it not for the fact that they also pass over too many errors of English and other minor factual details to permit such leniency.

I cannot recommend *Victory at Sea* to you unless you have a particular interest in Pacific war games of World War II, in which case it might be a readable and useful handbook. *The War in the Pacific* is a good work for the general reader, but for the Air Force professional, Levine's tome covers the ground in a more complete and authoritative way.

Fifty years have gone by, and now we have a pretty good history of World War II.

Although a scientist would be horrified that our database includes only three books, I do conclude that good history *can* be written after 50 years—as is the case with Levine. However, the passage of that much time does not guarantee it. Too often, historians lose the context of the past if they have not lived with it and get it wrong. Levine gets it right. Also, there were many good histories of the Pacific war written short of the 50-year mark.

Biography is a favorite of mine, but I deliberately excluded that category from my sampler. Thomas Buell's splendid biographies of Adm Raymond Spruance and Adm Ernest King are two that I might have chosen—splendid examples of both the biographical art and of good history that antedated the 50-year milestone. But now we must clear the decks for a revivification of Korean War historiography, for its half-century mark is just around the corner. That event is important because the torch is passing, and that war is also about to be erased from the memory banks of most active decision makers. □
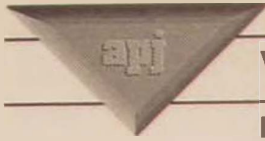
There is one thing stronger than all the armies in the world, and that is an idea whose time has come.

—Victor Hugo

WARE ON WARDEN:

SOME OBSERVATIONS OF THE ENEMY AS A SYSTEM

Dr Lewis Ware

AS AN OPERATIONAL framework for the employment of strategic airpower, the air campaign has sought and attracted much attention in recent years. Its champions have been tireless in promoting a commanding position for it among the US Air Force's many roles and missions. Such zeal gives the impression that winning acceptance for this particular form of using the air weapon may be the real campaign in question.

In establishing the value of the air campaign, its advocates assert that the enemy is a system on which they base the claim to have constructed a model of the conflictual environment. This essay scrutinizes the logic of that assumption. It examines its analytical and conceptual content so as better to assess how well this assumption explains the environment of future conflicts in which the armed forces will be expected to operate.

My purpose is not to challenge the need for the kind of airpower that the air campaign represents. Clearly, we need a rational template for the application of airpower against enemies organized as states. Nor is it my purpose to question the ways the air campaign employs airpower operationally to its best advantage against such enemies. A rational template helps identify critical targets, and it is far better to engage critical targets than those that have less significance for the course and outcome of fighting. My purpose is simply to underscore the problem that occurs when enthusiasm for an idea outstrips the logic marshaled in its support. In the case of the air campaign, its importance may have been exaggerated relative to other

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crucial roles that the Air Force will be obliged to play in the evolution of a new global environment. Perhaps nowhere is this enthusiasm more obvious than when advocates assert that the air campaign is a "model" underpinned by the idea of a conflictual environment wherein they analyze the enemy as a system.[1]

In part, the problem of perceiving the enemy as a system arises from a misunderstanding of what constitutes a model and the purposes to which models should be put. Models are generally intellectual constructs composed of sets of categories, assumptions, and postulates that help us sort, analyze, and examine the relationship between and among elements of data. We construct models so that we may be able to *explain* phenomena and *predict* the course of events by means of them.[2] The explanatory value of a model—that is, the degree to which it helps us comprehend the phenomena it studies—is the test of its effectiveness. If a model does not correspond in some way to what it claims to represent, it will have limited utility because the model will have failed to mirror reality faithfully. Thus, it cannot suggest valid or appropriate methodological approaches to the problem it seeks to solve.[3] The enemy, after all, is the phenomenon upon which the air campaign wishes to exercise a decisive influence—it is the "problem" we seek to solve. Seen from this perspective, the way in which advocates of the air campaign perceive the enemy as a system fails to grasp the enemy's true nature. Thus, the assertion that the air campaign provides an authentic model of the enemy is open to serious debate. As a system, the enemy may be considered a model only in the engineer's sense of the word. That is, it provides a schematic diagram of a perception of the enemy which, by stripping away his "flesh" and by breaking him down into his "skeletal" parts, seeks to isolate him as a target for the most efficient application of the physics of force. In point of fact, this schematic representation of phenomena is the meaning most often preferred by some military people and corporate business staffs as a synonym for *model*. Still, we must remember that a drawing or schematic diagram is not necessarily a model.[4]

Advocates assert that the enemy is organized in five concentric rings and that inasmuch as the five rings represent the enemy's basic architecture, they therefore constitute a system. The rings descend in order of importance from the innermost to the outermost—namely, from leadership, organic essentials, infrastructure, and population to fielded forces. Imbedded within these rings, we find centers of gravity (COG), viewed as the points of maximum utility to attack. The destruction of these COGs is most likely to hurt the enemy the worst and produce decisive results. Furthermore, these COGs may be divided into sub-COGs and nodes of pressure.[5] By virtue of the airplane's ability to transcend the limitations of natural topography, it remains the weapon of choice to render the enemy strategically powerless under the conditions of the five-ring analysis.

Nevertheless, the five-ring analysis begs the question of *who* and *what* the enemy is, what circumstances he operates under, and what qualifies him as a "system." War is not an act of individuals but a social activity. This statement is not social science double-talk; it is an issue critical to our understanding of warfare. Hence, we are obliged to ask in what way this view of the enemy resembles a social construct.

However we may choose to define the component elements of a social construct called "the enemy," there can be little argument that, through the interaction of its individual parts, a social construct represents people organized according to patterns which provide for enduring cooperation and collective expression. One important manifestation of such collective expression is in the manner and means by which people conceive and make concrete the idea of violent conflict. To grasp such manifestations in their most unambiguous form requires more than superficial analysis.

In the five-ring analysis, the social contours of the enemy are not recognizable. Consequently, the perception of his collective social expression is blurred, and thus the way he organizes himself for war is unclear. Nevertheless, this reduction of the enemy to the sum total of five tangible and discrete categories (i.e., the rings) permits us to represent him in diagrammatic form for the purpose of simplifying military operations against him. On the one hand, this kind of reductionism has immense practical value for the successful prosecution of an air action. On the other hand, it produces a picture of the enemy as a disembodied, static "unit" against which force is exerted but which in itself remains physically passive and unchanging after attack. That perception is seriously flawed. More important, such analysis lends credence to the argument for the primacy of offensive airpower which—by virtue of the assumption that offensive airpower is limitless in its technical capabilities—is therefore limitless in its uses against a passive enemy.[6]

Under such conditions of analysis, the enemy is not only depersonalized, he is effectively "desocialized" as well. Any suggestion that the five-ring analysis in some way explains the nature of the enemy's social essence is at best a disingenuous inference. It is not that advocates do not recognize that the five-ring analysis ought to account somehow for the complexity and sophistication of the enemy's social organization.[7] In point of fact, they suggest that as we peel away the enemy's "skin," we will discover ever more significant relationships between rings, COGs, sub-COGs, and nodes.[8] Even so, these enthusiasts state that their "primary interest is not in building a theory of organization; rather it is to derive an understanding of what we might need to impose an intolerable cost or strategic or operational paralysis on an enemy."[9] Either intolerable costs or systemic paralysis, then, is the social consequence an enemy faces unless he ceases fighting. We cannot skirt the social issue after introducing the notions of cost, penalty, value, or consequence. We cannot understand the social activity we call war without introducing them. Hence, one way to resolve this issue is creation of a tautology. Thus, the perception of an enemy organized in five rings establishes its own sufficiency as the highest degree of analysis required for the execution of a military action because it postulates that we may achieve decisive results on the operational level, since that is where the enemy takes his most palpable and calculable shape. Thus, the concept of "decisiveness"—a form of quantification implying attrition or dysfunction at the operational level—describes the mechanistic process by which we attain either the physical paralysis of the enemy or his total destruction.

Nevertheless, we are still left with a vague, indeterminate idea of "the enemy" who—while he may possess quantifiable or measurable characteristics necessary for

the successful application of operational air warfare against him—lacks a consistent and coherent identity. We may not need to view the enemy as a social construct in order to identify targets or even to realize the goals of air campaigning. But we always need a clear idea of the opponent if we are to understand how war as a form of collective social and political expression defines the enemy's relationship to the larger global environment where other crucial and significant geopolitical interactions between belligerents (such as war termination, for instance) take place. The goal, after all, is less the destruction of the enemy than it is the end of conflict on terms favorable to us.

If the five-ring analysis is problematical for a representation of the enemy as a social construct, it is even more problematical for a representation of the enemy as a system. A system presupposes the existence of a complex organism whose various parts are linked in such a way that the organism functions as a synergistic whole. This assumption accounts for the description of the enemy as composed of such integrated parts—once again, the rings. To describe the working of this synergism, advocates of five-ring analysis often use a physiological metaphor of the human brain's domination over the human body. In more concrete terms, were a person to receive "a shot through the head," the probability is very high that his or her body would be instantly paralyzed by virtue of the destruction of its internal neurological connections.[10] This kind of "organicism" presumes, at the very least, that the enemy as a system has a highly defined and integrated organizational form: first, it presumes that leadership—the enemy's brains—is the most important ring of the system and therefore must stand in the center of the organism; second, that the other rings are connected to the center ring through a series of organic links in both necessary and sufficient ways; and last, that because of these organic links, the smooth functioning of the respective rings will depend on the functioning of the center. Thus, advocates tell us, because the rings are linked organically in a descending order of importance, the impairment of any ring must necessarily have a negative impact on all the others.

The implied degradation of the total system may indeed occur when a ring is attacked and disabled. The Instant Thunder plan, we may argue, proved that. But we should point out that the five-ring analysis does not demonstrate empirically in terms of a cause-and-effect relationship *why* this degradation actually happens. Nor does it account for the effects that forces other than airpower might have on the enemy system, even if these forces are not directly engaged. Instant Thunder, we may argue again, was insufficient to cause a cessation of hostilities in Iraq. How, then, can advocates be so sure that any one ring is more crucial to the efficient functioning of the enemy than any other? In a word, the five-ring analysis assumes that links between events are causal and direct, when in reality the events appear to be connected only by an observable sequence in time. Moreover, if this assumption of a causal connection between events is a consequence of observable activity, the enemy's activity does not enter the calculus. By this logic, "deterrence" cannot work and, hence, does not exist.

What I have just described is a classical fallacy in logic[11] which leads to predictable theoretical myopia. For instance, if in the event the destruction of the leadership ring does not cause the degradation of the system in the manner

anticipated, logic requires that the five-ring analysis be revised with respect to an explanation of what constitutes the nature of the links between rings. Instead, advocates avoid the problem by advocating a graduated and simultaneous employment of pressure against other rings, which serves to circumvent the question of the nature of the connection between them.

