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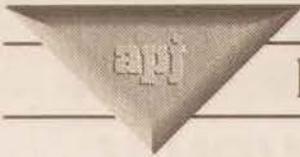
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Ricochets and Replies

We encourage your comments via letters to the editor or comment cards. All correspondence should be addressed to the Editor, Airpower Journal, 401 Chennault Circle, Maxwell AFB AL 36112-6428. You can also send your comments by E-mail to editor@max1.au.af.mil. We reserve the right to edit the material for overall length.

MORE ON ARKIN

I applaud the critical look that William Arkin takes at the Desert Storm air campaign in his article "Baghdad: The Urban Sanctuary in Desert Storm?" (Spring 1997). The article's central theme appears to be the apparent lack of understanding on the part of leaders who have failed to grasp what happened in the strategic air campaign. The "understanding" most people have of the air campaign, and of airpower in general, seems to be formed from a mixture of television reports, general impressions, and emotions. Indeed, when reading about Desert Storm, we see many conclusions, with numbers of bombs and targets used to support whatever assumption the author champions. In this article, Arkin provides us with assessments, not of what was damaged but what the effects of damages were. His assessments seem to be based on results, not simply numbers and statistics arrayed to suit his ends.

People claim that Desert Storm has taught us many "lessons"—most of one extreme view or another. In fact, many of these lessons are supported only by a selective presentation of data. For example, the General Accounting Office's report on Desert Storm claims that precision-guided munitions (PGM) weren't as effective as the Pentagon and contractors claimed, and that unguided weapons could

have done the same job at a much lower cost. It's certainly not uncommon for contractors to paint their products in the most favorable light. And, in some cases, I would agree that Pentagon officials overstated the capabilities of various PGMs. Since it was in the best interests of the war effort for the Pentagon to highlight the successes of precision strikes and not suboptimal results, perhaps this is understandable.

Yet, a shallow, or total lack of, understanding of strategic bombing—and airpower in general—isn't limited just to Army and civilian officials, as Arkin addresses in his article. It is alarmingly common in the Air Force as well. We have a wealth of experts (probably the best in the world) thoroughly versed in how to employ airpower, yet few people can talk intelligently about planning a conventional strategic bombing campaign. Some proponents offer the crutch of an automated targeting process. This is nonsense—far too much emphasis is placed on automating target selection (such as the joint force air component commander [JFACC] planning tool or on-the-shelf prioritized target databases). We really need experts and a great deal of study. Perhaps automation proponents believe we can be freed from having to study (in great detail) the enemy, his systems, and potential targets. Or perhaps automation seeks to fill a void in targeting and campaign planning expertise. This void was exacerbated by the termination of the intelligence officer and enlisted *targeteer* career fields. Or perhaps the root cause is the trepidation we Americans feel at planning offensive operations before the need arises. We don't feel right making these plans, so we wait until there's a need to go on the offensive.

It's much easier to criticize proposals than to devise a plan. This is as true of a strategy for offensive planning as anything else—witness the commentary on Col John Warden's centers of gravity that have appeared in *Airpower Journal*. Letters and responses have focused on what's wrong or what's right with the theories he presented in his book *The Air Campaign* and his Instant Thunder plan. Although debating the merits of his approach is a valuable exercise, we should recognize Colonel Warden for actually developing a theory. Far too many "experts" simply provide reasons why they believe that strategic bombing or centers of gravity don't work. The pages of *Airpower Journal* have been lacking in alternative plans. Yes, Desert Storm was a major success and demonstrated some of the awesome capabilities of airpower. But our overall success in Desert Storm doesn't automatically validate the targeting there. Who in the Air Force today is prepared to develop the next air campaign? Will we see a repeat of the Instant Thunder genesis—a plan developed by a group of experts, not part of the theater planning staff? I suspect that the answer is "yes."

Capt Jonathan Dagle, USAF
Davis-Monthan AFB, Arizona

SAY "YES" TO DRUGS

The article by Lt Col Rhonda Cornum, Dr. John Caldwell, and Lt Col Kory Cornum, "Stimulant Use in Extended Flight Operations" (Spring 1997), addresses a topic that has been controversial for decades, not just because of its aeromedical complexity but also because of its potential for abuse by media representatives who see its value only in generating alarmist headlines.

I was a flight surgeon for a tactical fighter squadron during the time that sedative and stimulant medications could be used under controlled conditions. At that time, sedatives were used to help the flier get to sleep at an unusual hour, so that he or she was rested when the flight began. Stimulants were used when the flier had been awake for many

hours and was expected to be fatigued. Generally, fliers would take the stimulant about two hours before landing so that they would be wide awake and alert during this most critical phase of flight. For transoceanic deployments of single-seat fighters with multiple midair refuelings, the landing might occur at sundown after the flier had been awake for 13 hours, strapped into the seat for nine hours, with only fair nutrition and hydration.

Using these medications exposes fliers to a risk beyond that of ordinary flight. Clearly, then, such medications should not be used unless the estimated risk of *not* using them exceeds the risk associated with their use. Assessing such risks involves a joint line-medical assessment. As with any situation in aviation, the flight surgeon and the unit commander decide whether or not an operational situation seems more hazardous without the medications. Only then do they decide if they will be made available to aircrews who have been cleared to use them. If offered the medications, fliers will decide for themselves whether or not to use them on the mission. All unused medications must be returned.

For this procedure, commonly used in Tactical Air Command during the 1960s on trans-Atlantic deployments, fewer than half of the fliers would opt to take the medications (100 mg of secobarbital and 5 mg of dextroamphetamine). I recall no ill effects or adverse incidents being reported at my base or at any others during this era.

Col David R. Jones, USAF, Retired
Montgomery, Alabama

EXCUSE ME, COLONEL DREW

I applaud Col Dennis M. Drew, USAF, Retired, for the contributions he has made to the Air Force, but I take exception to a great many of his observations, particularly "Educating Air Force Officers: Observations after 20 Years at Air University" (Summer 1997). He wrings his hands over "irrelevant" graduate-level education and then uses business degrees as



Mutually Assured Destruction Revisited Strategic Doctrine in Question

COL ALAN J. PARRINGTON, USAF

Today I can declare my hope and declare it from the bottom of my heart that we will eventually see the time when the number of nuclear weapons is down to zero and the world is a much better place.

—Gen Colin Powell, USA
Former Chairman, Joint Chiefs of Staff



ON 3 DECEMBER 1996, Gen Lee Butler, USAF, Retired, the last commander in chief of the Strategic Air Command, stunned a National Public Radio audience by calling for the near-term elimination of all nuclear weapons. Speaking to a National Press Club audience, he told them:

I have spent years studying nuclear weapons effects; inspected dozens of operational units; certified hundreds of crews for their nuclear mission; and approved thousands of targets for nuclear destruction. I have investigated a distressing array of accidents and incidents involving strategic weapons and forces. I have read a library of books and intelligence reports on the Soviet Union and what were believed to be its capabilities and intentions—and seen an army of experts confounded. As an advisor to the President on the employment of nuclear weapons, I have anguished over the imponderable complexities, the profound moral dilemmas, and the mind-numbing compression of decision-making under the threat of nuclear attack. I came away from that experience deeply troubled by what I see as the

burden of building and maintaining nuclear arsenals.¹

General Butler was joined on the rostrum by Gen Andrew J. Goodpaster, the former NATO commander and advisor to a half-dozen presidents during his 70 years of national service. They were there to announce the release of the “Statement on Nuclear Weapons by International Generals and Admirals,” a document signed by 63 former flag officers advocating the abolition of nuclear weapons. The signatories read like a Who’s Who of cold-war militaries, including such notables as Bernard Rogers, John Galvin, Chuck Horner, Lord Carver, Vladimir Belous, and Alexander Lebed—20 Americans, 18 Russians, and 17 nations in all from every corner of the globe. They were not the first to make such a recommendation, however. As General Goodpaster pointed out, every US president since Dwight Eisenhower has taken a similar position with respect to atomic weapons.

But the generals seemed perplexed. Despite the long widespread questions about the

utility of atomic weapons, the world was steadily marching along the path towards nuclear proliferation while the perceived window of opportunity brought about by the end of the cold war slipped away. It was as if the lessons of the past 50 years were too hard to swallow and the elimination of nuclear weapons just too hard to do. Other than garnering a few small articles in the national press, their warnings seemed to have little impact. Where the generals erred was in simply challenging the nuclear bombs, rather than the strategy behind the weapons—a strategy oddly known as mutually assured destruction (MAD).

MAD is a product of the 1950s' US doctrine of massive retaliation, and despite attempts to redefine it in contemporary terms like flexible response and nuclear deterrence, it has remained the central theme of American defense planning for well over three decades.

MAD, of course, is an evolutionary defense strategy based on the concept that neither the United States nor its enemies will ever start a nuclear war because the other side will retaliate massively and unacceptably. MAD is a product of the 1950s' US doctrine of massive retaliation, and despite attempts to redefine it in contemporary terms like *flexible response* and *nuclear deterrence*, it has remained the central theme of American defense planning for well over three decades.² But MAD was developed during a time of unreliable missile technology and was based on a mortal fear of Communism, aggravated by ignorance of an unknown enemy that lurked behind an iron curtain. Times have changed. Missile guidance improvements have eliminated the need for multiple targeting by redundant weapon systems. More importantly, our enemies have changed as have our fears about Communist domination. It is time to rethink our baseline defense strategy and the doctrine behind it.

The normal reaction to such a suggestion is the often heard: "Why tinker with something that has kept the peace for the past half-century?" Gen Henry H. "Hap" Arnold perhaps best answered this by asserting that modern equipment is but a step in time and 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."³ Furthermore, nuclear weapons did not keep the peace in Korea, Vietnam, Afghanistan, the Middle East, the Balkans, Africa, or Latin America, even though one side in those wars often possessed "the Bomb" and theoretically should have coerced the other side into submission.⁴ By one estimate, 125 million people have died in 149 wars since 1945.⁵ Well then, what about Western Europe? NATO's threat to use atomic weapons against invading Warsaw Pact forces is said to have preserved the peace in a region where two world wars broke out this century.

Not to take anything away from the Communists, but it was German militarism that led to those conflicts. The Soviet Union did not even exist in 1914 and actually came about as a result of an antiwar movement. After World War I, it was the Europeans that invaded Soviet territory in an unsuccessful effort to suppress Bolshevism by supporting the White Army counterrevolution. Stalin was no peacemaker for sure, but neither he nor his despotic regime was the cause of World War II—a cataclysmic event that cost 27 million Soviet lives.

It is naive to assert that the Soviets would have initiated a third major European war this century absent NATO's threat to use nuclear weapons. Wars do not go off at scheduled intervals. There is always a political objective at issue, and it has yet to be defined what vital Soviet interest could have existed to cause the Soviets to bear the burden of even a conventionally fought World War III. During the heyday of Communism's expansion in the 1960s, Adm Arthur W. Radford, chairman of the US Joint Chiefs of Staff, recognized that "Communism, when seeking a means to a political end is reluctant to use organized

armed forces in an overt aggression except as a last resort," and then only if "there is a reasonable chance of quick victory without—in the opinion of its leaders—appreciable world reaction."⁶ Towards the end of the cold war, Michael Howard, Regis Professor of History at Oxford, pointed out, "It is a basic principle of Marxism-Leninism that the revolution cannot be carried abroad on the points of foreign bayonets. . . . It would be quite unrealistic to assume the Russians have been deterred from attacking us solely by their perception of the military costs involved or by fear of nuclear retaliation."⁷ Henry Kissinger put it more bluntly in his 1994 treatise *Diplomacy*: "The much advertised Soviet invasion of Western Europe was a fantasy . . . a fear widely recognized by posterity as chimerical."⁸

Soviet military actions in Europe from 1945 to 1990 suggest more of a policy toward preservation of buffer states than of territorial expansion.⁹ Having been overrun twice in his lifetime, Stalin "intended to turn the countries conquered by Soviet armies into buffer zones to protect Russia against any future German aggressions."¹⁰ The hegemony subsequently imposed on the states of Central Europe by the Brezhnev Doctrine was thus understandable, if lamentable, in light of the unprecedented Soviet suffering at the hands of invading German, Italian, Hungarian, and Rumanian armies during World War II. One wonders how Americans may have reacted had the Japanese invaded California after Pearl Harbor and destroyed everything west of the Mississippi. The United States lost a quarter of a million men in World War II; the Soviets lost one hundred times that number, including millions of women and children. It should not be difficult to understand the paranoia typified by the Iron Curtain and Berlin Wall. Conversely, the Soviet's postwar evacuation and laissez-faire treatment of non-strategic Austria and Finland stand in the face of the popular notion of the Soviets as a monolithic leviathan bent on conquering the West through military aggression. To argue that nuclear weapons were the only thing that held the Soviets at bay is simply unfounded.

Nuclear weapons have only deterred nuclear war, and, ironically, very nearly caused one in the process. Everyone remembers that it was Khrushchev's placement of short-range nuclear missiles on America's doorstep that created the Cuban missile crisis, but most people are unaware that it was a similar US move on the Soviet periphery that caused the Kremlin's deployment decision in the first

"The much advertised Soviet invasion of Western Europe was a fantasy . . . a fear widely recognized by posterity as chimerical."

place. The American postwar policy of "containment," which aimed at meeting the Marxists on their doorstep, had resulted in a network of US bases and naval fleets that ringed the Communist empire with conventional and nuclear armed forces. When Khrushchev tried to match the US deployment of missiles to Turkey by placing Soviet weapons in Cuba, the world came very close to catastrophe.¹¹ The world went to the brink of war over nothing more than nuclear posturing. The Soviets blinked, we are told, but the US also quietly removed its nuclear missiles from astride the USSR's southern flank.¹² The Russian loss of face, unfortunately, added fissionable fuel to an already aggressive arms race that either side could ill afford.