This tactic of "parallel warfare,"[12] aided by a technology that increases the potency of air attacks against a selected target through the accuracy and destructive impact of precision guided munitions, allows us to fly airframes against many COGs at once with a high degree of impunity. Hence, under circumstances of parallel warfare, we assume that the need for sequential air attack in mass no longer exists. The practical possibility of simultaneous attack on all COGs with air-delivered high-tech weapons may indeed produce, by a process of elimination, a paralyzing effect on the enemy and thus his systemic collapse. Moreover, it may also satisfy the need of US forces—especially the Air Force—to minimize civilian casualties, maximize the destruction of the enemy's war-fighting capacity, eliminate the uncertainty of war, nullify the effect of coincidence, and render violent conflict as predictable as possible. Yet, by the same token, parallel warfare cannot help obscuring the value of individual elements within the COGs by obscuring the relationship between them.[13] So the graded value that the five-ring analysis assigns to each COG in the system is deprived of significance since—under conditions of parallel warfare—all COGs are equal, for all intents and purposes. Inevitably, parallel warfare undercuts the "connectedness" that the five-ring analysis is so intent on establishing for the purpose of accentuating the strategic importance of the air campaign.

In sum, the five-ring analysis offers no logical validation that the enemy possesses a form which degrades in predictable ways when his COGs are attacked. Nor does it tell us anything about how he operates under conflictual circumstances.[14] Consequently, the analysis skirts the troubling question of friction in war.[15] While not denying the social nature of war per se, the five-ring analysis minimizes the importance of all the intellectual, moral, and historical imponderables that characterize the nature of the enemy. It posits an environment in which only the rules of physics claim to furnish the working hypotheses sufficient for an understanding of conflictual relationships between belligerents. These hypotheses, however, lack internal consistency. So it is not surprising that, since little can be learned from these hypotheses about the character and complexity of the enemy, they have no predictive value as an explanation of how violent conflicts progress or how such conflicts end.

The five-ring analysis does not contribute substantially to a validation of the assertion that the air campaign is a model representing a comprehensive theory of airpower. The inaccurate use of the concept of a "model" may serve to bolster the strategic value of the air campaign in the face of its critics, but it also tends to cloud the issues that models are supposed to illuminate and that theories are supposed to resolve. Inasmuch as the operational context of the air campaign demands the maximization of high-tech military technology, the advocates' understanding of the meaning of a model is dominated entirely by what Eliot Cohen has called the

American cultural bias par excellence for "machine-mindedness"[16] and the substitution of quantifiable methods of analysis for formal thinking.

We can consider the air campaign a model only insofar as it accurately reflects the reality it claims to represent. A perception of the enemy as organized in a system of five rings on which we may base the air campaign model is clearly an inadequate analytical instrument in this regard. Its arguments rest on principled belief rather than on reason, and principled belief—however powerful or well intended—is by definition not susceptible to rational explanation.

Evidently, the problems discussed in this essay occur when substantial disagreement exists over the meaning of what constitutes a model in the conceptual sense of the word. More than that, the problem is not simply a semantic question of proper meaning and definition of concepts. Concepts form within given social contexts. Accordingly, we must examine the culture of the Air Force if we wish to understand the unique political-military and geostrategic ramifications of the analytical discourse that advocates have established for the air campaign.

Suffice it to say that the culture of the Air Force has made it an article of faith that only offensive strategic airpower possesses the necessary virtues to obtain decisive victory.[17] To win a conflict through the employment of strategic offensive airpower has been the predominant mission of the Air Force since the time before it won separate status from the Army and was the mission upon which the proponents of an independent air force based their argument for a separate existence from the Army. That mission has formed the historical perspective of countless airmen and shaped the military environment in which they have practiced their profession. Émile Durkheim, the nineteenth-century French social theorist, once remarked that religion is a culture worshipping itself.[18] We should not be surprised, then, that the enthusiasts of offensive strategic airpower have been cast as "evangelicals, ever in search of facts to confirm what is primarily a matter of faith."[19] If the offensive strategic airpower mission represents the religion of the Air Force, then some might say that the air campaign represents a form of its creed and thus a contemporary way that the Air Force finds for self-worship. If this notion is true, it is most unfortunate.

It is worth repeating that the model which advocates propose for the air campaign can operate successfully only in an international environment where the enemy's form of sociopolitical and economic organization is the "state" and where he has the industrial capacity to produce and field the conventional forces amenable to the dissection of the five-ring analysis. Unfortunately, the present-day international environment has been changing in ways that no longer make the state the sole focus and arbiter of violent conflict. To this end, RAND analyst Carl Builder has argued in his book *The Icarus Syndrome* that with the collapse of the Soviet Union, the Air Force has, indeed, lost all sense of its mission.[20] The formulations that have resulted in the flawed concepts of the air campaign, with its seductive appeal to simplistic reasoning, speak emotionally to a military culture in mourning for the loss of its historical roots and in search of a new purpose. Be that as it may, we must also say that the five-ring analysis of the enemy as a system is the newest contribution to thought regarding the employment of airpower—however flawed the concepts of the

air campaign may prove to be. What we should always strive for in the end is a better understanding of the contribution that airpower makes to war fighting and the means by which that contribution adds value to the military endeavor. The five-ring analysis of the enemy as a system is a start in that direction, but it is not the end.

Maxwell AFB, Alabama

Notes

1. Perhaps the most thorough description of the enemy as a system is by the author of the model himself. See Col John A. Warden III, "The Enemy as a System," *Airpower Journal* 9, no. 1 (Spring 1995): 40-55; see also idem, "Air Theory for the Twenty-first Century," in Karl Magyar, ed., *Challenge and Response: Anticipating US Military Security Concerns* (Maxwell AFB, Ala.: Air University Press, August 1994), 316-18.

2. Most academics, regardless of their discipline, would agree with this definition. See Jack C. Plano, Robert E. Riggs, and Helenan S. Robin, *Dictionary of Political Analysis*, 2d ed. (Santa Barbara, Calif.: ABC-Clio, Inc., 1982), 77-78.

3. Ibid.

4. Said another way, we should not presume that the use of the PowerPoint® application represents the employment of logic or models derived from logical analysis, even though such a presumption appears to be widely held.

5. See Warden, "The Enemy as a System"; see also the description of the enemy as a system in Maj David S. Fadok, *John Boyd and John Warden: Air Power's Quest for Strategic Paralysis* (Maxwell AFB, Ala.: Air University Press, February 1995), 24 passim.

6. This argument reminds us of the way Douhet rendered the enemy a passive object to be acted upon, thereby justifying the offensive as the only credible course of military action. See Lt Col Barry D. Watts, *The Foundations of U.S. Air Doctrine: The Problem of Friction in War* (Maxwell AFB, Ala.: Air University Press, December 1984), 7.

7. See Fadok, 28.

8. Ibid.

9. See Warden, "Air Theory," 316.

10. According to Fadok, this notion originates in the works of J. F. C. Fuller, the designer of the first modern operational plan for the paralysis of the enemy. Fadok, 6.

11. This is the *post hoc, ergo propter hoc* fallacy.

12. Again, one must emphasize that the issue of a cause-and-effect relationship among the rings is noncritical for advocates because they are interested only in the value of the five-ring analysis as an approximate tool for the application of operational military power. Unfortunately, analyses that derive their explanatory worth from implied relationships contribute to the perpetuation of "domino theories," in which one takes for granted that escalation in the tempo and intensity of destructive force has a concomitant effect on international relations. One has only to read Adm U. S. G. Sharp's *Strategy for Defeat: Vietnam in Retrospect* (Novato, Calif.: Presidio Press, 1978) to gain an appreciation for the military aspects of such domino theories.

13. Fadok makes this point in the context of the "connectedness" of the enemy as a system. Fadok, 27.

14. Noted by Col Pat Pentland in his lectures to the School of Advanced Airpower Studies. Ibid., 28.

15. Watts recognizes this problem as a major contribution to the American misperception of war. Watts, 48 passim.

16. See Eliot A. Cohen, "The Mystique of U.S. Air Power," *Foreign Affairs* 73, no. 1 (January-February 1994): 120.

17. See Col Phillip S. Meilinger, *10 Propositions Regarding Air Power* (Washington, D.C.: Air Force History and Museums Program, 1995), 8-13.

18. The shape of Colonel Meilinger's *10 Propositions*—a small book, the size of a tract, that can be slipped into the breast pocket for easy reference—is a symbol, the meaning of which should not be lost on the reader.

19. Earl H. Tilford, Jr., "The Meaning of Victory in Operation Desert Storm: A Review Essay," *Political Science Quarterly* 108, no. 2 (Summer 1993): 329.

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

THE PROBLEMS WITH BEES AND BOMBS

COL RICHARD SZAFRANSKI, USAF

BEES, IT IS WIDELY and apocryphally known, are aerodynamically unstable forms. Engineers—the story goes—can demonstrate that the planform of their wings, the high parasitic drag caused by their legs and bodies, the far aft location of their centers of gravity, and the configuration of their "fuselage" all render them incapable of flight. For whatever reason, this diagnosis does not appear to bother bees much. Bees fly.

Critiques of John Warden's "parallel war" targeting template seem to fall into two major camps. On the one hand, commentators in the meat-and-potatoes camp argue that descriptions of enemy states in terms of the "five rings" of leadership, organic essentials, infrastructure, population, and fielded forces are so obvious as to be almost vulgar or uninteresting. They cite Rear Adm J. C. Wylie's descriptions of dichotomous "cumulative and sequential" approaches to strategy[1] and the targeting template of the single integrated operational plan (SIOP) as the unacknowledged forebears of this kind of thinking. They argue that little is new in Warden's approach and assert that the template is inappropriate for fights with nonstate actors or some future peer competitor.[2]

These critics also know that the five-rings description of the Instant Thunder air campaign against Iraq emerged *post hoc, ergo propter hoc.* Warden did not describe it in his book *The Air Campaign,* written well before the Gulf War.[3] Air planners who worked in the special planning cell known as the Black Hole in Riyadh, Saudi Arabia, say they did not describe, elaborate, or explicitly use the template. Rather, the hypothesis followed the test. Likewise, airpower advocates postulated the notion of "strategic paralysis," cited as an aim of the air war in Operation Desert Storm,[4] *after*—not *during*—the air planning.[5] Critics in this camp worry more about future fights than past fights. They suggest that the kind of mechanistic thinking represented by the five rings is inadequate mental preparation for future fights.

On the other hand, critics in the intellectual camp are just beginning to speak. The most eloquent expression of their views is the tightly reasoned and wonderfully rich essay by Dr Ware. Critics in this camp have honed their lengthy grousing to a stiletto-like sharpness and thrust it into the heart of the issue. Ware's thrust is that the five rings are not a "model" that explains and predicts, but a graphic, diagram, caricature, or cartoon of the enemy. Such is the case, he asserts, because the enemy is a "system" only through "the interaction of its individual parts" [page 89],[6] and the five-rings graphic fails to explain these interactions and relationships. To the critics in the camp led by Ware, "social constructs represent people organized according to patterns which provide for enduring cooperation and collective

expression" [page 89]. Failing to understand these patterns and explain them denudes the putative model of its logic. War, Ware asserts, is "a form of collective social and political expression" [page 90]. Without the logic to explain the richness of this social and political expression in the five rings, the rings do not constitute a model. Worse, acritical acceptance of or enthusiasm for the rings obscures the complexity of the asocial activity we call warfare, including why we fight, how we fight, and how we bring the fighting to an end. The reductionism represented by the five-rings cartoon springs from "theoretical myopia" [page 90] and necessarily leads to inappropriate behavior that comes from muddled thinking.

Parallel attacks, Ware argues, obscure the illogic. Since forces engage elements of all five rings simultaneously, there is no way to prove the existence of any causality in any single attack against any ring. Thus, the cartoon may suggest a hierarchy of value to inform planners about the right target or the right attacks, but without some a priori explanation of causality and relationship, the diagram offers no verifiable hierarchy or predetermined set of relationships. A surplus of weapons simultaneously directed against many targets may hurt the enemy mightily, but what if a surplus of weapons is unavailable? "Mass," Ware seems to argue, substitutes for precision or precisely known effects. The enemy leadership may collapse or the leaders may survive and sue for peace, but the five-rings template provides no way to prove how or why this capitulation occurs. The only logic is commonsensical: attacking a bunch of things at once hurts an adversary more than attacking fewer things one at a time. In this regard, critics of both camps share a unitary vision: the template offers little that is new or profound.

Ware, however, adds a new dimension to the dialectic. He suggests that the emergence of the five-rings template was a culturally conditioned phenomenon that arose from a social environment wherein the Air Force needed and wanted a new formulation of its post-cold-war raison d'être. Thus, a hasty marriage occurred. The effervescence of the US-led coalition air forces' contribution to an apparent victory over Iraq was one spouse, and the post-cold-war, post-strategic-bombardment-of-the-Soviet-Union, what-are-we-to-do paranoia within the Air Force was the other. This union begot the five-rings offspring within the Air Force. The fact that the "model" is not a model, then, is less important than the fact that Air Force people—some of them, at least—assert that it is *cosa nostra* ("our thing"). Or so Ware tells it. Adm William Owens, the current vice-chairman of the Joint Chiefs of Staff, argues that "strategic bombardment" is not "our thing" when he asserts, "No single service can do this alone."[7]

Dr Ware would be hard put to prove his "cultural" suggestion, but—significantly—his essay concludes with the suspicion. Something more than criticism of a nonmodel may be here. Social commentary perhaps? Ware in effect asserts that we do not know with scientific or even Aristotelian precision why bees fly, but does he also assert that (what?) bees *should not* fly?

The dilemma that critics are left with, of course, is a hard one. Bees *do* fly and *did* fly. The air campaign against Iraq was a successful air operation by most measures of merit. Thus, critics need to contemplate the possibility that the assertion made by

five-rings advocates is fairly straightforward and undeniably, irrefutably true. Perhaps they are simply asserting that *the sudden, cumulative effects of simultaneous, parallel attacks against many things contribute to the cascading collapse of the enemy's combat-power production system.* In the end, one can argue that it matters less—much less—*why* this is so than the fact that it *is* so and will likely remain so.

That advocates offer the five rings as a possible explanation is not overreaching, but to duplicate success, these people need to advance some kind of explanation or model for consideration. We know, for example, that the notion of "deterrence" is the sine qua non of illogic. We never knew, as Brent Scowcroft asserted, if deterrence was or is the consequence of our behavior or whether there was no deterrence since the "enemy" had no intention of attacking in the first place.[8] We acted to deter, deterrence is grounded in illogic and a lack of empirical evidence, and the question of how or why deterrence works remains an intellectual mystery—but not a practical one.

In practice, following a template like the five rings for purposes of targeting does no real harm and clearly seemed to do much good. If there is any harm in advocating the five-rings model—or nonmodel—the harm is *un*real. That is, harm may reside in the intellectual ether and not in the world of action and history. The worth of the five rings is not their power to describe but their targeting norms. The rings merely assert that if one successfully engages high-value targets (variously called centers of gravity, decisive points, etc.) in the offered categories, then one does a good thing. Clausewitzian purists can argue over what the master intended by *Schwerpunkt,* just as intellectual purists can argue over what transforms a diagram into an authentic model. Purism matters less to action-oriented people than the verifiable consequences of action. Warfare offers a laboratory too complicated, too dynamic, too nearly "out of control" to test theories. In the absence of any other cognitive map to help us navigate the interconnected flux of the enemy target system—which is not necessarily the same as Warden's description of the enemy "as a system"—the five rings appear to work just fine. If they do not constitute a robust model, what are the consequences to action and to history?

Try as critics might, they cannot eradicate the objective reality of the Desert Storm air battles. They worked. They succeeded in hurting an enemy who had potentially significant combat power. The air battles dramatically reduced coalition casualties. Do these things not count for something? Perhaps critics are correct in proving that the targeting plan could *not* have worked *because* the enemy is a system neatly arrayed into five concentric rings, as Warden argues. *In spite of* what some allege is the gross inadequacy of the nonmodel, it still worked. We are left with an awareness that bees fly and that air attacks can vitiate an enemy. Viewing the situation in that light, we may conclude that critics of the five rings may be more like mosquitoes nibbling at the neck of history than anything else. I say this while acknowledging that I too am a critic; the commentaries we offer may prove to be as irrelevant as they are uninteresting to action-oriented folk.

What does Dr Ware offer in place of the nonmodel he so summarily dispatches? He offers, as do most critics in the intellectual school of criticism, an assertion of the goodness of precise definitions, the intellectual purity of flawless logic, and the wonderfulness of truth. Admittedly, these virtues are wonderful and good. Yet, Ware's lack of a corrective model suggests that thinking about fighting and understanding fighting are very hard work. The dynamic of warfare defies precise understanding of all the causes and all the effects that warfare evidences in action. Warden accepts this truism but offers a "try this." Ware laments that it is so but offers a critique of Warden. "So it goes," as Kurt Vonnegut would say.

After millennia of fighting, awareness of warfare's "majestic clockwork" has yet to emerge. This should not surprise us. Doctors cannot explain the "spontaneous remission" of disease. Atheists cannot explain the "miracles" experienced by devotees. Physicists cannot find the elusive "graviton." Yet, they dare. Doctors dare assert that healing has a lot to do with the "mind." Religious or spiritual people sometimes succeed in summoning miracles through faith. And our explanations of how the universe works seem to be adequate enough to carry out our daily business. Warden dares to offer us a map for air warfare. Its imperfection does not erase its utility. The model or nonmodel may be impure, imprecise, inadequate, and inaccurate, but it is not inconsequential. One is reminded of Karl Popper's observation that "bold ideas, unjustified anticipations, and speculative thought are our only means for interpreting nature: our only . . . instrument, for grasping her. And we must hazard them to win our prize."[9]

The "prize" in this case is the ability to rapidly engineer the cascading collapse of the enemy's combat-power production, combat-power transportation network, and combat-power control system—whatever those really are and however the process really works. If this proves, finally, to be more art than science, we should not be surprised. Sun Tzu's thinking was not collected in a tome about the *science* of war, just as Ware's criticism leaves the *art* of Warden's work unscathed. If Warden's work is art, then the issue becomes one of aesthetics—not practicality. Ware doesn't like Warden's artistic rendering of the enemy system. If that is the case, a superb scholar like Ware will appreciate that *de gustibus et coloribus non est disputandum* (it is silly to argue about matters of taste and colors). But we will. And so it goes. ☐

Maxwell AFB, Alabama

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Fall 1995

IRA C. EAKER AWARD WINNER

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The Airlift **System:** A Primer

Congratulations to Lt Col Robert C. Owen on his selection as the Ira C. Eaker Award winner for the best eligible article from the Fall 1995 issue of the *Airpower Journal.* Lieutenant Colonel Owen receives a $500 cash award for his contribution to the Air Force's professional dialogue. The award honors Gen Ira C. Eaker and is made possible through the support of the Arthur G. B. Metcalf Foundation of Winchester, Massachusetts.

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DESERT STORM'S SIREN SONG

Maj Kurtis D. Lohide, USAF

ADDRESSING AN audience at Trinity College in 1963, British historian Noble Frankland remarked, "People have preferred to feel rather than to know about strategic bombing."[1] He was referring to the difference in opinions concerning the effectiveness of strategic bombing in World War II. For example, authors of *The*

United States Strategic Bombing Survey (USSBS) maintained that Allied air attacks were decisive in winning the war in Western Europe.[2] Using the same survey as evidence, J. F. C. Fuller pronounced the Combined Bomber Offensive a largely wasted operation.[3] That these controversies continued to exist despite the voluminous data contained in the USSBS lends credence to Frankland's observation that the subject had been addressed on the emotional rather than on the cognitive level.

Similar to the lack of agreement on the effectiveness of the Allied bombing offensive, there is no consensus as to the significance of the Gulf War air campaign. Central to the ongoing debate is whether Desert Storm heralds a revolution in warfare. In his book *Storm over Iraq*, US Air Force historian Dr Richard Hallion states that the war confirms "a major transformation in the nature of warfare: the dominance of air power."[4] Opposing this position, individuals like William S. Lind, author of *The Maneuver Warfare Handbook*, argue that the air campaign certainly damaged Iraq's strategic infrastructure, but it did not decisively defeat the Iraqi army in Kuwait, a fact that discredits talk of revolution.[5] Thus, Frankland's comment also seems to apply to the current disagreements concerning the significance of the Gulf War bombing campaign.

The contradictory opinions discussed above offer testament to much "feeling" but little "knowing." To reverse this situation and to examine Desert Storm on a cognitive level, one must first define what constitutes a revolution in warfare. This article establishes such a definition that can serve as a standard and then evaluates Operation Desert Storm against this standard. It concludes that the air campaign only represents a revolution if viewed as a single snapshot in time. However, such a view is fundamentally flawed since revolutions require validation over time and repetition. Most important, to prematurely judge Desert Storm as a revolution in warfare could leave the US military ill prepared to deal with twenty-first century threats.