It is difficult, if not impossible, to calculate the costs of the strategic arms race of the last 50 years. Not only are the bombs and delivery systems expensive to produce, crisscrossing numerous US departmental budgets, but survivability measures needed to insure their use during war are staggering, not to mention the environmental, psychological, and opportunity cost factors. A 1988 Department of Defense (DOD) study indicated that nuclear-club nations typically spent more than twice as much on defense as did nonnuclear countries with similar requirements.¹³ A more recent Brookings Institution report put the costs of the 70,000 US nuclear weapons built

thus far at a minimum of four trillion dollars¹⁴—or very nearly equal to our national debt. While some analysts argue that those are economic, not security, considerations the demise of the Soviet Union has shown most clearly that the two issues are not mutually exclusive. Moreover, the historical response to a superior nuclear threat has been a countervalue strategy adopted by the enemy. There has been an inverse relationship between national security gained and money spent.

Is there a safe way for the West to reduce its reliance on nuclear weapons without endangering national security? The question might better be posed by asking if we can eliminate our reliance on nuclear weapons without endangering our national existence anymore than it is threatened right now by the thousands of Soviet warheads still on alert, or in the near future when unstable nations like North Korea or Iraq acquire their own bombs.

Arms control negotiators would tell us that the Strategic Arms Reduction Talks (START) agreements are doing just that. But even if after the yet to be ratified START II and III are implemented in 2007, the United States and Russia will still have five thousand nuclear weapons on alert, more than enough to destroy civilization as we know it. What is worse is that by simply reducing the excess inventory of nuclear weapons, the superpowers send the signal that they believe nuclear arsenals to be a vital part of national security and integral to status as a world power. The constant admonition to developing nations to forgo their own weapons programs comes across as elitist hypocrisy, routinely falling on deaf ears.

Proponents of national missile defense (NMD) systems argue their ideas will counter the emerging threat from nuclear proliferation, but promised technology appears farther and farther away. Even if Star Wars (the Strategic Defense Initiative) were to succeed, it would only defend against delivery systems and not the bombs themselves. Any nation unable to secure its borders against drug-running cartels will remain vulnerable to weapons that can fit in a suitcase, diplomatic

pouch, or Ryder rental truck. Noble as it may be, NMD is no panacea.

Even so, it is not really the nuclear missiles or warheads that are the problem: *It is the flawed strategy behind the weapons that justifies noncombatants as targets, and in so doing makes all weapons of mass destruction so speciously attractive that is the greatest threat to national security.* Many Americans may be surprised to learn that it was a fundamental shift in US military strategy 60 years ago that has led to the current dilemma.

During the 1920s and 1930s, airmen in the United States and Europe became enamored with strategic bombing. They believed the stalemated trench warfare of World War I could be avoided by directly attacking and destroying the enemy's center of gravity—its population's will to resist.¹⁵ "Instead of wearing down the morale of the enemy civilians through the attrition of surface operations, air power, its protagonists believed, would be able to attack and pulverize it completely."¹⁶ The localized panics caused by the German Gotha bomber attacks against London in World War I led airmen to believe that any nation could be brought to its knees by simply destroying the industrial base and causing widespread deprivations. The populations, it was argued, would rise up against the enemy government and cause it to sue for peace. It was even postulated that the threat of strategic bombing would "deter" an enemy from ever starting a war.¹⁷

World War II put these theories to the test. When it was over, strategic bombing proponents argued the destruction of German and Japanese industrial societies was "decisive."¹⁸ Many independent analysts disagreed.¹⁹ The facts were that despite the heroic sacrifices of the aircrews involved, strategic bombing never came close to its prewar predictions; and the costs in manpower, material, and moral factors posed serious questions about its value.²⁰ City after city was flattened, but the bombing had negative impact in forcing a surrender. In fact, the bombing of civilian areas was actually found to increase the enemy population's will to resist rather than defeating it. It was widely acknowledged, for



Symbols of deterrence or MAD? Clockwise from upper right: the famous "Red Phone" of the primary alerting system at the SAC command post; the battle staff aboard "Looking Glass," SAC's Airborne Command Post; a B-52 crew races the clock to their aircraft; a Minuteman missile on alert at Ellsworth AFB, South Dakota; and B-58 crew members sprint to their plane.

example, that the Luftwaffe lost the Battle of Britain when it switched from attacking military targets to attacking London.²¹ The German Blitz also angered many neutrals in the United States and eventually led to the entry of the United States into the war on Britain's side, a fatal mistake for the fascists. Still, many Allied airmen after the war remained unconvinced, clinging to their dogmatic beliefs that bombing alone could win a war against the Nazis. City after city was flattened, but the bombing had negative impact in forcing a German surrender. After the war, airmen argued that development of the atomic bomb vindicated their claim that strategic bombing could at least deter future wars. But as we have seen, this has not been the case.

The way to curtail our dependence on nuclear weapons is to first recognize that strategic bombardment is counterproductive. Carl von Clausewitz, the grandfather of contemporary military strategy, wrote that the objective of war is to force an opponent to accept one's political will. His statement that war is "an extension of political activity by other means" is often quoted.²² The means, however, have to support the ends. Professor Howard explains:

Clausewitz had described war as a "remarkable trinity" composed of its political objective, its practical instruments and of popular passions, the social forces it expressed. It was the latter, he pointed out, that made the wars of the French Revolution so different in kind from those of Frederick the Great and which would probably so distinguish war in the future. In this he was right.²³

While strategic bombing may have some positive, usually indirect, effect on the enemy instruments of war, it is also known to have a decidedly negative and immediate effect upon achieving the more important political objective, for it inflames enemy social passions into militant, often irrational, resistance.²⁴ One need only think of Pearl Harbor ("A day that will live in infamy!"), the London Blitz, Stalingrad, or a similar campaign to appreciate the effect of strategic bombing on the national will to resist.

If the objective of war is, as Clausewitz states, to convert the enemy's political will, attacking his home, his family, his means of existence—in other words, his passions—is clearly antithetical to the aim. There is, unfortunately, the popular myth that massive and unrestricted application of strategic airpower, such as occurred in Japan in August 1945 or North Vietnam during Christmas 1972, can secure an honorable peace without the need for further action.²⁵ This is nothing more than wishful, perhaps dangerous, thinking that falls apart under examination.²⁶

Lessons from the Strategic Bombing of Japan

While most historians recognize 1 September 1939, the day that Adolf Hitler invaded Poland, as the beginning of World War II, Americans remember 7 December 1941, the day the Japanese bombed Pearl Harbor, as the start of their war. The Japanese had, in fact, been at war for some time. They had been invading their East Asian neighbors uninterruptedly for most of the twentieth century. Their attacks on Manchuria and China in the early 1930s brought them into confrontation with the United States. As the decade progressed, relations grew tense. Embargoes and ultimatums finally brought the crisis to a head, but thoughts of war with the United States was not something Japanese leaders cherished.

Six months before the attack on Hawaii, Japanese military analysts concluded that if a war with the United States were to last more than 18 months, it could only end in defeat. The only Japanese hope was for a series of rapid crushing blows against Allied forces in the Far East followed by a decisive naval battle against the remaining American fleet. Successive quick victories were to be followed by negotiations and settlement that ceded the Western Pacific to Japanese hegemony. A similar strategy had been successfully employed against the Russians in 1904.

For the first three months after Pearl Harbor, the Japanese strategy worked. The Phil-



Bombs away! B-29s drop incendiaries on Yokohama.

ippines fell, and Singapore was captured. A relieving British Royal Navy task force was quickly sent to the bottom. Japanese codes had, however, been broken by American cryptologists, and the US Navy could not be lured into a trap. The war dragged on. Emperor Hirohito instructed his ministers to “miss no chance for concluding an advantageous peace.”²⁷ But the attack on Hawaii had hit an unexpected nerve, and Americans were in no mood for compromise. The United States began to mobilize forces such as the world had never seen. The worst fears of Japanese war planners came to be realized. By the end of 1943, independent Japanese army and navy studies reported that the war had been irrevocably lost, the only factor yet to be determined being the terms of surrender.²⁸ Thus, long

before the first strategic bomber came within range of Japanese shores in late 1944, its leaders were resigned to defeat. As one historian wrote:

The majority of Japanese officials had long recognized the need to surrender but their will was frozen. They did not know how to admit to one another that they were beaten. They only knew what they had done in their own conquests, and they feared vengeance in kind.²⁹

When the strategic bombers did arrive in the winter of 1944–45, the effect was, as it had been in Europe, to add to the level of anxiety rather than to assuage it.

The US Army Air Forces saw in Japan a unique opportunity to redeem its prewar doctrine of victory through strategic bombing

and spared no effort establishing Pacific island airfields for its new long-range B-29 bomber. Japan appeared the ideal strategic target, having no air defense to speak of with a highly urbanized population offering "vital centers" of commerce. At first, the B-29s struck industrial targets from high altitudes with measurable success, but with no appreciable effect on the governing body politic. Resistance increased sharply on Iwo Jima and other island fortresses with the advent of kamikaze and similar desperation tactics. American casualties grew in proportion with each passing month.

Japan appeared the ideal strategic target, having no air defense to speak of with a highly urbanized population offering "vital centers" of commerce.

Having failed to produce any sign of capitulation, planners changed bombing tactics. In mid-March the B-29s came in low under the cover of darkness, dropping incendiaries on the densely populated urban districts of Tokyo as well as 58 other metropolitan districts.³⁰ Hundreds of thousands perished, but the Japanese will would not crack. War losses on Okinawa in April reached record levels for both sides and for the first time, the Japanese inflicted more casualties than they suffered.³¹ One scholar, citing the US Strategic Bombing Survey, wrote:

The (Tokyo) fire convinced the Japanese lower classes, as no propaganda ever could, that surrender was, indeed, out of the question and that Americans really were demons bent on exterminating all Japanese.³²

The war dragged on throughout the summer as Americans prepared for a much dreaded invasion of the Japanese home islands. Negotiations through neutral countries produced no positive results. At Potsdam in July, Allied leaders tried to clarify the terms of surrender by putting a

liberal face on postwar occupation. But doubts about the status of the emperor continued to be the primary obstacle to peace. Even the atomic bombs, dropped on Hiroshima and Nagasaki in early August, were insufficient to convince the Japanese Peace Cabinet, as American diplomats had dubbed it, to submit to an "unconditional surrender." In vote after vote, they rejected the Allies' ultimatum as "a religious article of faith."³³ Only personal intervention by the emperor changed the calculus.

What finally convinced Hirohito to act was not the atomic bomb or the threat of a US invasion but an event more compelling than both. On 8 August 1946, two days after Hiroshima and on the eve of Nagasaki, the Soviet Union declared war on Japan. The long-established foe of Japan in the Far East attacked across a broad frontier with a ruthless million-man Red Army in coordination with their Maoist Chinese comrades.³⁴ Decades of humiliating Japanese triumph and aggression over its East Asian neighbors were coming to fruition. "The thought of a Russian invasion was terrifying enough, but the thought of a Chinese revenge raised cold sweat."³⁵ The emperor, fully aware of what had happened to the czar and his family at the hands of the Bolsheviks, wasted no time in coming to a decision.

Faced with the alternatives of either a US or Sino-Soviet occupation, Hirohito intervened and overruled the Peace Cabinet, directing the foreign minister to accept the Potsdam Ultimatum "with the understanding that the said declaration does not compromise any demand which prejudices the prerogatives of his majesty as a sovereign ruler."³⁶ The United States accepted in substance, if not in form, the conditional surrender proffered. The semideified emperor, himself having been spared, ordered his disbelieving armed forces to lay down their weapons, but not before an unsuccessful coup threatened his life.

"Japan was beaten as thoroughly as any nation had ever been beaten in history."³⁷ The last aircraft carrier had been sunk, the



Haiphong, 1972. There is, unfortunately, the popular myth that massive and unrestricted application of strategic airpower such as occurred in North Vietnam can secure an honorable peace without the need for further action.

last battleship sent to the bottom. Its air forces had long since sacrificed its pilot corps in kamikaze attacks, and its once proud army had retreated into fighting from island caves. The Japanese were not defeated by strategic bombing but by the cumulative weight of Allied land, sea, and airpower that had disarmed its military of its sinews and its government of its credibility. If anything, strategic bombing delayed the inevitable by alienating diplomacy. The atomic bombs were but a convenient scapegoat, for "in the unforeseen and unanswerable bomb, Hirohito saw a face-saving excuse for Japan's fighting men, one which could be used to ease the humiliation of defeat and smooth the pathway to surrender."³⁸

Lessons from Strategic Bombing in Vietnam

During the last 25 years, strategic bombing proponents have argued that the 1972 Christmas bombing of North Vietnam is what caused the Communists to finally accept the American peace proposals to end the war in Vietnam.³⁹ Again, the facts dispute this conclusion.

The history of war in Vietnam is too well known to repeat here except to say that it began during the Japanese occupation in World War II and proceeded unabated until 1975, when North Vietnam overran the South. American involvement began in the 1950s, a consequence of the previously dis-

cussed US cold war policy of containment. It peaked during the late 1960s with over a half-million US troops deployed throughout Southeast Asia and ended in the early 1970s following loss of public support.

"The thought of a Russian invasion was terrifying enough, but the thought of a Chinese revenge raised cold sweat." The emperor, fully aware of what had happened to the czar and his family at the hands of the Bolsheviks, wasted no time in coming to a decision.