Strategy of Annihilation

Perhaps the most logical method of establishing a standard for evaluating Operation Desert Storm is through the use of historical example. In the 1864–65 American Civil War campaign designed by Gen Ulysses S. Grant, one finds an example of warfare undergoing revolutionary change. As such, Grant's operations can serve as a historical "Rosetta stone" that provides the key to deciphering the significance of Operation Desert Storm.

> *To prematurely judge Desert Storm as a revolution in warfare could leave the US military ill prepared to deal with twenty-first century threats.*

The first step in comprehending how Grant changed the face of warfare is to understand the type of warfare that his campaign replaced. On 20 September 1792, the combined armies of French generals Charles Dumouriez and François Kellermann caused the Prussian army commanded by the Duke of Brunswick to withdraw from a battlefield near Valmy in northeastern France.[6] French marshal Ferdinand Foch noted the significance of the encounter, remarking that it ended the wars of the kings and launched a new era of nationalistic peoples wars.[7] The man who emerged as the leading figure of this new era was, of course, Napoléon Bonaparte. By combining the nationalistic fervor generated by the French social revolution and his own genius, Napoléon created the strategy of annihilation, a paradigm of warfare that dominated military thinking for the next century.

NAPOLÉON

TIME

SPACE

Legend:

 – Mass

Figure 1. Napleonic Decisive Battle Strategy of Annihilation

Historian David G. Chandler, author of *The Campaigns of Napoleon*, summed up the French emperors approach to war by calling him "the proponent of the single knockout blow."[8] Elaborating on Chandler's thought, J. F. C. Fuller noted that Napoléon generally achieved this annihilating punch by adhering to a single overarching principle—a concentrated superiority of force on the battlefield, particularly at the decisive point of attack.[9] A look at the French army's 1805 campaigns reveals the devastating effectiveness of this strategy. In that year, Napoléon gathered his corps, at the time quartered all over western Europe, and brought them together with perfect timing to surround the Austrian army at Ulm. After Austrian general Karl Mack capitulated, Napoléon dispersed his forces only to have them converge again and defeat the Austrians and Russians at Austerlitz.[10]

Figure 1 depicts the Napoleonic strategy of annihilation and makes it apparent that Napoléon's success resulted from his ability to manipulate the rudimentary elements of warfare: time, space, and mass. By combining these basic elements into a single point, Napoléon forced his enemies either to capitulate, as Mack did, or to face annihilation, as happened to the Austrian and Russian armies at Austerlitz. German military historian Hans Delbruck labeled this type of warfare, which has as its aim the decisive battle, the strategy of annihilation.[11] Whether termed *strategy of the single point* or *strategy of annihilation*, the convergence of time, space, and mass into a single instance constitutes classical Napoleonic warfare.

Without question, this strategy of annihilation had an enduring impact on warfare. As Napoleonic historian Gunther E. Rothenberg points out, starting with the French Revolution in 1792 and ending with

Napoléon's defeat at Waterloo in 1815, more than 644 major battles took place.[12] Certainly not all these clashes resulted in French victories; however, a common thread running through them all was an ever-growing adoption of the French method of battle.

For decades after his death, Napoléon's concept of the decisive battle of annihilation continued to wield a heavy influence on military thinking. In the midnineteenth century, for example, Field Marshal Helmuth von Moltke used the new strategic mobility made possible by railroads to rapidly mass-mobilize Prussian forces and win decisive Napoleonic-type victories during the wars of German unification.[13] Motivating Moltke was a belief that through such rapid concentrations he could elevate the principle of quick, decisive battle to a new and higher level.[14]

Again, from these examples one sees that Napoléon's genius lay in his ability to manipulate time, space, and mass—what can be thought of as the fundamental elements of warfare. However, had the battles of Ulm or Austerlitz been single occurrences, Napoléon's operating concepts would have gone unnoticed. According to Carl von Clausewitz, an activity becomes susceptible to rational study only when it "deals primarily with the same things again and again—with the same ends and the same means. . . ."[15] This logic seems equally applicable to the study of revolution in warfare. That is, a type of warfare can only be proven as revolutionary after repetition over time. A look back at General Grant's 1864–65 campaign confirms this conclusion.

Strategy of Exhaustion

In 1864 Grant observed that after three years of war the opposing forces, especially in the east, were in substantially the same positions they had occupied at the start of the war.[16] Grant's assessment of the situation came during a trip to Washington, D.C., where he received his third star and assumed command of all Union field armies.

His promotion and subsequent reassignment represented a turning point in the struggle between classical Napoleonic and modern warfare. Grant understood that the Industrial Revolution had caused the modern battlefield to expand in length, breadth, and depth. Consequently, he realized that victory could no longer reside in one decisive action.[17] Hence, instead of pursuing a strategy of annihilation, Grant conceived a strategy that would destroy the enemy by attriting his army and resources.

> Thus the kind of campaign that General Grant had in mind was one that would be characterized by a series of battles—some fought sequentially, others by exhaustion simultaneously—that would be distributed across the entire theater of war. No one would likely be decisive, but the culmination of the effects of all would.[18]

According to Grant, continuous hammering against the South's military fortress would eventually, by exhaustion through attrition, force the Confederacy to capitulate.[19]

In the spring of 1864, Grant planned a campaign composed of five operations to effect his strategy of exhaustion against the Confederacy. Gen George Meade's Army of the Potomac attacked Lee's army in northern Virginia; Gen Benjamin F. Butler moved his forces by water up the James River to threaten Richmond and Lee's lines of communications; Gen Franz Sigel was ordered to destroy food supplies and rail hubs in the fertile Shenandoah Valley; and Gen William T. Sherman was instructed to penetrate deep into the Confederacy and to destroy rail lines and supply centers at Atlanta, Augusta, Savannah, and Charleston. Grant planned an additional thrust at the South's economic heart by ordering Gen Nathaniel P. Banks to seize Mobile and march inland to attack the economically vital areas of Montgomery and Selma, Alabama.[20]

Although the ineptitude of several Northern generals caused some of Grant's plans to go awry, his strategy of exhaustion ultimately proved successful. This success car-

GRANT

Figure 2. Grant's Distributed Operations Strategy of Exhaustion

ried a significance beyond winning the war for the Union. His campaign design also recast the relationship of time, space, and mass. Figure 2 shows how these three basic elements were juxtaposed in Grant's 1864–65 campaign. As the newly appointed Union commander understood, the Industrial Revolution had essentially formed entire nations into armed garrisons. This in turn greatly expanded the theater of war. As Grant correctly ascertained, attacking only an enemy's army—essentially the Napoleonic method—would not cause a nation to surrender. Therefore, winning a modern war required a revolutionary new approach. After the Industrial Revolution, a successful attacker had to strike simultaneously and successively throughout a nation's depth. Such a campaign of deep successive operations would severely attrit the enemy's war-making capabilities, eventually causing his defeat.

As was the case with Napoleonic warfare, to fully appreciate the significance of the strategy of exhaustion requires looking at its enduring relevance over time. Events during the first half of the twentieth century provided the temporal test for the strategy first used by Grant. From the Russo-Polish War of 1920, influential Russian military intellectuals such as Michael Tukhachevsky developed firm beliefs on the necessity of using operational depth and sequential operations to win postindustrial age wars.

Also during this period, another Russian, A. A. Svechin, published *Strategiia* in 1926, a treatise that further refined the Russian military concept of successive combat operations over time.[21] Expressing thoughts that paralleled those of Grant half a century earlier, Svechin stated, "Great battles now in fact do not take place. Combat actions are broken down in time and space into a series of several combats. . . ."[22] This strategy allowed the Red Army to draw the Wehrmacht into a series of successive operations that finally broke the German offensive on the outskirts of Moscow.[23]

In the western European theater of World War II, there were other campaigns that also affirmed Grant's strategy as the archetype for winning modern industrialized warfare. Just as the Union commander had orchestrated multiple operations against Confederate armies, Allied forces struck Axis forces in France and Italy. Concurrently, in a modern version of Sherman's deep raid against the South's economic resources and communications, Allied bombers delivered devastating blows against German industrial centers and rail hubs. World War II thus served as the test of time and repetition that fully validated the strategy of exhaustion as a true revolution in the ways wars are fought. Using Grant's campaign as a blueprint, one can now demonstrate why Desert Storm does not carry the same significance.

Strategy of Paralysis

Today mankind is experiencing the effects of a technology-based societal revolution. [24] So proclaims Alvin Toffler in his future-oriented book *The Third Wave*. The changes associated with this new era are so profound that Toffler says that finding a name that encompasses them all is problematical. Terms like *Space Age, Information Age,* and *Electronic Era* come close, but overall seem to fail in capturing the ongoing changes in their entirety.[25] Nevertheless, although *third wave* is difficult to describe, few persons today can argue its existence. Nor do many argue that, like the agrarian and industrial waves before it, this third wave is shattering social, political, and economic paradigms.

If history remains an accurate prognosticator, warfare will also change in this new era. If one thinks of the strategy of annihilation as a product of the agrarian age and the strategy of exhaustion as belonging to the industrial age, then it seems reasonable to assume that the third wave will spawn its own unique strategy. Individuals supporting Desert Storm as a revolution in warfare claim

that this new strategy emerged during the Gulf War. As their logic goes, third-wave technological advances that produced stealth fighters and precision guided munitions also allowed coalition air forces to employ a new defeat mechanism against Saddam Hussein's military. The air attacks against Iraq led to defeat neither by annihilation nor exhaustion; instead, by using what has been coined parallel war, coalition aircraft "paralyzed" the Iraqis.[26]

Figure 3 pictures parallel warfare and the strategy of paralysis. As one can see, the intent of parallel warfare is to reconfigure the basic elements of warfare by distributing mass along a time line that is narrow but a space continuum that is broad. This configuration allows mass to become concentrated in time but not in space. A brief review of the Desert Storm air campaign demonstrates that coalition air planners did succeed in using parallel air attacks to simultaneously strike throughout the length, breadth, and depth of Iraq.[27]

[The] third wave is shattering social, political, and economic paradigms.