Negotiations to end the American involvement began in Paris in the spring of 1972. By October of that year, a draft agreement was reached with North Vietnam that called for an in-place cease-fire followed by a unilateral US withdrawal. "Peace is at hand" was the widely touted aphorism used to describe the situation leading up to the American presidential election that November. South Vietnam's president Nguyen Van Thieu, who was not part of the negotiations, subsequently let it be known, however, that he would not sign any agreement that left 149,000 North Vietnamese regulars inside his country's border ready to attack after the Americans left.⁴⁰

Back in Paris, US negotiators, buoyed by the Nixon landslide electoral victory, tried to inject Thieu's demands for a Communist withdrawal into the October agreement. The North Vietnamese stalled and walked out of the talks. The agreement began to unravel. To pressure the North and reassure the South, President Nixon ordered an unprecedented round-the-clock aerial attack on North Vietnam, stating he would continue the attacks until the North showed a more constructive negotiating attitude. In the end, it was Thieu who was made to show flexibility. After 12 days of bombing with no Communist concessions in sight, Thieu was told by Nixon to

accept the October agreement or else go it alone. South Vietnam had little choice but to accept the *fait accompli*. The Christmas season bombing did not materially change Hanoi's previous position, and at the January 1973 conference table, it was the US negotiators who capitulated.⁴¹

No clearer statement of Hanoi's intentions, or of strategic bombing's limitations, need be found than in the North's actions immediately following the signing of the Paris Accords. Before the United States had time to fully withdraw, the Communists began the buildup in the South for their final offensive in direct violation of the peace agreement; and despite American threats to again bring strategic airpower to bear,⁴² North Vietnam was never deterred, and the Christmas bombing's only real effect was to open a window for the United States to "leave with honor." As Professor Howard observes, "It was only an episode in a strategic defeat."⁴³

Lessons from Strategic Bombing in the Persian Gulf

Some pundits have asserted that after 70 years of unfulfilled promises, airpower finally came of age in the 1991 Persian Gulf War with Iraq. Certainly, if strategic bombing ever had the opportunity to prove itself, it was during Desert Storm. Air planners had five months and nearly limitless resources to prepare for what was clearly going to be a one-sided battle in terms of numbers, technology, intelligence, communications, airmanship, and geopolitical advantage. Allied air commanders also had the luxury of attacking from numerous directions in an environment of generally excellent flying weather. Furthermore, American aircrews had spent the last two decades conducting large-scale exercises over similar terrain in the US Southwest. They were at the top of their cold-war form. They could not have been better prepared or better led.

The Desert Storm air planning staff, affectionately dubbed the "Black Hole," had considerable freedom in planning their strategic

campaign. They were also greatly assisted by the Air Staff at the Pentagon. A prioritized list of strategic targets was "aimed at winning the war by destroying Iraq's governing infrastructure and causing Saddam Hussein's overthrow."⁴⁴ Targets included command and control, telecommunications, electric power production, oil refineries, railroads, and bridges. It also targeted suspected nuclear, biological, and chemical weapons facilities as well as Scud surface-to-surface capabilities.⁴⁵ The planners hoped to apply indirect pressure on Saddam by causing economic deprivations on the Iraqi population who would, in the words of the plan's chief architects, get the signal that "Hey, your lights will come back on as soon as you get rid of Saddam."⁴⁶

The thousand-hour air war began on 16 January 1991 and continued unabated until 24 February, when the ground war commenced. During the six-week interval, most of Iraq's infrastructure was destroyed as planned.

Yet, at the war's end, Saddam Hussein was still alive and his Ba'athist regime still in power. . . . Thus, the results of these attacks clearly fell short of fulfilling the ambitious hope, entertained by at least some airmen, that bombing . . . might put enough pressure on the regime to bring about its overthrow and completely sever communications between the leaders in Baghdad and their military forces.⁴⁷

On the battlefield in Kuwait, and along the lines of communication leading into it, *tactical airpower* did play *the* decisive role, as it has in every major war of this century. In fact, *tacair* "devastated the Iraqi army . . . and all but won the war."⁴⁸ But, in the strategic sense, in the ability to force a decision in and of its own accord, airpower was incapable of driving Saddam Hussein from power or his troops from Kuwait as strategic bombing advocates *first* suggested. Nor was strategic bombing able to destroy Saddam's nuclear, biological, and chemical program as originally claimed.⁴⁹ As before, strategic airpower fell well short of its goals while tactical airpower, in concert with army and naval surface operations, secured the victory.

It is difficult, perhaps dangerous, to draw too many lessons from so one-sided a war

"Yet, at the war's end, Saddam Hussein was still alive and his Ba'athist regime still in power."

that in reality is not yet over, but if one axiom emerged, it was "rooted in the pervasive view that nuclear weapons, in any form, were politically unacceptable, except as an instrument of last resort."⁵⁰ Not only was the civilized world repulsed by Saddam's threat to use weapons of mass destruction, but coalition planners also rediscovered how apolitical their own nuclear arsenals were in the context of a real war. Staff proposals to develop nuclear options were quickly shot down at every decision level. In the political arena where real war strategy is vetted, the trillion-dollar nuclear arsenals had little utility. Curiously, this important geopolitical lesson was lost on its way back to Western capitals where war planners, NATO's chiefly among them, dogmatically clung to cold-war nuclear doctrines as if

the technological capabilities of nuclear arsenals are treated as being decisive in themselves, involving a calculation of risk and outcome so complete and discrete that neither the political motivation for the conflict nor the social factors involved in its conduct—nor indeed the military activity of fighting are taken into account at all.⁵¹

Lessons from the Cold War

NATO's long-established threat to go nuclear if conventional defense fails has always been blustering at best, suicidal at worst, for it ignores the very social factors from whence it gathers its authority.⁵² Can anyone seriously believe that the same nations who refuse to consider the use of nuclear weapons in a far-off desert scenario would initiate em-

ployment of such weapons in their own communities? Put in another context, would the Allies have used atomic bombs to stop Hitler's invasion of Poland in 1939 or even France a year and a half later? Great Britain repeatedly threatened the use of strategic chemical bombs prior to 1939 but quickly backed down when real war came.⁵³ France went so far as to declare Paris an open city to preclude its destruction when its territorial defenses crumbled.

Nuclear weapons have been no more useful in stopping war than the vaunted Maginot line at stopping Hitler.

President Truman did authorize the use of atomic weapons to try to shock Japan into the unconditional surrender (American intelligence knew the Japanese were working through neutral intermediaries for more favorable terms), but would he have done so at the beginning of a war against an equally armed opponent given the perspective we have now? Truman fired Gen Douglas MacArthur for publicly advocating their use in Korea. Nuclear weapons have been no more useful in stopping war than the vaunted Maginot line at stopping Hitler.

The danger in NATO's threat to use nuclear weapons if conventional defense fails is that it sanctions widespread collateral damage as a factor of modern war and thereby encourages Third World militaries to acquire their own nuclear arsenals on the basis of legitimate self-defense. It also compels a first-strike doctrine by way of a use-or-lose logic. Analogous to the irreversible mobilizations that led to World War I, nuclear war once started will prove almost impossible to stop. As General Butler put it, "Nuclear war is a raging, insatiable beast whose instincts and appetites we pretend to understand but cannot possibly control."⁵⁴ The tens of thousands of warheads now positioned on alert create a tinderbox

atmosphere not warranted by current diplomatic relations.

In January 1996, Russian strategic rocket forces, reacting to a scheduled launch of a Norwegian scientific rocket, went on full alert thinking they were under attack. Boris Yeltsin is said to have activated "his nuclear briefcase" coming within 60 seconds of a massive offensive response.⁵⁵ Ballistic Missile Defense Office officials in Washington acknowledged the incident but placed the threat of an accidental Russian launch at no more than 3 percent. For many Americans that is unacceptably high, particularly in today's post-cold-war regime.⁵⁶ The second step toward nuclear withdrawal should be a negotiated removal of all, not just obsolete, strategic weapons from their immediate launch postures. This is the position adopted by the international generals and admirals.

This is not as destabilizing as it may sound. Wars do not simply occur like some unpredictable natural phenomena; they are the last event in a long string of failed diplomatic and economic ties. Warning time is integral to the process to which military preparedness can and should be correlated. But the scope of readiness cannot be from instant overkill in peace to superannihilation in crisis if we intend for political diplomacy to prevail over military necessity. Stability comes from the former, not the latter, for it is the relationship between forces that counts.⁵⁷ It should be remembered that World War I was not caused by insoluble political differences, but was the result of military mobilization schedules that could not be stopped once started.

We cannot "disinvent" atomic weapons, but we can holster their potential to drive events rather than respond to them. Verifiable measures could be instituted over time to the point where nuclear weapons could be removed from their threatening missile silos, submarine launch tubes, and aircraft bomb bays to be safely stored in survivable locations for recall if ever needed. In 1991, President George Bush took a positive step in this direction by ordering the tactical weapons denuclearization of the US naval surface fleet and the stand-down of the strategic bomber alert

force. Since then, little progress has been made despite the current administration's claims that Russian missiles are no longer targeted at the United States, a dubious claim that galls many critics.⁵⁸

To accomplish such a fundamental change in strategy, we must first dislodge the institutional inertia that relegates the Triad (the three-layered redundancy of land, sea, and air nuclear forces) to off-limits, closed-door discussions. Too many politicians, afraid to be labeled as weak on defense, hide behind the dual shield of secrecy and arms talks, abrogating their constitutional responsibility to publicly debate and set nuclear war-fighting policy. Many senior military leaders, concerned with day-to-day operations against a mirror-imaged foe, have similarly taken a "not on my watch" hard line, describing as destabilizing anything but the same old doctrine. Some boldly suggest that what supposedly worked against secular Soviets will work against radical religious fundamentalists. It is as if MAD and the Triad were sacrosanct. But this is not the 1960s.

The factors that generated MAD and its doctrines no longer exist, if they ever did. During the 1950s, Air Force leaders, almost to the man, did not believe in the stability of mutual deterrence, describing the concept as "a dangerous fallacy" and "a tremendous disservice." One leader wrote, "I suggest that the so called atomic 'stalemate' or 'standoff' is more of a psychological than a real deterrent. At best it is a cliché born of the natural tendency to rationalize away the prospects of total atomic war."⁵⁹ Those individuals were arguing for more, not fewer, atomic weapons, but their conclusions were drawn when dramatically few weapons existed.

The perennial argument that we must modernize because others will whether we do so or not ignores the historical fact that it was the United States that was first to develop or conceive every major innovation in the nuclear arms race. We developed the atomic bomb, the hydrogen bomb, the neutron bomb, and the multiple independently targeted reentry vehicle (MIRV) warhead. We



Is there a safe way for the West to reduce its reliance on nuclear weapons without endangering national security?

were also the first to deploy long-range strategic bombers, intercontinental ballistic missiles (ICBM), sea-launched ballistic missiles (SLBM), and cruise missiles.⁶⁰ We continue to innovate with the B-2 and its new weapons. If the rest of the world has done anything, it is to try to play catch-up ball in a game that cannot be won. The notion that the Soviets tried to acquire nuclear superiority and in the process accelerated the demise of their economy is a Pyrrhic victory given the missile threat we still face, the burdens General Butler describes, and the inevitable proliferation of nuclear weapons into unstable terrorists' hands.

Many military leaders do not believe we need to maintain and modernize our current nuclear capabilities, certainly not at the cost of future conventional weapons or more cuts in force size. The world is changing, and so must we. We need a strong military, but we need one that is equipped with quantities of superior

weapons it can use to defend our long-term national interests. We must spend our limited defense dollars wisely.

Finally, we need to develop and enforce international laws regarding the use of nuclear weapons. Militaries, both here and abroad, already categorized nuclear bombs with other unconventional ordnance using the common label "NBC" for nuclear, biological, and chemical devices. The term *unconventional* belies the characteristics of the class that as a rule constitutes inhumane weapons causing severe and lasting collateral damage. Strategists have been confounded for eight decades to define a clear set of circumstances where use of these types of weapons can be justified, and thus civilized nations have established treaties to outlaw the latter two elements of the NBC set as an unacceptable means of defense.

Nuclear weapons, like chemical and biological devices, should be banned from civilized warfare, as envisioned in Article VI of the Nuclear Non-Proliferation Treaty, to which we are a principal signatory. We need not wait until some Third World nation decimates its enemy's capital before we collectively label the development and/or use of chemical, biological, or nuclear weapons a criminal act of war punishable by international sanctions. Of course, this may require that we abandon strategic warfare altogether, for it goes to the very heart of the question of what war is really all about. The truth is we would be better off militarily and economically, for there are far more productive ways of convincing opponents to accept our political will than by attacking their passions. We might even find it more civilized.

We must, in the end, recognize that it was the United States that led the world down the strategic nuclear warfare path, and it is only the United States that can lead from the preci-

pice upon which we are now lodged. The United States developed atomic weapons not in response to a military need but as a hedge against Nazi terror. The Soviets developed their arsenal in response to the United States; the Chinese in response to the Soviets; the Indians, the Chinese; the Pakistanis, the Indians; and so on. It is fruitless for developed nations to continue to decry the nuclear proliferation of Third World countries while simultaneously maintaining their own arsenals. If the United States, the world's only remaining superpower, provides the leadership, other nations will follow, for it is in their primary interests to do so. To continue in the same direction is to defy the process of history.