For instance, during the first 24 hours of the war, coalition air forces carried out more strikes against Iraqi leadership, organizational elements, and fielded forces than the Eighth Air Force did against Germany in the entire year of 1943.[28] Based on the lack of Iraqi response, air advocates legitimately maintain that these opening blows achieved paralysis. Throughout the remainder of the conflict, Saddam's forces offered no resistance other than some isolated tactical fights which, although intense to the combatants involved, proved operationally ineffective. The lopsidedness of the victory legitimized the strategy of paralysis and seemingly ear-
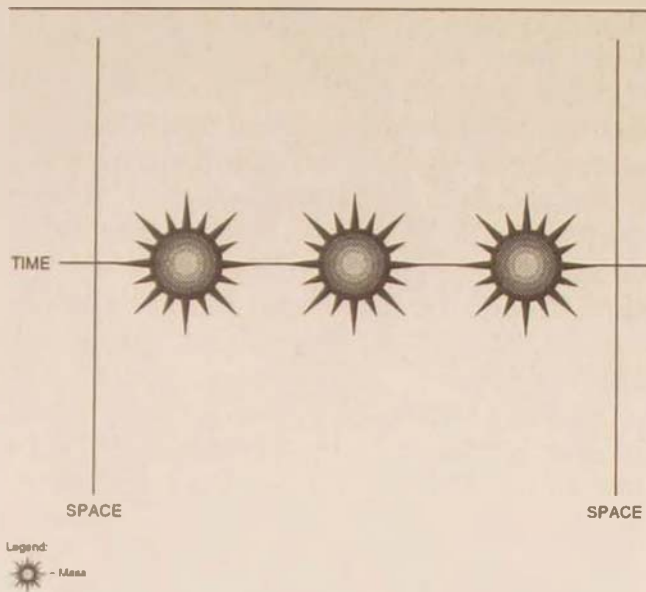
Figure 3.   Desert Storm Parallel War Strategy of Paralysis

marked the air campaign as a notable event in the history of warfare. Pulitzer prize-winning author Rick Atkinson summarized the feelings of many airmen by saying, "In the twentieth century, only one sizable war had been decided by a single battle in a single day: the 1967 conflict between Israeli and Arab. Now there were two."[29]

A revolution in warfare must cause more than a one-time reconfiguration between the relationships of time, space, and mass. This change must also prove enduring over time.

Actually, the scope of the Gulf War's first day went drastically beyond the Israeli Air Forces' (IAF) preemptive air strikes in the Six-Day War. In 1967 the IAF destroyed the Egyptian air force, giving Israel air superiority over the Sinai battlefield. With free-

dom of the skies assured, the IAF subordinated itself to Israeli Defense Force (IDF) ground forces. Then, while the IAF supplied close air support, highly mobile Israeli armored forces applied the killing blow, blasting through Egyptian defenses and eventually capturing the entire Sinai Peninsula. Proponents of the strategy of paralysis argue that, unlike the Six-Day War, the initial air strikes in Desert Storm accomplished much more than air superiority. Airpower for the first time administered the coup de main, the blow that brought on the enemy's defeat.[30]

Since airpower provided the defeat mechanism in Desert Storm, airpower disciples assert that the victory unequivocally validates the strategy of paralysis and establishes the Gulf War as a revolutionary event in the history of warfare.[31] Actually, although Desert Storm may appear as a new era in warfare, reliance on a single sample makes this conclusion untenable. As proven by the historical analysis of Grant's campaign, a revolution in warfare must cause more than a one-time reconfiguration between the relationships of time, space, and mass. This change must also prove enduring over time.

Unless validated by repetition over time, a so-called revolution in warfare might just as likely be an aberration. In the Gulf War, this second criterion obviously remains unfulfilled, making it perilous to prematurely label the war as a revolution. However, Desert Storm advocates present a powerful counterargument to this reasoning. They contend that it is extremely dangerous in today's world to adopt a wait-and-see attitude toward the Gulf War victory.[32] To buttress this position, they cite the exponential rate at which third-wave change occurs. While the agrarian revolution took thousands of years to play itself out, the Industrial Revolution took only hundreds of years and the ongoing third wave may be complete in a few decades or less.[33] In this environment of rapid change, air proponents reason that the United States cannot afford the time re-

In a modern version of Sherman's deep raid against the South's economic resources and communications, Allied bomber attacks delivered devastating blows against German industrial centers and rail hubs. Here, a formation of Eighth Air Force B-24 Liberators are en route to bomb Nazi targets.

quired to validate new strategies of warfare. They maintain that changes in technology develop so rapidly that unless the US military plans proactively, new weapons will become obsolete even before they are fully fielded.

Drastic budget cutbacks further exacerbate these problems. Since only finite amounts of money exist for future military development, air enthusiasts say it is impossible for the United States to hedge its bet by developing a broad-based defense structure composed of equally robust air, sea, and land components. In this climate, they make the convenient and reassuring argument that the Desert Storm experience stands as a shining beacon to guide the US military as it navigates through an uncertain future.

To summarize, belief in the veracity of Desert Storm as a revolution in warfare lowers the risk associated with planning future military force structures. A quotation from Giulio Douhet's *Command of the Air* helps explain why this is such a seductive thought:

> Victory smiles upon those who anticipate the changes in the character of war, not upon those who wait to adapt themselves after the change occurs. In this period of rapid transition from one form to another, those who daringly take to the new road first will enjoy the incalculable advantages of the new means of war over the old.[34]

If Desert Storm represents a new paradigm of warfare, the design of a force structure

based on its outcome meshes nicely with Douhet's prescription for managing change. However, despite the temptations to be proactive, Americans must not believe in a military revolution that has not been validated over time. Ample evidence exists today that suggests that the future harbors threats radically different from those posed by traditional nation-state entities. By examining these alternate threats, one discovers that Desert Storm's guiding voice could quickly become a siren song, luring the American military onto the rocks of disaster.

Cultural Warfare

As outlined in the October 1993 Bottom-up Review, current defense policies will develop a US military force capable of fighting near-simultaneous wars against North Korea and a revitalized Iraq. However, in a recent article entitled "The Coming Anarchy," noted journalist Robert D. Kaplan disputes the notion that these countries are America's most dangerous future threats. Using West Africa as an example, Kaplan makes the case that a vast wave of anarchy is likely to cause drastic changes in the political character of the twenty-first century world.[35] He postulates that this surge of lawlessness could spawn a kind of cultural-based warfare "far more significant than any coup, rebel incursion, or episodic experiment in democracy."[36]

Kaplan argues that the anarchical implosion of violence will lead to a withering away of central governments in much of the future world.[37] In this type of world, international borders become largely meaningless as cultural entities such as ethnic clans, drug cartels, or religious sects replace traditional nation-state type governments. If Kaplan is correct, the United States could pay a bloody price for believing in the strategy of paralysis as the blueprint for winning future wars.

Against nonintegrated political units, the strategy of paralysis is largely irrelevant. One must remember that in Desert Storm

the United States-led coalition found itself pitted against a highly organized political system bearing all the trappings of a modern nation-state. In Iraq, the military infrastructure, fielded forces, and command structures were tangible centers of gravity that airpower could effectively attack. These well-defined target arrays accentuated the US military's advantage in technology and facilitated a quick, decisive victory with minimum casualties. However, a highly decentralized threat tends to mitigate the capabilities of American technology that carried the day in Desert Storm. In Somalia, for example, every clan warrior concealed in a doorway constituted a potential center of gravity. In such a situation, the strategy of paralysis is inapplicable.

Since the country possesses no coherent strategy to combat cultural conflict, many Americans, both civilian and military, suggest a neoisolationist posture. This attitude accounts for the nation's extreme reluctance to become involved in situations such as the one in the former Yugoslavia. Yet many respected individuals like Kaplan convincingly depict a twenty-first century in which cultural confrontation will dominate continents and threaten today's geopolitical status quo. Such a climate demands that the United States either develop an effective strategy to combat cultural conflict or abdicate its superpower status.

This threat to US livelihood highlights the dangers of accepting Desert Storm as a revolution in warfare. Believing that the Gulf War symbolizes a new war-fighting paradigm promotes a hazardous singularity of thought that can easily create within the US military a kind of collective cognitive dissonance. That is, defense planners risk becoming incapable of mentally envisioning any future scenario that contradicts the Desert Storm model. Already struggling with force drawdowns and budget cutbacks, the US military must not permit itself to become further handicapped by such mental ossification. Lacking resources, it must use robust

Against nonintegrated political units, the strategy of paralysis is largely irrelevent. In Desert Storm the US-led coalition was pitted against a highly organized modern nation-state. However, a highly decentralized threat tends to mitigate the capabilities of American technology. In Somalia, every clan warrior concealed in a doorway constitutes a potential center of gravity.

intellectual debate as its best leverage against an uncertain future. Such free-flowing dialogue allows the military community to ponder a broad spectrum of military strategies. Dispelling the myth that an air-dominated, high-technology military revolution took place during the Gulf War will ensure that these vital discussions occur.

Conclusion

British military historian Sir Michael Howard once stated that whatever strategy a military adopts in times of peace will be to some degree wrong.[38] Still, Howard says that a military organization must strive to select a course during an age of peace that is

"not too wrong."[39] According to many air-power proponents, Desert Storm represents a revolution in warfare and serves as a beacon to safely guide the American military through the current fog of peace. They therefore advocate pressing ahead with a strategy that mirrors the air-dominant Desert Storm model. This article, while acknowledging Desert Storm as a praiseworthy event, discredits the logic of labeling it a revolution. At this point, calling Desert Storm a revolution in warfare is an emotional reaction that advances a tentative hypothesis to the force of theorem without the proper verification provided by rigorous testing. Die-hard air enthusiasts will likely dismiss this argument, declaring that it is necessary to act now on the assumption that

Desert Storm was a revolution. They will argue that change occurs so rapidly in today's information-based society that the United States must be proactive in incorporating the lessons of Desert Storm into its future defense plans. Actually, this view is dangerously myopic. Abundant evidence exists to suggest that the twenty-first century could be dominated by culturally based conflict. The strategy of paralysis is ineffective against such an amorphous threat. Therefore, creating a US military force that is overly dependent on a high-technology air arm would be, to use Howard's words, too wrong.   ☐

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25. Ibid.

26. For an in-depth discussion on the origins of parallel warfare, see Robert R. Soucy II, *Serial vs. Parallel War: An Airman's View of Operational Art* (Fort Leavenworth, Kans.: United States Army Command and General Staff College, 1993).

27. The phrase "quick, decisive victory with minimum casualties" is derived from the US Army's capstone doctrinal manual Field Manual (FM) 100-5, *Operations*. It is a paraphrase of the ideas found in chapter 1, page 1-2, under the heading "The American View of War."

28. This information was supplied to the author by Col John A. Warden III.

29. Rick Atkinson, *Crusade: The Untold Story of the Persian Gulf War* (New York: Houghton Mifflin Company, 1993), 48.

30. An alternative argument can be made that the air campaign only appeared decisive because of the limited objectives established for Operation Desert Storm. Had the objectives been unlimited, as Grant's were, a much more robust ground war, one with successive operations, would have become necessary. In this case, a strategy of exhaustion would have been more evident and reflective of a second-wave war. Instead, it appeared a revolution took place when in fact the limited nature of the war made the objectives more easily attainable.

31. Dennis M. Drew, "Desert Storm as a Symbol: Implications of the Air War in the Desert," *Airpower Journal* 6, no. 3 (Fall 1992): 13.