Since the seventeenth century, wars have progressively become more destructive and inhuman, no doubt the result of an industrial revolution that put a weapon in every peasant's hand. Democracy has been no cure, and in fact may have added to the inhumanity by fomenting intense nationalism and partisanship as in the American Civil War, when six hundred thousand fellow countrymen lost their lives over the democratic question of states' rights. World War I saw 10 million men killed in the trenches of a senseless stalemate egged on by nationalistic pride. World War II saw another 50 million perish, most of them civilians in bombed-out cities and concentration camps, justified in the name of "total war" that was started by a free and democratically elected chancellor of the German Third Reich. If the world is to reverse the tide of history and survive the atomic age, we must soon recognize the incompatibility of weapons of mass destruction with the political nature of warfare. Only then will we begin to change the counterproductive strategies that threaten us all. □

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Gen Carl Spaatz and D Day

DR. RICHARD G. DAVIS

THE RECIPE FOR a successful flag officer includes four essential ingredients: (1) the luck of Vince Lombardi, who said, "Luck is the residue of hard work and skill"; (2) the killer instinct of Robert E. Lee—not just the desire to destroy one's enemy, something any soldier must have, but the ability to send men one admires and respects to their death; (3) the perseverance of George Washington; and (4) the ability of George C. Marshall to inspire the trust of both subordinates and superiors. A survey of the actions and decisions of Gen Carl A. Spaatz, US Army Air Forces (AAF), during the first six months of 1944 confirms that he had these qualities.

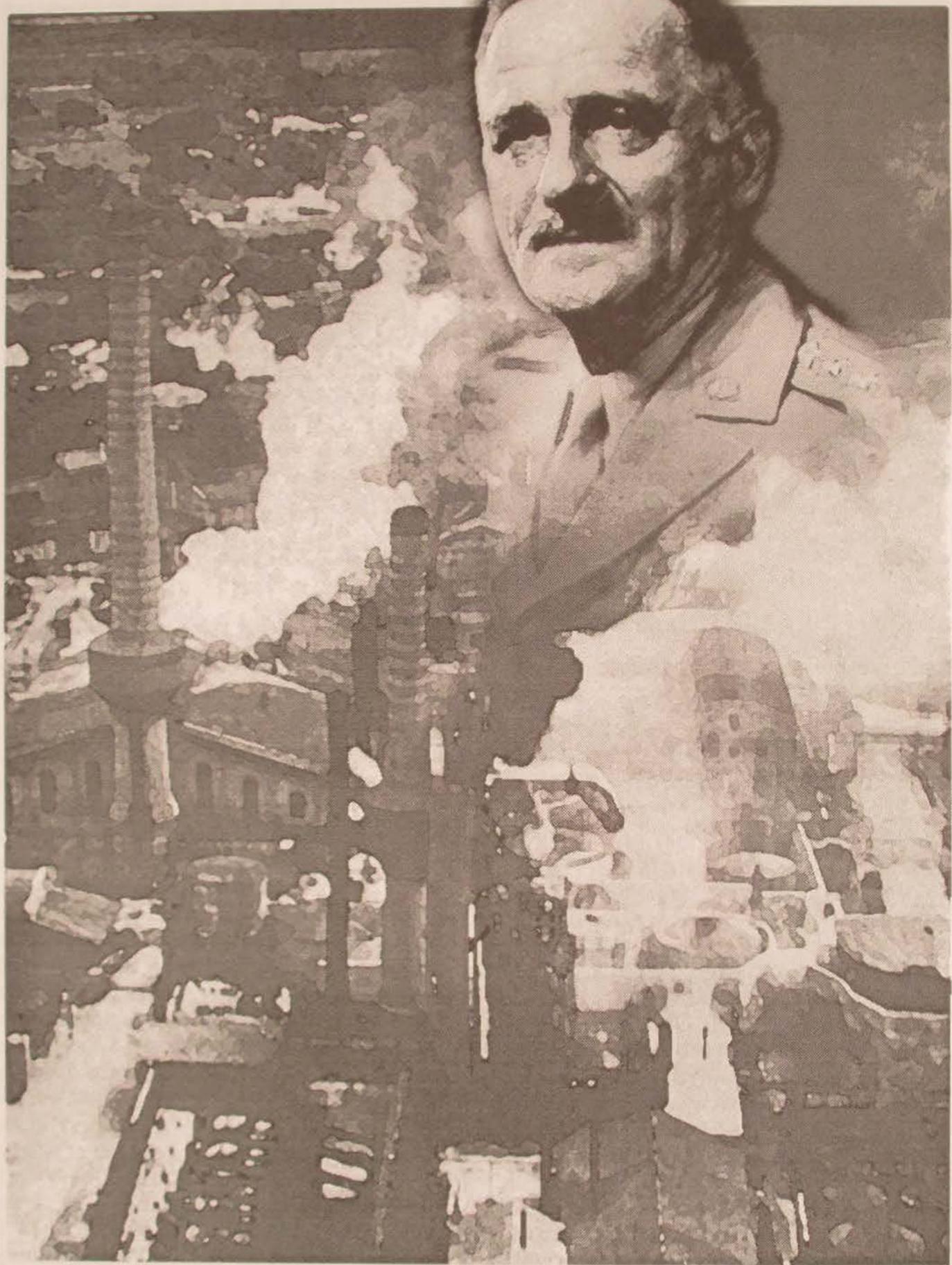
Luck boils down to the favorable resolution of uncontrollable variables. The manner in which generals exploit these gifts determines their fate. The shortcomings of Spaatz's enemies presented him an opportunity. The breaking of high-level German ciphers, sent via the supposedly secure Enigma code machine, vouchsafed all Allied commanders unparalleled knowledge of their enemies' intentions and situation. Vital German targets, such as synthetic oil plants and large marshalling yards, used the Enigma machine to pass damage reports to Berlin, giving the Americans instant and accurate bomb damage assessments. Intercepts of Luftwaffe traffic also validated the effectiveness of American air tactics.¹

The very nature of the Nazi state and ideology played into the hands of Allied air leaders. Hitler's personal isolation, coupled with his

propensity to divide responsibility for the war economy into competing fiefdoms, all dependent upon himself, resulted in staggering mismanagement. With the notable exception of Albert Speer, the highest Nazi leadership had little conception of the industrial process. Almost all major German war-production decisions and priorities rested not on economic efficiency, but on the self-interest of the entities involved.

Not only did the Nazis fritter away their industrial strength, but also their ideology and individual outlook sapped their efforts. Having gained power using tactics of terror and intimidation, Hitler preferred retaliation to passive defensive measures. Resources expended on V weapons produced technical triumphs—but at the direct expense of aircraft production. Had the Germans decided to focus on fighter production and to concentrate that production in defense of the industry in 1942 instead of 1944, Spaatz's task would have proved far more formidable.²

Spaatz possessed resources far greater than those of his predecessor Ira Eaker, for whom increases in force had come slowly. Indeed, the pipeline overflowed for Spaatz. Eighth Air Force needed 17 months to reach 20½ bomb groups, and its first long-range P-38 fighter escorts did not become operational until the day after the second Schweinfurt raid of 14 October 1943. Fifteenth Air Force, established on 1 November 1943, began life with the six heavy bomb groups that had been in the Mediterranean since May 1943. By May 1944, the Eighth had grown to 41 heavy groups, and





Directing the air war. (Left to right) Maj Gen Ralph Royce, Lt Gen Carl A. Spaatz, Maj Gen Hoyt S. Vandenberg, and Maj Gen Hugh S. Knerr.

the Fifteenth to 21. Fighter groups in Eighth Air Force and Ninth Air Force, the latter on call to fly escort for the Eighth, grew from 12 to 33 groups. Many of these groups were equipped with the extremely long range P-51 fighter and were capable of using range-extending drop tanks, whose production bottlenecks had been solved.³ Finally, the introduction of radar bombing devices in the fall of 1943 allowed for bombing through clouds, but only with extreme inaccuracy. Bombing through complete overcast caused only one bomb in 70 to land within one-half mile of the aiming point.⁴ Bombing a target a mile in diameter in good visual weather, however, was 50 times more accurate.⁵ Spaatz and his lieutenants James H. Doolittle (Eighth Air Force) and Nathan F. Twining (Fifteenth Air Force) capitalized on German inefficiency and American prodigality by greatly increasing their rates of operation. The combination of

more sorties and more aircraft gave Spaatz a far bigger hammer than Eaker's.

Spaatz, like other generals, was a killer of men. In the winter and spring of 1944, he began a campaign of straightforward attrition against the Luftwaffe day-fighter force for the purpose of extinguishing its capacity to interfere with American bomber operations and the upcoming cross-channel invasion. This air campaign would eviscerate the Luftwaffe's air leadership cadres, forcing it into a descending spiral of inexperience and increasing losses from operations and accidents. Within a few weeks of his arrival in London, in late December 1943, he authorized Doolittle to implement the fighter escort tactics the two men had already employed in the Mediterranean. Instead of maintaining close escort, which forced American fighters to absorb the first blow,⁶ Doolittle ordered his fighters to take the initiative by attacking and pursuing

German fighters. Spaatz and Doolittle risked their bombers in order to expose the enemy. As aerial combat raged and as escort fighters flew to and from their rendezvous with the bomber stream, fighter pilots found themselves at low altitudes and proceeded to strafe targets of opportunity. When Enigma intercepts alerted American air leaders that this caused havoc, Spaatz encouraged the practice. The enemy responded by setting up flak traps at likely strafing targets, which killed, wounded, or resulted in the capture of more American fighter pilots than any other tactic.⁷ Spaatz continued the low-level attacks until April 1945. Soon the Luftwaffe could no longer conduct any operations, including training and air transport, without fear of interference.

In order to force the Luftwaffe to accept battle, Spaatz ordered a continuing series of deep-penetration missions into the Reich. Starting on 11 January 1944, Americans attacked the German air industry, and both sides suffered heavy losses. When cloud cover prevented precision bombing of air plants or other specific targets, Spaatz ordered area raids on German cities, particularly Frankfurt. Forty percent of all such raids ordered or authorized by Eighth Air Force took place between February and May 1944.⁸ The Germans either opposed the raids, as they usually did, or allowed uncontested city attacks at the cost of civilian morale and production. In mid-February, under orders from Arnold, Spaatz and Doolittle—without protest—extended the bomber crews' combat tour from 25 to 30 missions. At the end of the month, the Americans conducted Operation Argument or "Big Week," which dealt a body blow to the enemy air industry. Spaatz was determined to initiate and continue the operation, even if it cost two hundred bombers on the first day.⁹ After Big Week, Spaatz wished to switch priorities to the German synthetic oil industry, a target system whose sovereign importance to the entire German war machine would require the Luftwaffe to defend it or die trying. As discussed below, this change was delayed until May.

Thus, at the beginning of March, Spaatz ordered a series of area attacks on Berlin that went straight over the top, making no attempt to conceal their intentions and targets from the defenders. The importance of the city as an industrial, transportation, and administrative center guaranteed a fierce response. In its first major attack on the German capital on 6 March, the Eighth lost 69 heavy bombers—the highest number ever lost on a single mission. On 8 March, the Americans lost another 37 bombers over the "Big B," but the next mission saw no aerial opposition. By 6 June, the Americans had achieved daylight air superiority over Europe at the cost of over twenty-seven hundred bombers, almost one thousand fighters, and over 18,000 casualties—50 percent more than they had lost in all of 1942 and 1943 combined.¹⁰

Spaatz's ability to persevere reflected the courage of his convictions. In the months preceding the cross-channel invasion, one question directly affected Spaatz—in what manner could strategic bombers best aid the invasion? Gen Dwight Eisenhower's air component commander, Air Chief Marshal (ACM) Trafford Leigh-Mallory, and Eisenhower's deputy supreme commander, ACM Arthur Tedder, advocated the transportation plan, which called for attritional bombing of the French and Belgian rail systems to render them incapable of allowing speedy reinforcement or easy logistical support of German forces opposing the invasion. Spaatz's headquarters originated a competing oil plan that called first for the destruction of refineries at Ploesti, Romania—the principal source of natural oil for the Axis—and then the destruction of the synthetic oil industry. Loss of oil would fatally hamper any German response to the invasion and the Soviet summer offensive.

The oil plan was the quintessential strategic bombing plan. By destroying a compact and absolutely crucial target system, with only three weeks of visual bombing, airpower would make an important contribution to the end of the war. For Spaatz, the oil plan had an additional advantage: it allowed the Americans to continue the attrition of the Luftwaffe



"The introduction of radar bombing devices in the fall of 1943 allowed for bombing through clouds, but only with extreme inaccuracy. Bombing through complete overcast caused only one bomb in 70 to land within one-half mile of the aiming point."

and to fly precision missions into Germany, which justified AAF strategic doctrine. After bitter bureaucratic infighting among Allied ground and air staffs, Eisenhower chose the transportation plan on 25 March because it offered measurable results; the effects of the oil plan, although logical, could not be verified with existing Allied intelligence.

As is true of every major decision—whether military, corporate, or political—one faction or person will not accept that decision as final. In April 1944, Spaatz was that person. Throughout March, ACM Charles Portal, the Royal Air Force (RAF) chief of staff and the officer charged with direction of the Combined Bomber Offensive by the Combined Chiefs of Staff, had refused to allow Spaatz to order Fifteenth Air Force to attack the Ploesti oil complex, producer of 25 percent of Germany's oil. Portal did not want to draw the Fifteenth away from its duties to Operation

Pointblank and its assistance to the Allied ground forces; further, Portal regarded the bombing of Balkan rail yards as more militarily effective than bombing oil fields. An attack on the Romanian fields would also strengthen Spaatz's hand in the oil-versus-transportation dispute. It made little sense to strike Ploesti, forcing a greater German reliance on synthetic oil, and then ignore that target system.