32. John A. Warden III, "Employing Air Power in the Twenty-first Century," in *The Future of Air Power in the Aftermath of the Gulf War*, ed. Richard H. Shultz, Jr., and Robert L. Pfaltzgraff, Jr. (Maxwell AFB, Ala.: Air University Press, 1992), 80.

33. Toffler, 10.

34. Giulio Douhet, *The Command of the Air*, ed. Richard H. Kohn and Joseph P. Harahan (Washington, D.C.: US Government Printing Office, 1983), 30.

35. Robert D. Kaplan, "The Coming Anarchy," *The Atlantic Monthly*, February 1994, 50.

36. Ibid., 49.

37. Ibid., 51.

38. Michael Howard, "Military Science in the Age of Peace," *Journal of the Royal United Services Institute for Defense Studies*, March 1974, 209. Reprinted in US Army Command and General Staff College, C610, *Introduction to Military Theory* (Fort Leavenworth, Kans.: US Army Command and General Staff College, July 1992), 209.

39. Ibid.

policy and the use of force in the periodical *Foreign Affairs*. Both articles were cleared for publication by the Office of the Secretary of Defense since they both presented views that were consistent with and, in fact, represented the policies of the Bush administration. It is not unprecedented or even unusual for the chairman of the Joint Chiefs of Staff to write articles for publication.

The author then speculates that General Powell's two articles may somehow have been influenced by a "lack of policy expertise within the Clinton White House." Careful editorial review would have revealed that the *New York Times* article was published in early October 1992—before the presidential election. There was no Clinton administration, Clinton foreign policy, or Clinton White House at that time. The article was written in direct response to a critical *New York Times* editorial a few days earlier. The *Foreign Affairs* article was printed in the Winter 1992–93 issue. It was submitted for publication in September 1992— also well before the presidential election.

Finally, by the fall of 1992, when these articles were published, the Bush administration had published its national security strategy and General Powell had published the national military strategy. The general was not, as claimed by Captain Westermann, advocating a "new national strategy" but explaining and defending the national strategy that had been approved by President Bush.

Col F. William Smullen III, USA, Retired
Executive Assistant to Gen Colin L. Powell
Alexandria, Virginia

THE AUTHOR RESPONDS

Colonel Smullen's letter provides an excellent opportunity for clarifying a number of specific points in my article. He suggests that my criticism concerning General Powell's articles in the *New York Times* and in the winter issue of *Foreign Affairs* is misplaced, as both were written at a time in which "there was no Clinton administration, Clinton foreign policy, or Clinton White

House." In my opinion, the fact that General Powell wrote the *Foreign Affairs* article in September is irrelevant. The post-election publication of the *Foreign Affairs* article, although previously cleared by the Department of Defense (DOD) and based on military policy approved by the Bush administration, still lends an appearance of military intrusion into the policy process. This appearance is reinforced by the fact that General Powell's article was one of three articles on the issue's cover accompanied by a red headliner reading "Advice for President Clinton." In my opinion, this public response should have come from the secretary of defense as the senior civilian within DOD rather than from a serving military officer, regardless of his or her position. The entry of a military member on active duty into a public debate on foreign policy or defense policy is, in my view, still problematic. I see a significant difference between the involvement of General Powell in the political process caused by the article's publication in the mass media (e.g., the *New York Times*, the *Washington Post, Time,* etc.) as opposed to his discussion of the same topic within the military community via professional military periodicals such as *Airpower Journal, Military Review,* US Naval Institute *Proceedings,* and so forth.

With respect to Colonel Smullen's criticism concerning my use of the phrase *a new national strategy,* the abstract of the *Foreign Affairs* article states that "the Chairman of the Joint Chiefs of Staff *defines a new national military strategy* aimed at accomplishing a range of missions far broader than America's armed forces have known before" (emphasis added). Additionally, General Powell also writes in this article of the "new national military strategy" and of its subsequent "fine-tuning" in the fall of 1992. I do not imply that General Powell *independently* developed a "new national [military] strategy"; rather, I again focus on the propriety of his advocacy of this issue within the mass media. I also believe that my article clearly credits and supports General Powell's critical role in the formation of a national strategy blueprint in the wake of the post-cold-war world.

Capt Edward B. Westermann, USAF
Maxwell AFB, Alabama

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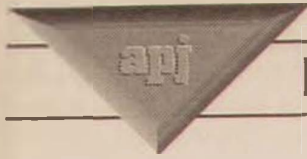
Some books are to be tasted; others swallowed; and some to be chewed and digested.

—Francis Bacon

The Laws of War: Constraints on Warfare in the Western World edited by Michael Howard, George J. Andreopoulos, and Mark R. Shulman. Yale University Press, P.O. Box 209040, New Haven, Connecticut 06520-9040, 1995, 303 pages, $30.00.

During the heady days of the coalition air victory in the Gulf War, it was easy to believe that technology was taking warfare into a new—almost antiseptic—dimension. Watching the gun-camera films of precision weapons piercing doors and hearing generals and pundits talk of "surgical" strikes (certainly an ill-advised use of the term, leading to unrealistic and likely unattainable expectations), watchers were seduced into a false expectation that the world was entering a period of relatively bloodless wars, with general acceptance of legal and moral curbs upon senseless violence. Subsequent events in the states of the former Yugoslavia and Rwanda have rudely disabused us. Another contemporaneous phenomenon, at least in American society, was the fascination, even in civilian circles, with such previous exotica as military necessity, collateral damage, and proportionality, often with little or no understanding of the real meaning and significance of those and related terms. Fortunately, a book occasionally comes along that assists us in putting matters in proper perspective and in understanding not only what the concepts mean but how and why the concepts arose. *The Laws of War* is such a book.

It is, in fact, a chronological analysis of the major eras and events in the development of Western warfare. After examining the reciprocal and complex relationship between the advance of Western civilization and changes in Western warfare, the editors then explore how both civilization and warfare affect the laws of war and are, in turn, affected by those laws. After an initial overview addressing general Western constraints on warfare, the chapters successively address "Classi-

cal Greek Times," "Age of Chivalry," "Early Modern Europe," "Colonial America," "Age of Napoléon," "Maritime Conflict," "Land Warfare from Hague to Nuremberg (1899–1948)," "Air Power," "Nuclear War Planning," and "Age of National Liberation Movements." Thereafter, Paul Kennedy (author of *The Rise and Fall of the Great Powers: Economic Change and Military Conflict from 1500 to 2000*) and George Andreopoulos conclude by reexamining the book's main concerns and reflecting upon the impact that changes in Western society imposed upon warfare and the law of war (which the Air Force generally terms the law of armed conflict).

However, the book does not address every area or subject within the law of war. The editors purposely imposed certain limitations upon the book. Their primary limitation was to address only the development of warfare and the law of war in the Western world—that portion of the globe encompassed by Western Europe and its American colonies. As the editors point out, this was not because valuable lessons could not be learned from other cultures; rather, they were motivated by a desire to "learn something about the way in which not only warfare but moral standards have evolved in the West; to determine whether there has been a constant improvement in civilized standards, and if not, why not" (page 1). A second limitation was to address only the legal concept of *jus in bello* (i.e., how nations conduct warfare) and not to address the related, but substantially dissimilar, concept of *jus ad bellum* (i.e., why nations go to war in the first place). (Those readers who wish to research the latter topic may wish to obtain books such as Michael Walzer's *Just and Unjust Wars* [2d ed.] or James Turner Johnson and George Weigel's *Just War and the Gulf War*.) Third, this work is not simply a review and analysis of law-of-war treaties or customary practices. Although the authors address treaties and the development of customary international law, based upon the practice of nations conducting warfare, they do so in the context of analyzing the development of warfare and its relationship with Western law and morals.

The editors were both deliberate and fortunate in their choice of contributors for each chapter,

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for they not only obtained noted experts in the law of war, they obtained experts who were able to communicate clearly and succinctly. Thus, whether the subject is the evolution of the Greek hoplite (foot soldier) and its effect upon Athenian democracy, or the dilemma of the modern nation-state contending against insurgencies that seem unwilling to respect the law of war, the contributors uniformly convey their points clearly and expressively. The contributors were drawn from a wide cross section of American institutions, both military and civilian. Each is a recognized expert in at least one area of military history and doctrine; some, such as Paul Kennedy and Michael Howard, have written books of wide repute. Harold E. Selesky is a familiar name to many Air Force readers, since he directs the University of Alabama Master of Arts program in military history at Air University.

Perhaps the most outstanding features of this book are its coherent, unifying themes and the contributors' rigorous research. The editors chose two major themes: (1) identifying who is included in/excluded from the laws of war and (2) determining whether *jus in bello* practices during any given conflict have worsened or improved, the longer the conflict lasted. Each of the contributors, while free to include other issues, specifically addresses these themes. Thus, for example, Mr Selesky addresses the attitude of the British and French enemies toward each other and toward their Indian allies during the North American colonial wars. He concludes that while the British and French commonly reciprocated courtesies, even to captured soldiers, their attitudes toward those Indians who were their putative allies were quite different. Nevertheless, their practices did not strikingly differ from the practices of the Greek city-states toward each other versus toward the Persians, or from the practices of Europeans toward each other versus toward "natives" (including "backward" Europeans such as the sixteenth-century Irish) throughout the globe (which practices were generally reciprocated by the natives, if given the opportunity).

The second theme defies easy answer. Reviewing historical examples, the editors cannot find a coherent thread. Although the Thirty Years' War and the Napoleonic wars witnessed a decline in war crimes, largely due to a decline in either religious or revolutionary fervor, the Peloponnesian War resulted in a steady increase in the number of atrocities, culminating in Athens waging virtually a total war against the populace of the other Greek city-states. Finally, in our own

century, advances in technology and the passions of warring parties have led to what Kennedy and Andreopoulos characterize as "increasingly indiscriminate and total forms of warfare" (page 216).

Supporting the excellent writing and analysis is rigorous and practical research. Each chapter is clearly supported by extensive endnotes, referencing both primary and secondary sources, and each chapter is accompanied by a suggested reading list of current and easily obtained writings. Readers—whether operators or attorneys, experts or novices—will find excellent references for further research.

The Laws of War is one of the very best works written about this critical field. To the beginner, it provides an easily understood and comprehensive introduction; to the advanced practitioner, it offers a chance to explore new areas and to examine previously held beliefs and attitudes. As chief of the International and Operations Law Division at the Air Force Judge Advocate General School and principal law-of-war lecturer at Air University colleges, I highly recommend *The Laws of War* and anticipate great benefit from it.

W. Darrell Phillips
Maxwell AFB, Alabama

Every Inch a Soldier: Augustine Warner Robins and the Building of U.S. Airpower by William Head. Texas A&M University Press, Drawer C, College Station, Texas 77843-4354, 1995, 304 pages, $45.00.