On 5 April, Spaatz resorted to subterfuge. Under the guise of attacking Ploesti's main rail yard (each oil refinery also had its own such yard), the Fifteenth made its first raid on Romanian oil. As the official history of the AAF noted with some satisfaction, "Most of the 588 tons of bombs, with more than coincidental accuracy, struck and badly damaged the Astra group of refineries."¹¹ On 15 and 26 April, the Fifteenth returned, again somehow missing the main rail yard and unfortunately damaging more Axis refineries. As a result of



Oil targets. In late April 1944, Reichsminister Albert Speer complained that "the enemy has struck us at one of our weakest points. If [he] persists at this time, we will soon no longer have any fuel production worth mentioning."



The costly war over Europe: B-17s return to England. "By 6 June, the Americans had achieved daylight air superiority over Europe at the cost of over twenty-seven hundred bombers, almost one thousand fighters, and over 18,000 casualties—50 percent more than they had lost in all of 1942 and 1943 combined."

this "transportation" bombing, German imports of finished petroleum products fell from 186,000 tons in March to 104,000 tons in April.¹²

In the United Kingdom, the Eighth continued its duel with the Luftwaffe day fighters. On 18 and 19 April, however, the Germans offered little resistance to missions near Berlin and Kassel. Rather than elating Spaatz, this circumstance seemed to confirm one of his worst fears—that the Germans had begun a policy of conservation in anticipation of the invasion. Also on 19 April, the British invoked the emergency clause in their agreements with the Americans. Specifically, Tedder informed Spaatz that the threat of the German V-1 rocket had caused the War Cabinet to declare the security of the British Isles at risk. Tedder thereupon moved Operation Crossbow—bombing the V sites—to number-one priority, ahead of the Luftwaffe.¹³ The British move threatened to gut the AAF's entire bombing effort at precisely the time Spaatz needed to offer the Luftwaffe more provoca-

tion to fight. The Luftwaffe never bothered to resist Crossbow bombing.

Spaatz went to Eisenhower that evening and found the supreme commander upset with the AAF. First, in spite of the decision of 25 March in favor of transportation, the Eighth had yet to bomb a single transportation target, with the invasion only seven weeks distant. Second, on the previous evening, Maj Gen Henry Miller, a member of Spaatz's staff, had gotten drunk at a nightclub in London and had proceeded to take bets that the invasion would occur before 15 June. Spaatz responded promptly, phoning Eisenhower and placing Miller under house arrest. Eisenhower followed up by demoting Miller to colonel and returning him to the States.¹⁴ The discussion of policy matters took longer and generated more heat. Spaatz even may have threatened to resign.

At last, Eisenhower agreed to allow the Eighth to use two visual-bombing days before the invasion to strike oil targets, in order to test the Luftwaffe's reaction. For his part, Spaatz appears to have agreed to devote more



Bloody Omaha. General Spaatz, "the tongue-tied fighter pilot, . . . was as responsible as anyone for the happy outcome of the Normandy invasion."

energy to transportation bombing. The next morning, Spaatz visited Tedder.¹⁵ They agreed that on the next suitable day, the Eighth would raid Crossbow targets and that on the next two suitable days, the Americans would hit oil targets. That day, Doolittle sent almost nine hundred heavy bombers against Crossbow. On 22 April, Spaatz began to fulfill his other pledge—638 bombers attacked Hamm, the largest rail yard in Europe. Not until 12 May did weather allow oil strikes.

The first oil strike vindicated Spaatz's judgments. The eight hundred attacking bombers hit six synthetic plants and lost 46 bombers. The Germans reacted strongly, and the American escort of 735 fighters claimed 61 destroyed in the air and five on the ground. Luftwaffe records confirmed 28 pilots dead, 26 wounded, and 65 fighters lost.¹⁶ Enigma messages revealed the Germans' immediate and alarmed response. On 13 May, the Luftwaffe ordered the transfer of anti-aircraft guns from fighter production plants and the eastern front to synthetic oil facilities. A week later, an order from Hitler's headquarters ordered increased conversion of motor vehicles to highly inefficient wood generators.¹⁷ When

Tedder heard of the intercepts, he remarked, "It looks like we'll have to give the customer what he wants."¹⁸ A week after the raid, Speer reported to Hitler that "the enemy has struck us at one of our weakest points. If [he] persists at this time, we will soon no longer have any fuel production worth mentioning. Our one hope is that the other side has an air force General Staff as scatterbrained as our own."¹⁹ In that, he was disappointed. Once the invasion was established ashore, the Anglo-Allies moved oil targets to the highest priority, where they remained until the end of the war.

Spaatz possessed a good measure of the fourth necessary ingredient of a successful general—the ability to inspire trust in both superiors and subordinates. His chief lieutenant, Jimmy Doolittle, in an oral-history interview with Ronald R. Fogleman, then a major, stated, "I idolize General Spaatz. He is perhaps the only man that I have ever been closely associated with whom I have never known to make a bad decision."²⁰ This praise, coming from a man of enormous physical and moral courage and high intellect, speaks for itself.

In the much smaller circle of his superiors, Spaatz also inspired great trust. He was Arnold's

personal friend, confidant, and favorite. Arnold purposely placed Spaatz in positions that would increase the latter's importance and influence, not so much because his actions would reflect favorably on Arnold, but because he knew that Spaatz's first loyalty was to the service. Arnold's abiding trust and confidence meant that Spaatz always had support in the highest areas of decision making.

Spaatz also earned Eisenhower's esteem. From June 1942 through May 1945, the two worked hand in hand, becoming close friends—even to the unlikely extent of Spaatz playing the guitar to accompany the supreme commander's singing when the two relaxed at parties. However, the friendship did not interfere with Eisenhower's judgment. In June 1943, he wrote of Spaatz, "I have an impression he is not tough and hard enough personally to meet the full requirements of his high position."²¹

Notes

1. See "The U.S. Military Intelligence Service: The ULTRA Mission," in Diane T. Putney, *ULTRA and the Army Air Forces in World War II: An Interview with Associate Justice of the U. S. Supreme Court Lewis F. Powell, Jr.* (Washington, D.C.: Office of Air Force History, 1987), 65-110, for a good introduction to the importance of ULTRA to the AAF.

2. See Williamson Murray, *German Military Effectiveness* (Baltimore, Md.: Nautical & Aviation Publishing Company of America, 1992), especially chap. 4, "The Air Defense of Germany: Doctrine and the Defeat of the Luftwaffe," 69-86.

3. See Richard G. Davis, *Carl A. Spaatz and the Air War in Europe* (Washington, D.C.: Office of Air Force History, 1993), appendix 3, for growth of AAF strength in Europe and the Mediterranean.

4. Eighth Air Force Operations Analysis Section, "Report on Bombing Accuracy, Eighth Air Force, 1 September to 31 December 1944," Papers of Carl A. Spaatz, Library of Congress.

5. Charles W. McArthur, *Operations Analysis in the U.S. Army Eighth Air Force in World War II* (Providence, R.I.: American Mathematical Society, 1990), 292.

6. *Ibid.*

7. Commanding general, VIII Fighter Command, memorandum to commanding general, Eighth Air Force, subject: Tactics and Techniques of Long-Range Fighter Escort, 25 July 1944, AF/HSO microfilm reel B5200, frs. 142-61.

8. Richard G. Davis, "The Combined Bomber Offensive: A Statistical History," unpublished manuscript and database. See worksheets for February-May 1944.

9. Davis, *Carl A. Spaatz*, 321-22.

10. Richard G. Davis, "Pointblank versus Overlord: Strategic Bombing and the Normandy Invasion," *Air Power History* 41, no. 2 (Summer 1994): 12.

11. Wesley Frank Craven and James Lea Cate, eds., *The Army Air Forces in World War II*, vol. 3, *Europe: Argument to V-E Day, January 1944 to May 1945* (1951; new imprint, Washington, D.C.: Office of Air Force History, 1983), 174.

By January 1945, Ike had changed his opinion. In urging Spaatz's promotion to a fourth star, he declared that "no one could tell him that Spaatz was not the best operational air man in the world, [although] he was not a paper man, couldn't write what he wanted, and couldn't conduct himself at a conference, but he had the utmost respect from everybody, ground and air, in the theater."²²

In February 1945, Eisenhower ranked Omar Bradley and Spaatz equally, calling them the two American officers who contributed most to the Allied victory in Europe. He described Spaatz as an "experienced and able air leader; loyal and cooperative; modest and selfless; always reliable."²³ That is an accurate and concise summary of the tongue-tied fighter pilot who became a successful general and was as responsible as anyone for the happy outcome of the Normandy invasion. □

12. Sir Charles Kingsley Webster and Noble Frankland, *The Strategic Air Offensive against Germany, 1939-1945*, vol. 4 (London: Her Majesty's Stationery Office, 1961), appendix 49, page 516.

13. D/SAC/TS.100, Tedder to Spaatz, letter, 19 April 1944, diary file, Papers of Carl A. Spaatz, Library of Congress.

14. Davis, *Carl A. Spaatz*, 392.

15. *Ibid.*, 392-93.

16. Williamson Murray, *Strategy for Defeat: The Luftwaffe, 1933-1945* (Maxwell AFB, Ala.: Air University Press, January 1983), 273; and Adolph Galland, *The First and the Last: The Rise and Fall of the German Fighter Forces, 1938-1945*, trans. Mervyn Savill (New York: Holt, 1954), 280.

17. AAF, *Ultra and the History of the United States Strategic Air Forces in Europe vs. the German Air Force* (Frederick, Md.: University Publications of America, 1985), 98-99. This is a reprint of National Security Agency Special Research History no. 13 (SRH-13), written by USSTAF in September 1945.

18. W. W. Rostow, *Pre-Invasion Bombing Strategy: General Eisenhower's Decision of March 25, 1944* (Austin, Tex.: University of Texas Press, 1981), 52.

19. Albert Speer, *Inside the Third Reich* (New York: Macmillan, 1970), 346-47.

20. Lt Gen James H. Doolittle, transcript of oral history interview by Maj Ronald R. Fogleman, Capt James P. Tate, and Lt Col Robert M. Burch, 26 September 1970, 53, Air Force Historical Research Agency, Maxwell AFB, Ala., file no. K239.0512-0793.

21. Robert H. Ferrell, ed., *The Eisenhower Diaries* (New York: W. W. Norton, 1981), 94-95, entry for 11 June 1943.

22. Maj Gen Laurence Kuter, AAF staff, to Henry H. Arnold, letter, 28 January 1945, Papers of Henry H. Arnold, Library of Congress.

23. Alfred Chandler, *The Papers of Dwight David Eisenhower: The War Years*, vol. 4 (Baltimore: Johns Hopkins University Press, 1970), 2466-69.



Muir Fairchild and the Origins of Air University, 1945–46

DR. MARK R. GRANDSTAFF

IN MAY 1945, in a small San Francisco hotel room overlooking the bay, Maj Gen Muir S. Fairchild formally reviewed his 28-year career in the Army Air Forces (AAF).¹ In his mind, it had been a memorable one—a virtual “rags to riches” story from the military point of view. He had entered the Washington National Guard as a private in 1916 and by the end of World War I, had received a commission, attended flight

school, and flown in bomber combat missions with the French air forces over Germany. After the war, Fairchild won a regular commission, became a test pilot, and attended the Air Corps Tactical School (ACTS) at Maxwell Field, Alabama, the Army Industrial College, and the Army War College at Washington, D.C.² One of his most momentous adventures was his trip with Capt Ira Eaker—the Pan-American Goodwill Flight to

South America (1926–27)—as a result of which he became one of the first airmen to receive the Distinguished Flying Cross.

In 1937 Fairchild was assigned as an instructor at ACTS, and within two years he was promoted to permanent major and became director of the Department of Air Tactics and Strategy (a department that one historian called the most important at the school). As war became imminent, his reputation and connections with some of the most senior officers in the Air Corps paved the way to his assignments in the Office of the Chief of the Air Corps. He was appointed secretary of the newly formed Air Staff (1941) and then the assistant chief of the Air Corps and promoted to brigadier general. In March 1942, when Fairchild was named director of military requirements, he pinned on his second star. In November, Hap Arnold, commanding general of AAF, selected him to work closely with the three-member Joint Strategic Survey Committee of the Office of the Combined Chiefs of Staff.³ From that position and through living at Fort Myer, Virginia, he came to know some of the key senior military leaders of the midtwentieth century, including Arnold, George C. Marshall, and Ernest King. Fairchild worked closely with Stanley Embick and Russell Wilson, and renewed friendships with Eaker, Hoyt Vandenberg, Larry Kuter, Haywood Hansell, and Gordon Saville. Although Fairchild felt overlooked for a combat command, he made significant contributions to the formalization of Air War Plans Division, Plan 1 (AWPD-1) and AWPD-42 and became, as David MacIsaac asserts, "the intellectual father of the Strategic Bombing Survey."⁴

Yet, as Fairchild reminisced in his hotel room, these events seemed irrelevant and part of a time that was rapidly coming to a close. Shortly, he would be attending the opening session of the United Nations (UN) Conference on International Organization at the request of Edward Stettinius, but thoughts turned toward his future.⁵ The war in Europe was over. Japan, he reasoned, would capitulate within a year, and people who had served in combat commands overseas would be

coming home to claim the good jobs that they had earned as "heroes." Rather than take some assignment overseas and be a burden to theater commanders, who neither needed nor wanted a two-star butting into their business, Fairchild hoped that the War Department might have some plans for him. He even liked the idea that John McCloy thought of him as an "elder statesman for the War Department." Nevertheless, should his friend Ira Eaker, now deputy commander of AAF, suggest that he look for a job overseas, Fairchild would "thank him kindly" but say no and retire. Fairchild wanted to be needed by AAF. If his "services were no longer required," he would not go "somewhere just for the job."⁶ Indeed, he and his wife, Florence, had their eyes on a small ranch in Rancho Santa Fe, California, and hoped to be living there soon.⁷

Even as Fairchild thought about the future, several senior generals and their staffs were working on plans for the postwar AAF. One of their central concerns was the establishment of a series of schools and colleges for professional military education (PME). Generals such as Arnold, Eaker, Vandenberg, and Donald Wilson were convinced that wartime technological innovation and the success of the air campaign demanded a school system separate from that of the Army.⁸ As early as 1942, AAF leaders described the need for reopening ACTS and establishing the Air War College (AWC).⁹ By 1944 it became obvious that such a postwar system of officer education must be developed because of AAF's need to train its officer corps and to establish an educational precedent for its separation from the Army—and because many AAF senior leaders had attended Army professional schools and found them wanting.