There has always been a dearth of sound biographies of American airmen. This shortcoming is especially true of people involved with engineering or logistics. William Head, an official historian with the Air Force, helps fill this void with a biography of Warner Robins, perhaps the first and most important of the air logisticians. Head bases his study on the official and personal papers of Robins, as well as interviews with surviving family members.

Robins was born in 1882 to a patrician Virginia family whose men had fought in the Revolution, the War of 1812, and the Civil War. Following in such footsteps, he entered West Point in 1904—the same class as Henry H. ("Hap") Arnold. After graduation in 1907, Robins spent a decade in the cavalry, and in 1916 his troop accompanied Gen John Pershing to New Mexico for the "punitive expedition" against Pancho Villa. The famous Mexican bandit escaped, but Robins did not. One of the other units on the border was the 1st Aero

Squadron, a group of flimsy airplanes engaged in reconnaissance operations. Robins was intrigued by the possibilities of flight and submitted his papers for a transfer to the air arm.

Because of his relatively senior rank—he was a major by that time—Robins was put into an administrative position almost as soon as he won his wings. Although he thereby missed his chance to serve in France, Robins made a reputation as a first-rate organizer. In 1919 he was assigned to the Supply Division of the Air Service, and—in a sense—he never really left. For the next 20 years, Warner Robins would toil in the world of logistics, mostly at Wright Field in Ohio. These were crucial, if not glamorous, assignments that put him in the forefront of technological development. Airpower was only a word unless planes were developed and built to carry out the theories of the air advocates. Combined with this need, however, was the contradictory requirement to cut spending for defense in a period of fiscal conservatism heightened by the Great Depression. An airman in Robins's position faced a tremendous challenge.

Head tells us that Robins was an outstanding logistician who was largely responsible for putting the Air Service—and later, the Air Corps—on a sound administrative footing. He instituted a supply accountability system that remained in effect until the advent of computers 30 years later. Likewise, in 1927 he opened a logistics school for nonflying officers. (In the future, it would be unnecessary to rely upon officers transferred from the cavalry!) Missing from this account are details on how precisely Robins went about his task and how his ideas differed from standard practice. Clearly, however, the author's conclusion regarding his subject's impact is accurate; a series of air chiefs found his work indispensable. As the air arm expanded between the wars and its materiel functions became more complex, Robins advanced in rank to assume greater responsibilities over these efforts. In 1935 he was promoted to brigadier general—one of only four in the Air Corps at the time—and given command of the Materiel Division at Wright Field.

For the next four years, Robins oversaw the entire logistics side of the Air Corps. He pushed hard for increased funding for research and development, as well as key technologies ranging from the B-17 to the Norden bombsight to the high-octane gasoline needed to power the new high-performance engines. More importantly, he was in charge of the logistics end of the air arm just as the country began its massive expansion for World War II.

An indifferent pilot, Robins suffered a near-fatal crash in 1921 that broke his jaw and right arm. The following year he also developed severe hypertension. Each year thereafter, passing his physical became a chore; indeed, in some cases he had to check into a hospital for two weeks prior to the exam so his condition could be brought under control just enough to get a clean bill of health. In 1939 he took over the Air Corps Training Center in Texas, but in June of the following year, the stress of approaching war—combined with his parlous health—resulted in a fatal heart attack. He was only 57 years old. Three years later, the Warner Robins Army Air Depot at Robins Field, Georgia, was dedicated to his honor.

This is a well-written and heavily researched account of an important airman. Logistics is not an overly exciting subject, but it remains absolutely essential to military operations. As the old adage goes, "Amateurs discuss strategy, but professionals talk about logistics." Warner Robins played a key role in establishing the foundations for Air Force logistics that would stand the test of war and the transition to the independent service that followed. Overall, *Every Inch a Soldier* is an excellent addition to the literature on airpower biography.

Col Phillip S. Meilinger, USAF
Maxwell AFB, Alabama

Shaping Europe's Military Order by Richard A. Falkenrath. Massachusetts Institute of Technology Press, 55 Hayward Street, Cambridge, Massachusetts 02142, 1995, 320 pages, $39.95.

The Conventional Forces in Europe (CFE) Treaty was signed in the waning days of the cold war (November 1989), following 20 months of negotiations between the members of the North Atlantic Treaty Organization (NATO) and the Warsaw Pact Treaty Organization. At its completion, President George Bush hailed the agreement as ending the "military confrontation that has cursed Europe for decades." CFE did not go into effect immediately due in large measure to disagreements that arose in part as an outgrowth of the political turbulence that engulfed the Continent. Still, the treaty adapted intact to the dramatic political developments in Europe. Since that time, implementation has proceeded in quiet but systematic fashion. In fact, some experts are surprised to learn that this most comprehensive

of all conventional arms control arrangements has survived and is near full implementation (slated for 17 November 1995).

With this background in mind, Richard Falkenrath's *Shaping Europe's Military Order* is a timely study not only of the way this treaty came about, but also the role it may have to play in future European security. From the onset, Falkenrath carefully traces the negotiation process and the objectives of the two alliances (NATO and the Warsaw Pact), as well as many of the principal nations involved. In this regard, the author points out a curious phenomenon. The basic goals of the negotiations were to achieve parity in conventional military forces between the two alliances, preclude the possibility of a short-warning attack, and prevent large-scale offensive operations. Events that occurred between autumn 1989 and the end of 1991, however, robbed the agreement of this strategic premise almost immediately. In its place, CFE played an important role in ending the confrontation between NATO and the Warsaw Pact, the retreat of the Soviet army from Eastern Europe, the demise of the Soviet Union, and the reunification of Germany in a fashion perceived as less threatening to its neighbors.

In the initial portion of the book, the author examines not only the decision by national leaders (most notably Presidents George Bush and Mikhail Gorbachev) to begin these negotiations, but also their relationship to the evolving political change in Europe. This part includes a thorough review of the political milieu in the late 1980s and of developments in Western and Soviet perspectives on arms control following the ill-fated Mutually Balanced Force Reduction (MBFR) talks. In this discussion, Falkenrath points out that the shift in the Soviets' thinking may have been the result of a clear understanding of their own domestic weaknesses rather than acceptance of Western arguments.

Readers interested in understanding the treaty's main requirements will find the chapter on the negotiations of great value. Here, Falkenrath discusses the regional sublimits, categories of equipment, information-exchange requirements, verification procedures, and so forth. This is not, however, a stale description of the final treaty text but a useful discussion of the final agreement, as well as the principal position of various states on these issues. This chapter, together with the comprehensive series of tables and maps at the end of the book, makes this text a useful source of information on the content of the treaty.

Shaping Europe's Military Order then proceeds to the question of implementation following the signing of the accord in November 1990 and addresses two very significant difficulties. The first problem was the so-called article three dispute in which the West charged that the Soviet Union was attempting to circumvent the treaty. According to the author, this controversy demonstrates that the West was resistant to treaty revisions, that Eastern leaders ascribed great value to CFE as the Warsaw Pact unravelled, and that technical aspects of arms control can provide a negative effect on political relations. The second problem entailed difficulties arising from the dissolution of the Soviet Union and the emergence of several new nations as participants in the CFE process.

Although the book provides an excellent history of the negotiation process and its aftermath, as well as a primer on the treaty, it also offers clear analysis of impending difficulties and lessons for the future. In his section on implementation, Falkenrath describes in detail a pressing problem that could derail the treaty even as it approaches its goal. Despite the success to date, the final implementation of CFE is jeopardized by a disagreement between the Russian Federation and the West over the "flank zone."

Shaping Europe's Military Order is an important book that should appeal to a wide audience of scholars. Historians will find the descriptions of the final days of the cold war fascinating. Readers interested in the modalities of international negotiations will discover that the book is a rich case study not only of the positions of the two alliances or the US and USSR, but also of the motivations of various other states in the process. Finally, arms control experts and policymakers will find it a compelling discussion of lessons learned that may apply in other areas of the globe, and an important variable in any attempt to shape a future security order for Europe.

Col Jeffrey D. McCausland, USA
Carlisle Barracks, Pennsylvania

The Military Revolution Debate: Readings on the Military Transformation of Early Modern Europe edited by Clifford J. Rogers. Westview Press, Inc., 5500 Central Avenue, Boulder, Colorado 80301-2877, 1995, 387 pages, $69.95.

In recent years, interest has arisen—first in the former Soviet Union and then in the United States—in what is referred to as the military technical revolution (MTR) and the revolution in military affairs (RMA). It is fashionable to argue

that the Gulf War furnished a vision of a future in which the technology of what is trumpeted as the "Information Age" would combine with military doctrine and training to produce an RMA. A plethora of writings from various and sundry defense analysts (among others) attempts to define exactly what an RMA is and then offers suggestions for future military forces. But the vast majority of these writings has ignored the debate over military revolution that has raged among historians—military historians in particular—since 1955.

On 21 January of that year, military historian Michael Roberts delivered a lecture before the Queen's University of Belfast. Published as an article in 1956, "The Military Revolution, 1560–1660" has fueled debate in historical circles for almost four decades. Roberts's concept of a military revolution became "orthodoxy" in early modern military history and remained virtually unchallenged until Geoffrey Parker published his article "The 'Military Revolution, 1560–1660'—A Myth?" which is reprinted in *The Military Revolution Debate*. Subsequent studies also failed to disprove Roberts's basic thesis.   In 1988 Parker published *The Military Revolution: Military Innovation and the Rise of the West, 1500–1800*. In this volume, Parker poses the question that shaped the ensuing debate: How was the West—initially so small and deficient in most natural resources—able to overcome this situation through military and naval power and conquer global empires? In *The Military Revolution Debate,* Clifford Rogers does not attempt to include every relevant article from the last four decades or provide an exhaustive examination of the minutiae of the debate. Instead, he brings together the most important of the articles that have appeared since 1956.

This masterful collection of several difficult-to-obtain studies includes David Parrott's "Strategy and Tactics in the Thirty Years' War: The 'Military Revolution' " and Colin Jones's "The Military Revolution and the Professionalisation of the French Army under the Ancien Regime." However, Rogers does not stop there. To fill what he perceives as gaps in the presentation, he includes newly written essays by Thomas Arnold, Jeremy Black, and former Air Force lieutenant colonel John Guilmartin, Jr., among others.   Together with a concluding rejoinder by Geoffrey Parker that defends his vision of the RMA, these articles present the reader with an overall framework which both solidifies understanding and highlights questions not yet fully answered by the debate.