By mid-August 1945, senior AAF leaders argued vehemently that the war had squarely placed AAF in the vanguard of technological wars of the future and that it deserved the status of a separate service. Not all people agreed, however. As early as 1944, some members of the War Department questioned the decisiveness of the strategic campaign in Europe.¹⁰ When Fairchild, then a member of the Joint Strategic Survey, received word that



Air War College as it was in its first decade.

the air campaign in Europe was being seriously questioned, he suggested to General Arnold that an independent committee be established to study the AAF's effect on industrial centers in Germany. Impressed with the quality of civilian speakers he had listened to when attending the Army Industrial College in 1936, Fairchild believed that it would be both politically and intellectually worthwhile to obtain the most qualified academics and industrialists to assess the effect of the air campaign in Europe. As the plan evolved, the Committee of Operations Analysts received a course on strategic air warfare from Fairchild. After intensive efforts, the committee reported that the campaign had been essential to victory over the Germans. These well-respected civilians provided a credible deter-

rent to anti-air force arguments. With the end of the war, civilian and many military leaders and analysts alike agreed that, with the advent of nuclear technology and long-range delivery systems, the next war would be fast and atomic—and would occur on American soil.¹¹ The strength of this argument, coupled with the AAF's showing during the war, ensured the AAF a place next to the Army and Navy in the new National Military Establishment created in September 1947.¹²

Despite general agreement that AAF deserved a separate military role in the postwar world, the trend toward joint military education seemed to undercut the need for a separate educational system for air officers. In light of the lesson learned in the war and the emphasis on postwar defense unification, top

Army generals such as Marshall and Dwight D. Eisenhower questioned the need for the services to maintain separate professional education systems.¹³ From 1944 to 1947, several attempts to define postwar PME ended in the decision either to continue the various services' school systems or to establish a series of joint schools (which in essence would replace the other service schools).¹⁴ Although the Army chose to keep its war college closed, both the Navy and AAF pursued plans for the continuation of their separate school systems.¹⁵ Fairchild noted in *The Army Times* that recent developments in long-range supersonic aircraft and nuclear weapons, along with the possibility of guided missiles, broadened the scope of airpower and demanded an educational system that prepared leaders and planners for global war beyond the magnitude heretofore considered.¹⁶

Ultimately, each of the armed services would maintain a separate educational system, but a new series of joint schools, known as National Defense University, would be added; this university would provide capstone courses in an officer's professional career. Nevertheless, during 1945 and 1946, AAF's hopes for a separate school system seemed threatened by a push toward unification. Generals Eaker and Vandenberg reasoned that if AAF were to create an "Air University," it would have to be "the best military school in the world."¹⁷ Once so recognized, no person, agency, or department could cavalierly discard it. Moreover, the creation of a separate postwar education system for AAF would help demonstrate the uniqueness of air forces and help further the cause of separation.

Creating the "best military school in the world" would take much planning, as well as a respected leader who was part visionary, part taskmaster, and all air force. Records are sketchy on the reasons for Fairchild's selection: he had no college degree but was well known for his even temper and integrity, superior knowledge of air strategy and doctrine, and—most of all—his keen mind.¹⁸ Many high-ranking officers had referred to him as the "brains of the Air Force" because of his

penetrating insights as well as his ability to synthesize disparate views into what many people referred to as the "big picture."¹⁹ Certainly, he was highly respected by civilians in the War Department as well as by members of the Joint Chiefs of Staff (JCS), especially Marshall and Arnold.²⁰ His record on the Joint Strategic Survey, along with his work on the air war plans and Strategic Bombing Survey, gave him a reputation as a global thinker who understood the interface between war, society, and industry.

For such a position as commander of the new postwar schools, he was perhaps academically unparalleled in AAF because of his attendance at the Army Industrial College and the Army War College, his training at the AAF Engineering School at Dayton, Ohio (later named the Air Force Institute of Technology), and his work as a test pilot and later as an instructor and chief of air tactics and strategy at ACTS. He also had good friends such as Vandenberg, who as A-3 (Operations) was in charge of outlining the postwar school system. Eaker knew Fairchild's intellectual abilities, his meticulous work habits, and his dedication to duty. Arnold saw Fairchild as an intellect, a doer, an eloquent spokesman, and a firm believer in airpower.²¹ When Fairchild's name was brought up to head the AAF school and future Air University (AU) system, undoubtedly Arnold and Eaker (given most of the other air leaders' penchants for education) were relieved that Fairchild was available and willing to take on the project.

Eaker offered the job to General Fairchild in late August or early September of 1945, recognizing that Fairchild was still committed to the UN conference and to his job with the JCS. The first war college course was scheduled to begin in early September of 1946. Because Fairchild was unable to take the job of commandant until relieved from JCS in December of 1945, an acting commandant would be appointed until then. Eaker and Vandenberg agreed that Fairchild should have the choice of the best people available for administrators and instructors—of course, other commands also wanted them.²² Fairchild asked that David Schlatter, his for-

mer director of air support at the Department of Military Requirements, be his vice commandant and acting commandant until Fairchild could take full-time command.²³ Gen Joe Cannon, Schlatter's boss, initially said "no" to the reassignment because he thought it was something for the "boys in the backroom [in Washington, D.C.] to do."²⁴ Arnold convinced him otherwise. In September Schlatter was reassigned, assuming command of the AAF School on 8 November 1945.²⁵

Further discussions among Eaker, Fairchild, and Vandenberg resulted in an agreement about the broad philosophy that should govern the AAF School. The crucial aspect of the policy focused on what some people had suggested as early as 1940—that a school should consist of a tactical course, a command and staff course, and an air war course.²⁶ They further agreed that the schools should be geographically colocated at Maxwell, Gunter, and Craig Fields and placed under Headquarters AAF.²⁷ Eventually, these schools would become the Air Tactical School and the Air Command and Staff School (ACSS); the advanced course would become AWC. These schools, according to Arnold's directive, would then be placed under the centralized control and direction of AU.²⁸ Fairchild, who recognized the importance of initial directives in setting precedents, ensured that the directive included a clause that stressed the schools' focus on innovation (not traditionalism) because students must be prepared "for future wars and not for past wars."²⁹ In addition to officer professional education, the directive assigned the AAF School with broad supervision over the AAF Engineering School.

Eaker, Vandenberg, and Fairchild also agreed that AWC was the most important course at the AAF School. It would set the tone and establish the reputation for AAF's system of educating its officers generally. Schlatter, as acting commandant, was assigned to help construct the curriculum for the Command and Staff school (which was to open in September 1946), as well as recruit the necessary instructors and staff personnel to run the

entire AAF program.³⁰ Fairchild, when not busy with his duties as a delegate to the UN convention or at JCS, was to conceptualize the overall mission of the AAF School/AU, recruit the commandant for AWC, and help devise the curriculum for the air war course that was to begin in September 1946.

With the exception of a few trips to the West Coast, from mid-November through December 1945, Fairchild stayed in Washington to discuss the proposed university with other senior officers and to work out the larger plan for putting it into service.³¹ By 26 November, Fairchild had envisioned an AU system that consisted of "several schools and at least one college" which would embrace a new philosophy of PME.³² In a letter to Isaiah Bowman, president of Johns Hopkins University, Fairchild noted that

this system of schools must take into account an entire new world of war fighting. Considering this new world that lies ahead with its atomic bombs, guided missiles, bacteriological warfare and the prospective startling developments of scientific warfare in general, it is mandatory that the Army Air Forces school system be brought up to the highest standards of modern education, not only in the tactical field but in the technical and strategic fields as well.³³

Fairchild postulated that future air officers would face situations unknown to those living in 1946. He believed that they must be educated in all facets of air warfare and the administration of its forces. Air officers must have technological breadth in order to be open to emerging scientific technologies; the ability to understand tactical doctrines and employment; and the ability to think in global strategic terms.³⁴ These officers could not be parochial or believe that airpower alone would solve the nation's military problems. Finally, there should be something of the statesman in all senior officers; that is, they should be well read, educated broadly, and willing to consider the creation and implementation of military policy from a number of different perspectives. In order to do this, Fairchild believed that AAF's educational system must take officers from their initial as-

signments, teach them a technical specialty, send the most technologically proficient to advanced civilian schools, and then train them in the professional aspects of their jobs, from squadron leader through wing commander and beyond.³⁵

The first professional school would resemble the old ACTS.³⁶ Now called the Air Tactical School, its mission was to offer instruction in the tactical employment of fighter and bomber aircraft; it would later cover guided missiles as well.³⁷ All tactical officers (not technical officers) would attend this school at some point during the first four years of service. Much of the instruction would focus on preparing officers for "general squadron duties, including squadron command, and would stimulate their thinking and encourage individual study."³⁸ The course would also include an introduction to military geography and, in time, air intelligence and public relations. According to Fairchild, geography and intelligence were "of cardinal importance to the air officer of the future," because they related directly to targeting. Public relations was the key to making Americans aware of AAF's roles and budgetary needs.³⁹ Finally, after reading hundreds of after-action reports of officers during the war, he wanted to make sure that the course offered remedial training in reading and writing—"especially in the preparation of clear, logical, and concise staff memoranda and reports."⁴⁰

The second phase—ACSS—would admit the best qualified officers at the 10th year of service. It would prepare them for group and wing command as well as staff duty at all echelons, from the squadron through the Air Staff. Fairchild wanted the course to provide intensive coverage of all aspects of air warfare through the operations of air forces.⁴¹ In-depth courses on geopolitics, geography, and intelligence collection rounded out the curriculum.⁴² ACSS would offer courses in logic, clear thinking, and the formulation of sound conclusions. Instructors would teach remedial English, both written and spoken.⁴³

AWC, according to Fairchild's conceptualization, would select only the best senior officers with at least 12 and no more than 20

years in the service. This advanced course would stress the "broad aspects of war from the national viewpoint." In other words, the course would teach students how to relate large air forces to grand strategy and then how to make air, ground, and naval power work together to meet those objectives. The type of instruction to create such global thinkers would vary from preassigned problems completed in seminars (or by committees) to lectures by outstanding civilian and military personnel.⁴⁴ A course on world politics would be added later.⁴⁵

After reading Fairchild's extensive discourse on the underpinnings of this new AU concept, Bowman agreed to serve on a Board of Visitors that would advise the commanding general on the "proper way" to introduce such "modern education" into AAF's curriculum. Fairchild also wrote educators at Harvard and MIT, as well as some in the University of California system, relating the same details about the purpose of AU and seeking their advice.⁴⁶ Based on their response, Fairchild began concentrating on AWC. First, he sought the "right" person for the commandant's position. Then he worked toward Eaker's admonition to create the most outstanding senior service school "in the world."

Fairchild knew whom he wanted as the War College's commandant. He had known Orvil Arson Anderson since his days at ACTS. Anderson was blunt, bombastic, and overly exuberant at times, but he knew air theory and strategy as it related to World War II better than anyone, including Fairchild himself.⁴⁷ An air pioneer, like Fairchild, he had made the Explorer I balloon flight into the stratosphere in 1933; was later a test pilot at Wright Field, Ohio; and had attended ACTS, Chemical Warfare School, and Command and General Staff School at Fort Leavenworth, Kansas. In June 1943, he had gone to Europe as the chairman of the Combined Operational Planning Committee, which planned operations for the strategic bombing offensive. In 1944 he became the deputy commander of operations for Eighth Air Force. As the European war moved toward a close, Fairchild was instrumental in getting him selected as senior



In the beginning: the old Air Command and Staff College building.

military advisor to the Strategic Bombing Survey. Experience and background made Anderson conversant in all aspects of airpower, especially those that related to the application of Allied air offenses to industrial targets. Fairchild was positive that he needed Anderson now. The significant problem was getting him assigned to the AAF School system.⁴⁸ The Strategic Bombing Survey would not release him until the late summer of 1946, too late to be of much help in designing AWC's initial organization and curriculum.

Lacking a commandant for AWC, Fairchild became heavily involved in organizing and staffing the college, and in determining the correct model of instruction for senior officers. Unlike some AAF officers, Fairchild had attended the Army War College and had actually liked the instruction he received there. He wrote to Anderson, "I am convinced that the [Air War College] should be run on the model of the old Army War College [because their only problem] was the material, not the meth-

ods of presentation. The scope of the Army War College course was very narrow and not all that imaginative, but . . . the method of presentation and instruction was truly excellent."⁴⁹ Fairchild later promised AU students that they would never see a map of Gettysburg (not the first, second, or third day) during their stay at Maxwell.⁵⁰

What Fairchild wanted was a seminar/committee system in which senior officers considered a specific problem and then listened to a lecture on the subject by a variety of industrial and military experts. He wanted discussion, problem solving, and creative thinking to highlight each seminar. Much like graduate school, the college would force senior officers to think, share ideas, and receive critical feedback. Fairchild and Anderson agreed that the war had demonstrated how quickly new technology had made many prewar tactics and doctrines obsolete. Instruction at AWC must "forego doctrine and resort to logic." Officers in this new age of war must attend a school

whose focus was not on historical examples or models but on projections and possibilities. AWC, like AU in general, was to be a "prewar," not a postwar, school.⁵¹ This format had practical justifications. Given the incoming class's experience in World War II, most of the senior officers attending the course would know as much as their instructors, if not more. From a staffing perspective, the number of course instructors could be kept to a minimum.⁵²

Anderson did not take command of the college until August, so Fairchild and the growing AWC staff continued to flesh out the first year's curriculum. Ultimately, the nine-month course would include three phases.⁵³ First, the academic phase stressed overcoming service-oriented parochialism through the study of the "psychology of thinking and problem solving." Civilian educators taught a course in basic logic and the scientific method in order to understand bias, prejudice, doctrine, and dogma—and to eliminate them. Another significant part of the course introduced the student to management principles "in order that senior officers might more effectively and economically manage" large installations, research facilities, and huge armadas of aircraft. Again, civilian educators and industrialists were brought in to lecture on how to adapt these principles to military situations.