Divided into three sections, *The Military Revolution Debate's* first four articles estabish the lim-

its of that debate. The first is Michael Roberts's classic "The Military Revolution, 1560–1660" followed by Geoffrey Parker's rejoinder "The 'Military Revolution, 1560–1660'—A Myth?" which provided the proverbial spark. Articles by both Jeremy Black and Clifford Rogers then establish the range of the argument, which develops more fully in "Aspects," the second section, wherein lies the genius of this collection of essays. Drawing upon previous (and sometimes difficult-to-obtain) essays, Rogers persuades several eminent historians to contribute their thoughts on the watershed between the medieval and modern world. However, outside the narrow field of early modern history, just what is the importance of this newest offering in the debate on early modern military revolution?

The questions raised by these historians concerning the rise of the West and its expansion into worldwide empires during the early modern era embrace today's RMA arguments as well. Although different technologies may obscure the similarities between the RMA of the early modern era and what seems to be an RMA brought about by the Information Age, the basic conceptual framework and the process for historical analysis of the early modern military revolution are applicable to today's debate. As both a military historian and one who is involved in today's hot debate over the military in the Information Age and over so-called information warfare, I have found this small volume to be extremely useful in providing a framework to analyze the vision of war in the Information Age. The historical debate is about the changes that transformed the armies and navies of the West into the most powerful war-making entities of their time. Today's RMA debate is also about change, and this is the key to both debates. I strongly advise anyone interested in today's debate to carefully read the arguments both pro and con presented in *The Military Revolution Debate*.

Maj M. J. Petersen, USAF
Maxwell AFB, Alabama

Spying without Spies: Origins of America's Secret Nuclear Surveillance System by Charles A. Ziegler and David Jacobson. Praeger Publishers, 88 Post Road, Westport, Connecticut 06881, 1995, 242 pages.

Spying without Spies deals with how the United States detected the first atomic explosion deep in-

side the Soviet Union in 1949—a subject that up until now has remained hidden from the American people. The Manhattan Engineer District ran the first rudimentary detection system on Germany in 1944 using A-26s with xenon-detection equipment. *Manhattan Engineer District* was the cover name assigned to the Army organization that designed, built, and tested the first atomic bombs. At the end of the war, no one was sure how or if the US could even detect atomic events deep inside the Soviet Union. This book tells how scientists, intelligence officials, Air Force officers, and commissioners of the Atomic Energy Commission (AEC) grappled with the problem. The book also provides an understanding of how national security decisions were made in the early postwar years.

Charles Ziegler and David Jacobson use declassified records and participant interviews to produce this remarkable account. The only drawback is that rather than write a comprehensive history, the authors examine how organizational struggles finally produced a detection network. The military—especially the Air Force, whose WB-29s of the Air Weather Service ultimately detected the explosion of Joe-1 in 1949—is mentioned only as a side note. Organizational development of atomic intelligence is a post–World War II development and is a part of cold war history that the authors are trying to study. Unfortunately, they use too much of an anthropological approach to a historical problem.

At the conclusion of the war, American intelligence collection was in shambles, and the first issue was how to organize the government—or at least the military—to collect atomic intelligence. Although scientists knew they might be able to detect some radioactivity (fallout) from a bomb blast, they could not do so at long range. Further, the old standby methods of human intelligence could no longer penetrate the Soviets' wall of secrecy that governed every part of their atomic developments. With the emergence of two superpowers at the end of war, the US knew that it would not be the sole possessor of atomic bombs for long and that the Soviet Union was already developing its own. A major policy di-

lemma involved finding out how soon the Soviets would test their bomb and how the US could detect the explosion. Creating the necessary intelligence to discover such a Soviet test soon became top priority inside the American intelligence bureaucracy that was created in the late forties.

Although the organizational hurdles involved in establishing the technical detection network were huge, the scientific ones were even more difficult. Atomic science was still in its infancy, and during the war the Manhattan Engineer District had focused only on producing the bomb. In an attempt to keep the bomb from other countries, Maj Gen Leslie Groves, who headed the district, had bought up all the high-grade uranium on the world market.

Scientists and private companies tried various methods—such as detecting sound at long ranges, as well as using balloons and air sampling at altitude—but most trials were experimental and could not be used in real-world scenarios. The detonation of two atomic devices at Bikini atoll in 1946 (Operation Crossroads) occurred too early for new theories in long-range detection to be tried but did lay the groundwork for later air filters used by the WB-29s.

Spying without Spies provides the first description of the creation and institutionalization of America's nuclear detection system and the relationship it forged between the science and intelligence communities. Thus, the book makes a unique contribution to intelligence literature. Still managed by the Air Force (under the Air Force Technical Applications Center) in later years, this detection system would go on to develop other means of detection and then play a pivotal part in the atmospheric test-ban and threshold-limit treaties that monitored the first arms control treaties signed by the superpowers. Organizational theorists and intelligence professionals will want to read *Spying without Spies* since writers rarely approach intelligence problems in this manner.

Capt Gilles Van Nederveen, USAF
Andersen AFB, Guam

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Our Contributors

Carl H. Builder (BS, USNA; MS, UCLA) is a senior member of the RAND staff, specializing in strategy formulation and analysis. He currently lectures at all of the US war colleges on future trends and their implications. He is the author of two books on military history: *The Masks of War*, a study of American military styles in strategy and analysis, and *The Icarus Syndrome*, an analysis of the role of airpower theory in the evolution of the US Air Force. Mr Builder has directed two Air Force mission analyses—one on high-energy laser weapons and the other on antisubmarine warfare.
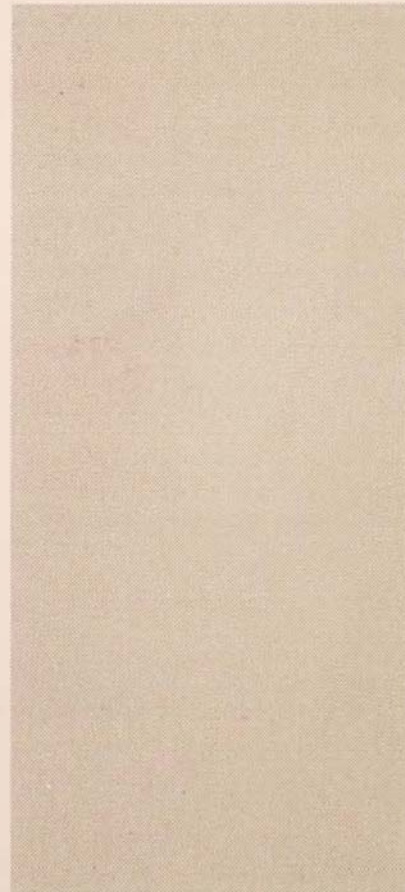

Dr James A. Mowbray (PhB, MA, Wayne State University; PhD, Duke University) is professor of aerospace doctrine and strategy at Air War College, Maxwell AFB, Alabama. He is the author of a forthcoming book, *USAF in the 21st Century*, that will be an all-electronic publication on the Internet.

Col Roberto Corsini is assigned to the Plans and Operations Division of the Italian Air Staff. He has served as a squadron commander and as commander of base operations for a reconnaissance and attack wing. Colonel Corsini attended the Air Academy and the Air War School in Italy, the NATO Defense College, and the Air War College of the US Air Force.

Maj Gen I. B. Holley, Jr., USAFR, Retired (BA, Amherst; MA and PhD, Yale), is professor emeritus of history at Duke University. He has been a visiting professor at the National Defense University and the US Military Academy. He has taught at the Industrial College of the Armed Forces and served as chairman of the advisory committee on history to the secretary of the Air Force and as mobilization assistant to the commander of Air University, Maxwell AFB, Alabama. The author of *Ideas and Weapons* (1953), *Buying Aircraft: Air Materiel Procurement for the Army Air Forces* (1964), and *General John M. Palmer: Citizen Soldiers and the Army of Democracy* (1982), General Holley has published in *Air University Review* and serves on the Board of Advisers of *Airpower Journal*.


Col Dennis M. Drew, USAF, Retired (BA, Willamette University; MS, University of Wyoming; MA, University of Alabama), is professor and associate dean at the School of Advanced Airpower Studies, Air University (AU), Maxwell AFB, Alabama. Previous positions include director of the Airpower Research Institute at AU, chief of both the Strategy and Doctrine Branch and the Warfare Studies Division at AU's Air Command and Staff College. He also served as a missile combat crew commander, missile operations staff officer, and staff division chief at Headquarters SAC. Colonel Drew, a distinguished graduate of Air Command and Staff College and a graduate of Squadron Officer School and Air War College, is a previous contributor to *Airpower Journal* and the author of numerous publications on military subjects.

R. L. DiNardo (BA, Bernard Baruch College; MPhil, PhD, City University of New York), professor of history at Saint Peter's College, Jersey City, New Jersey, is visiting professor at Air War College, Maxwell AFB, Alabama.   He is the author of numerous publications on a variety of topics in military history, with major areas of research being the German army in World War II and the American Civil War.
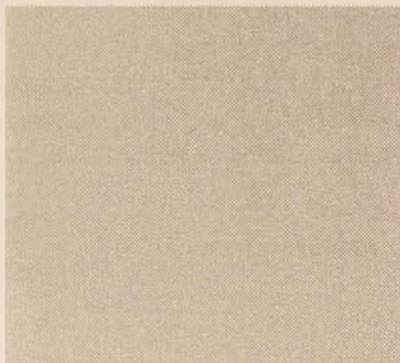
Daniel J. Hughes (MA, PhD, University of North Carolina) is professor of military history at Air War College, Maxwell AFB, Alabama. Previous assignments include historian at Fort Leavenworth, Kansas; at Fort Benning, Georgia; and at Headquarters Air Force Reserve, Robins AFB, Georgia.

Dr David R. Mets (BS, USNA; MA, Columbia University; PhD, University of Denver) is a professor at the School of Advanced Airpower Studies, Maxwell AFB, Alabama, and was once the editor of *Air University Review*. He spent a 30-year career as a Navy sailor and as an Air Force pilot and navigator. He flew more than 900 C-130B sorties in Vietnam, and his last flying tour was as commander of an overseas AC-130 squadron.   He had teaching tours at both the US Military Academy and the US Air Force Academy. Dr Mets has published three books.

Maj Kurtis D. Lohide (BA, Indiana University; MMAS, US Army Command and General Staff College) is a political-military planner on the Joint Staff. Previous assignments include F-4G electronic warfare officer and chief, weapons tactics division, 561st Tactical Fighter Squadron, 480th Tactical Fighter Squadron, and 81st Fighter Squadron. He is a distinguished graduate of the USAF Fighter Weapons School and a graduate of Squadron Officer School and the US Army School of Advanced Military Studies.

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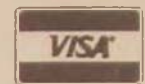
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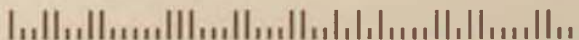
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