The second part of the course, the evaluation phase, built on these methods and management principles. Because there was to be no school solution, the curriculum presented the students with background factors that affected a problem. Distinguished military officers and civilians presented lectures bearing on the problem. Instructors then issued a bibliography for the students' reading and research. The seminar group of five to seven students discussed the problem and then came up with its own solution. The group presented its findings to the entire student body for critique and possible synthesis into a composite student solution. During the first year of classes, students developed a model for evaluating battle scenarios and applied it to the strategy and conduct of World War II.

The final part of the course, known as the projection phase, aimed at helping students understand how air strategy is only one component of military strategy, just as military strategy is only one component of national strategy. The faculty introduced current military problems such as the air defense of the United States, postwar military posturing, joint-service strategy, and ways of extending the range of weapons. Students analyzed these problems from various political, economic, social, and military perspectives and worked out a potential solution. The outcome of these seminars was often sent to the Air Staff for consideration and possible implementation.⁵⁴

Although Fairchild spent a great deal of time working on AWC's curriculum, other problems also called for immediate solutions. He had to find good instructors, establish a working relationship with the major commands, schedule renowned lecturers, and help devise curricula for the other professional schools. One of his biggest concerns was the division of subject areas. What he did not want was a school that was divided into "old" categories such as bombing, pursuit, tactical matters, and reconnaissance. AU, like AAF, must stress airpower as an integral whole. Neither AAF nor AU should be divided into a series of fiefdoms.⁵⁵ Moreover, he was concerned that the major commands would send him their worst personnel rather than their best.⁵⁶ He wanted A-1 (Personnel) and A-3 of the Air Staff to personally take charge of assignment to the schools.⁵⁷ Finally, Fairchild wanted AU to have major-command status in order to have the bureaucratic power to go head-to-head with certain major-command commanders, namely Joe Cannon, George Kenney, and Pete Quesada.

Fairchild officially took command of the AAF School on 20 December 1945, with a mandate to create the "best school in the world."⁵⁸ The institution's name would change to Air University on 12 March 1946 (it was made a separate command on 4 January 1946).⁵⁹ Doors would open to students on 3 September of that year. Fairchild's inaugural address spoke of the future of war as well as the role that AU would take in "educating and

producing" future planners and leaders who would design an air force that hopefully would "never be used." But should it fail as a deterrent force, it must also be an air force that could restore peace on "terms acceptable to us." Peace, to paraphrase General Fairchild, was indeed the AAF's profession.⁶⁰

In 1954 Lieutenant General Kuter told graduating students of ACSS about Muir Fairchild's contributions to AU. Kuter, like many of his contemporaries, found Fairchild a visionary and an intellect who was able to marry his profound understanding of airpower to officer education. "The success that has been attained by the AU—using the organization, methods, and aims, which [Fairchild] conceived and set in motion—is a tribute to his wisdom and judgment," Kuter reflected.⁶¹ Fairchild, prior to his death on active duty in 1950, became the vice chief of the Air Force, but his time in that office was by far eclipsed by his tenure as AU's first commander.

When Fairchild contemplated his future in the AAF in May 1945, he hoped to receive an

assignment that demonstrated that AAF still needed him. Hoping that some people might even come to see him as an elder statesman in the War Department, he had no idea how much influence he would have on AAF and the future Air Force. His ultimate contribution was not from the cockpit; or as a leader of bombing groups in World War II; or as a leader at ACTS and JCS; or as a delegate to the UN conference; or as the "intellectual father of the Strategic Bombing Survey." His greatest contribution was not even the school system that he inaugurated. Rather, it was his role as a professional Air Force officer and the inculcation of that role into the curriculum of the Air University system. Part visionary, part philosopher, part technical specialist, part warrior, part statesman—and all Air Force—Fairchild set the model of Air Force officership for the rest of the twentieth century and beyond. That was his ultimate contribution, and that is why even today his influence is felt, as Kuter eloquently put it, "in ever widening circles."⁶² □

Notes

1. Muir Fairchild to Florence Fairchild, letter, 9 May 1945, Fairchild Personal Papers, in possession of Mrs. Betty Calvert (Fairchild's daughter), Newport News, Va. One correspondent characterized Fairchild as the "unknown general" who was the "general manager of the Air Force"; indeed, little has been written about his life and Air Force career. Two articles that provide a good overview of Fairchild's career are Maj Gen Haywood S. Hansell Jr., "Gen. Muir S. Fairchild: Strategist, Statesman, Educator," *Air Force Magazine*, January 1979, 72-74; and Kenneth Schaffel, "Muir S. Fairchild: Philosopher of Air Power," *Aerospace Historian*, September 1986, 165-71. See also Peter Edson, "Death of 'Unknown General' Was Hard Blow to Air Force," c. May 1950, Fairchild Personal Papers, Newport News, Va. An interesting but incomplete assessment of Fairchild's effect on AU is Maj Charles H. Mitchell, "Impact of General Muir S. Fairchild on the Air University and the USAF," ACSS Report, 86-1770, Air University Library, Maxwell AFB, Ala.

2. Fairchild was born on 2 September 1894. One can find a good biographical sketch, dated 2 September 1942, in his papers at the Air Force Historical Research Agency (AFHRA), Maxwell AFB, Ala.

3. One can find a description of his work on this committee in a briefing paper attached to a short biographical sketch of Fairchild. See Fairchild Papers, 1942, AFHRA. See also Mark Stoler, "From Continentalism to Globalism: General Stanley Embick, the Joint Strategic Survey Committee, and the Military View of National Policy during the Second World War," *Diplomatic History*, Summer 1982, 303-21.

4. David MacIsaac, *Strategic Bombing in World War II: The Story of the United States Strategic Bombing Survey* (New York: Garland Publishing Co., 1976), 24.

5. Muir Fairchild to Edward R. Stettinius, secretary of state, letter, 2 April 1945, Fairchild Papers, 1945, AFHRA. See also program, closing plenary session, United Nations Conference on International Organization, San Francisco, Calif., 26 June 1945, Fairchild Personal Papers, Newport News, Va.

6. Fairchild letter to Florence Fairchild.

7. R. M. Clotfelter to A. S. Barrows, letter, 28 July 1949, Fairchild Personal Papers, Newport News, Va.

8. Maj Gen Donald Wilson, commander of the AAF Center, Orlando, Fla., and former instructor at ACTS, formulated his own plan for the Postwar School System and argued for an Air University with centralized control. See Maj Gen F. L. Anderson, memorandum to General Vandenberg, subject: Wilson's Proposal, 17 August 1945, National Archives. Wilson was also a member of the Gerow Board (see note 14).

9. One can find discussion about the need for a separate staff college in Col Harvey Holland, chief, Training Literature Section, memorandum to director of individual training, 14 September 1942, National Archives.

10. Hansell, 73-74.

11. Muir S. Fairchild, "Thinking and Planning for the Future," *The Pegasus*, June 1948, 1-3. See also Fairchild, "The Air University," draft copy for article in *Army Times*, December 1946, Fairchild Papers, Library of Congress.

12. Lt Col Donald Wilkins, Office of Information Services, to chief, Combined Chiefs of Staff (Fairchild), letter, 18 October 1945, Fairchild Papers, AFHRA.

13. "General George C. Marshall and the Question of Postwar Advanced Military Education," copy in the Military History Institute, Carlisle, Pa.

14. The best known of the attempts was the Gerow Board. See Report of War Department Military Education Board on Educational Systems for Officers of the Army, 1945, copy in the Air University Library.

15. [Author unknown—probably General Fairchild], memorandum to General Vandenberg, subject: Comments on AAF Board Project 47-75, 1945, Fairchild Papers, AFHRA.

16. Muir Fairchild to *Army Times*, draft letter, December 1946, Fairchild Papers, Library of Congress. See also Maj Gen David M. Schlatter, "Conditioning Minds to Meet a Changing Military World," *The Pegasus*, June 1948, 5-7, 16.

17. Ira Eaker to Muir Fairchild, letter, 20 December 1945, Fairchild Papers, AFHRA.

18. Georgetown University conferred an honorary doctor of military science on Fairchild on 28 September 1947 for his contributions during the war and at Air University. See "Honorary Degree Citation," 28 September 1947, Fairchild Personal Papers, Newport News, Va.

19. Gen William F. McKee, transcript of oral history interview by Maj Alan Gropman, May 1973, 4, AFHRA.

20. In fact, two respected Air Force generals, when asked about the greatest generals they had known, quickly cited George C. Marshall and Muir S. Fairchild. See Maj Gen Gordon Saville, transcript of oral history interview by Thomas A. Sturm, March 1973, AFHRA; and Maj Gen Haywood S. Hansell Jr., transcript of oral history interview, 19 April 1967, AFHRA.

21. Saville interview, 344-45.

22. General Fairchild, memorandum to Major General Partridge, AC/AS-3, subject: Instructor and Student Personnel, 1946, 2-3, Fairchild Papers, AFHRA.

23. One can find Fairchild's sanguine opinion of Schlatter in General Fairchild, memorandum to General Arnold, subject: Promotion of Col David M. Schlatter to Brigadier General, 20 November 1942, Fairchild Personal Papers, Newport News, Va.

24. Lt Gen David M. Schlatter, transcript of interview, 6 May 1970, 8, Murray Green Collection, United States Air Force Academy Library.

25. Maj Gen C. C. Chauncey, deputy chief of Air Staff, memorandum to Maj Gen David Schlatter, subject: Directive Re Army Air Forces School, 8 November 1945, Fairchild Papers, AFHRA.

26. James C. Shelburne, "Factors Leading to the Establishment of the Air University" (PhD diss., University of Chicago, 1953), 191-92. See also Billy J. Tolson, "A History of Air University" (PhD diss., University of Oklahoma, 1983).

27. Lt Gen Hoyt Vandenberg, memorandum to Gen Ira Eaker, subject: Establishment of the Army Air Forces School, 1 November 1945, Fairchild Papers, AFHRA.

28. A good description of this can be found in Fairchild's comments to a conference of AAF major commands. See "AAF Educational Program," *Army and Navy Journal*, 2 March 1946.

29. Chauncey memorandum. See also "Address of Maj. General Muir S. Fairchild before Meeting of Military Order of the World Wars," Atlanta, Ga., 5 April 1946, Fairchild Papers, AFHRA.

30. Lt Gen John W. Carpenter III, transcript of oral history interview by Lt Col Arthur W. McCants Jr. and Maj Scottie S. Thompson, January 1970, 106-8, AFHRA.

31. Muir S. Fairchild to Lt Gen Barton K. Yount, letter, 23 November 1945, Fairchild Papers, AFHRA.

32. Muir S. Fairchild to Isaiah Bowman, PhD, letter, 26 November 1945, 1, Fairchild Papers, AFHRA; and Maj Gen Matthew K. Deichelman, transcript of oral history interview by Lt Col John N. Dick, 3 February 1976, 129, AFHRA.

33. Fairchild letter to Bowman.

34. Guido R. Perera to Maj Gen Muir S. Fairchild, letter, 27 November 1946, 3-4, Fairchild Papers, AFHRA.

35. Maj Gen Hugh Knerr, memorandum to commanding general, AAF, 20 February 1946, subject: Air University, Fairchild Papers, AFHRA. Fairchild agreed with the first four points of the Knerr memo. See General Fairchild, memorandum to General

Spaatz, commanding general, AAF, 8 March 1946, Fairchild Papers, AFHRA. He also made the plea that Maxwell (not Washington, D.C.) was the correct place for Headquarters AU as well as AWC. Evidently Spaatz agreed.

36. The best work on ACTS is Robert T. Finney's *History of the Air Corps Tactical School, 1920-1940* (reprint, Washington, D.C.: Center for Air Force History, 1993).

37. Muir Fairchild to Hugh Knerr, letter, subject: Reactions to the Air Board, 4 March 1946, National Archives.

38. Fairchild letter to Bowman.

39. Eaker letter to Fairchild.

40. Fairchild letter to Bowman.

41. General Fairchild, memorandum to Gen E. W. Barnes, subject: Certain Aspects of the Air Force Courses, 6 March 1946, Fairchild Papers, AFHRA.

42. General Fairchild, memorandum to Gen E. W. Barnes, subject: Intelligence Instruction, 6 March 1946, Fairchild Papers, AFHRA; and Gen E. W. Barnes to Bruce Hopper, Headquarters AAF, letter, 16 July 1946, Spaatz Collection, Library of Congress.

43. Barnes letter, 2.

44. *Ibid.*, 2-3.

45. Bruce Hopper, memorandum to General Spaatz, subject: Report on Fairchild's Briefing, 25 April 1946, Spaatz Collection, Library of Congress.

46. Carl Spaatz to Clarence A. Dykstra, provost, University of California at Los Angeles, letter, 27 March 1946, Fairchild Papers, AFHRA.

47. Gen David A. Burchinal, transcript of interview, 1975, 80-81, David A. Burchinal Papers, Military History Institute, Carlisle, Pa.

48. General Fairchild, notes on trip to Washington, 15 March 1946, Fairchild Papers, AFHRA. See also *idem*, notes on trip to Washington, 29 March 1946, Fairchild Papers, AFHRA.

49. Muir Fairchild to Orvil A. Anderson, letter, 13 February 1946, 1-2, Fairchild Papers, AFHRA. For an example of Fairchild's committee work while attending the Army War College, see Fairchild (committee no. 4, chairman), subject: High Command, 18 February 1937, Military History Institute, Carlisle, Pa.

50. Maj Gen Muir S. Fairchild, commanding general, Air University, address of welcome to students of AWC and ACSS, 3 September 1946, 8, Fairchild Papers, AFHRA.

51. *Ibid.*

52. Fairchild estimated that AWC would need four to six officer instructors. Hopper memorandum.

53. Maj Gen Orvil A. Anderson, "Teaching the Dynamics of Decisive Air Power," *The Pegasus*, June 1948, 8-10, 16.

54. Presentation of AWC study on organization to AAF Air Board, subject: Problem, Organization of AAF upon Unification, 4 December 1946, Air War College Reports, National Archives.

55. Eaker was equally opposed to a return to the Army's "old pre-war system" of separate corps. See Eaker letter to Fairchild. For Fairchild's perspective, see "Report of AAF Educational Conference, 20-22 August 1946," Maxwell AFB, Ala., 7, Gen E. W. Barnes Papers, AFHRA; and Saville interview, 350-51.

56. Muir Fairchild to Bruce Hopper, PhD, letter, 17 August 1946, Spaatz Collection, Library of Congress.

57. Fairchild memorandum to Partridge; and Hugh Knerr to C. C. Chauncey, deputy chief of the Air Staff, letter, subject: The Air Board, A-3, and Air University, 1 April 1946, National Archives.

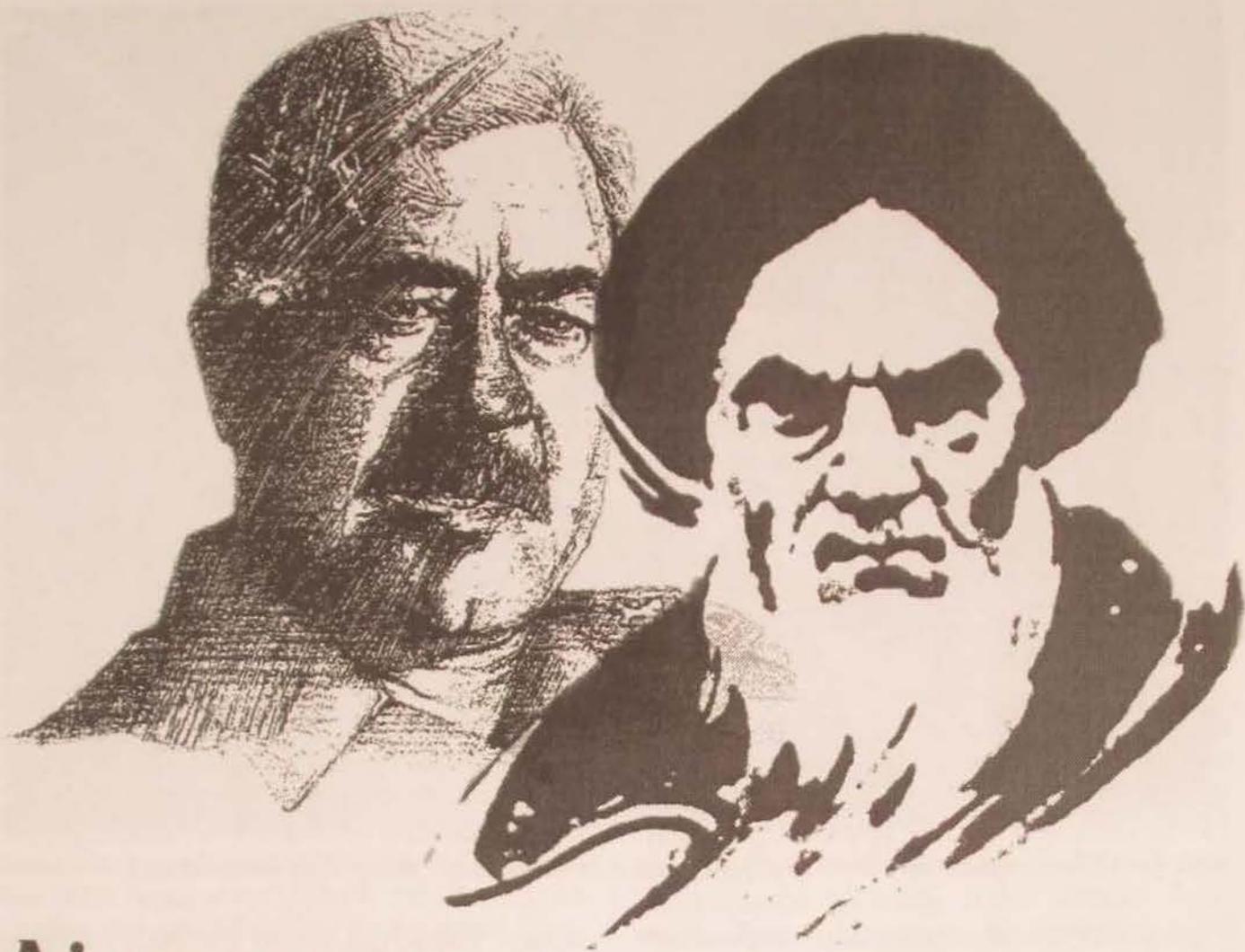
58. Eaker letter to Fairchild.

59. A. W. Johnson, War Department Adjutant General's Office, to Muir Fairchild, letter, subject: Redesignation of the Army Air Forces School, 12 March 1946, Fairchild Papers, AFHRA.

60. Fairchild address of welcome; see also "Extract from *Army - Navy Journal*," 7 September 1946, Fairchild Papers, AFHRA.

61. Lt Gen Laurence S. Kuter, dedication of the graduation exercises, squadron officer of ACSS, Air University, 19 March 1954, Kuter Collection, USAFA Library.

62. *Ibid.*



Airpower and Political Culture

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AIRPOWER¹ IS THE most responsive and, in many ways, the most useful form of military force yet developed. Increasingly, airpower demonstrates the capacity to dominate warfare, yet variations in its effectiveness show that air forces rarely achieve their material potential. The great success with which liberal democracies have employed air forces as instruments of power is most easily attributed to asymmetrical wealth, but this understanding misses the

role democratic institutions and value systems play in the development and employment of airpower.

Western democracies have evolved a distinctive and dominant security institution, the national air force. Authoritarian regimes have only occasionally imitated such arms and then could not trust them.² The interrelationship between democracy and effective airpower has both current and future significance.



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Airpower effectiveness clearly depends on training, equipment, organization, and strategy, but comparative studies of airpower tend to focus on just technical and material factors.³ Social, political, and organizational factors can also determine airpower's value as an instrument of power, either amplifying or attenuating its material potential. Scholarly studies of the sensitivity of military power to political culture tend to focus on armies⁴—the arms of conquest prized by authoritarian states—so there is much to learn in this field, far more than one brief article can disclose.

Authoritarian states have repeatedly found airpower's utility as an instrument of the state limited by their political institutions, often gaining only a small return for their airpower investments. Some have even found their military treasure working against the interests of their regimes. Even technically adept authoritarian states demonstrate this ten-

dency. The Soviet Union and Nazi Germany devoted considerable resources (largely in collaboration) to develop airpower in the 1930s. While they developed advanced air arms for the time, these governments also impaired these forces with doctrines that improved their adherence to the exclusive party in power but curbed their service to the state.⁵ Recent wars provide further and clearer evidence of this trend.

Evidence from recent wars indicates that the sensitivity of airpower to political culture persists. The 1991 Gulf War exhibited a stark contrast between authoritarian and democratic air effectiveness, but material factors alone might have determined the outcome in this case. Regardless, the might and exquisite military competence of the coalition air operation overshadowed the effects of political culture on Iraqi air operations. A more appropriate case for illuminating how modern air-

power operates in the hands of authoritarian leaders is the Iran-Iraq War, the longest conventional war of this century.⁶

Iran's Islamic Revolutionary Regime

When Teheran's Islamic revolutionary government came to power, it quickly imposed political controls over the existing military elite. These controls particularly affected the Shah's favored military arm, the air force. Until 1979 the Imperial Iranian Air Force, largely modeled after the US Air Force, had been a major force in the Middle East. It atrophied quickly after it was reorganized as the Islamic Iranian Air Force. Iran's Western-trained airmen chafed under increasing restrictions and began defecting. Repression led to defection in a descending spiral; the most eminent defector was Iran's president Bani-Sadr in June of 1981 in the company of a colonel of the Islamic Iranian Air Force. By 1982, over 180 pilots had defected, many with their aircraft. They reported that they were forced to fly without Identification-Friend-or-Foe (IFF) equipment, which resulted in 55 Iranian aircraft being lost to fratricide.⁷ Aircraft maintenance was poor, but political security measures took an even greater toll on Iranian air operations. A committee of three religious authorities was appointed to oversee air operations. Aircrew members were searched before each mission, crews were given the minimum fuel thought necessary for the assigned mission, and aircrew members, instead of being allowed to plan their missions, were issued flight plans just before takeoff.⁸

The measures Teheran imposed on its air forces continued to erode combat effectiveness throughout the war. Iranian air efforts peaked in the first few weeks of the war and declined steadily thereafter. The isolation of Iran's Islamic revolutionary regime and the difficulties it experienced in obtaining replacement parts and equipment was one factor in this decline, but not the only one. (Iraq also suffered from withdrawal of aid. The

Soviet Union embargoed military shipments to Iraq soon after the war began, although it quietly resumed them in 1982.)⁹ The extreme

Social, political, and organizational factors can also determine airpower's value as an instrument of power, either amplifying or attenuating its material potential.

hostility of the Khomeini regime to the most industrialized states—the major arms suppliers—isolated Iran and significantly complicated its war effort. But suspicion and tension between Iran's political elite and its air force proved the most corrosive influence on Iranian airpower. Teheran continued to impose restrictions on its available airpower as the Iran-Iraq War progressed. In the final months of the war, Baghdad reported daily sorties in the hundreds, while Teheran's war bulletins reported only a handful (and magnified the media signature of the few daily sorties by broadcasting the times they had been over their targets).¹⁰ Finally, in the ultimate demonstration of its mistrust, Teheran founded a rival air force within its Islamic parallel armed force, the fundamentalist Revolutionary Guards (*Pasdaran*).¹¹

Iraq's Baathist Regime

The near-complete failure of the Iraqi air force in 1991 has lured many commentators to conclude inaccurately that this was an impotent force.¹² In actuality, during the eight-year course of the Iran-Iraq War, the Iraqi air force developed into a regionally dominant threat.¹³ Still, despite investing in the materials of air strength, Baghdad harvested only part of the potential gains available to it even when fighting Teheran—largely for nonmaterial reasons.

Militarized states tend to design their armed forces not for war fighting but for coup prevention. The autonomous operating char-

acteristics and concentration of lethal power inherent in air forces have been key to the outcomes of coups in Guatemala (1954), Chile (1972), and the Philippines (1989). Iraq's Baathist regime had historical reasons to fear the military—and the air force in particular. The Iraqi air force had been instrumental in several regime changes, including the 1936 coup and the 1958 republican revolution. The Baath party launched its first coup in February 1963 by capturing and executing the commander of the Iraqi air force.¹⁴ That government, which brought Saddam Hussein his first position of power, lasted eight months. In November 1963, the military revolted from the Baath party, securing its coup with an air force attack on the Baghdad headquarters of the Baath National Guard.¹⁵ The Baath party returned to power in 1968 in yet another military coup led by Ahmad Hasan al-Bakr and secured by a purge of the military orchestrated by his chief of security, Saddam Hussein.

Saddam Hussein pushed President Bakr aside in 1979. Within a week of assuming power, he claimed to have discovered a "conspiracy" among the military and then executed the accused before a month had passed.¹⁶ Saddam Hussein purged all of the armed services but devoted particular attention to the Iraqi air force. Membership in the Baath party became a prerequisite for attendance at the Iraqi Air Force Academy. Saddam Hussein further tightened his control by moving the academy to his home town of Tikrit.¹⁷

When Iraq began its war against Iran in September 1980, it copied Israel's 1967 strategy—attacking all of the important Iranian air bases on the first day—even though Iran had followed the lead of NATO states by constructing hardened aircraft shelters in the 1970s.¹⁸ Iran responded with a similar one-pulse attack on Iraq's air bases.¹⁹ Yet neither state persisted in its efforts to eliminate or even significantly contain the opposing air force after the opening days. Westerners might characterize this omission as risk avoidance or a strategic oversight, but it accorded with each regime's priority on internal control. Saddam Hussein's declaration that he would disregard Western

analysts' criticisms of his use of airpower corresponded to his strategic overconfidence.²⁰

Once the Iran-Iraq War began, Iraqi air commanders were punished for aircraft losses regardless of damage inflicted on the enemy. Optimistic reporting was rewarded and unfavorable yet accurate reporting punished.²¹ The regime acted against its own interests when it attempted to gain better results by committing the Iraqi air force to battle piecemeal, which increased its losses and reduced its accomplishments.²²

Despite these impositions on its employment, the Iraqi air force, exposed for eight years to the pitiless realities of combat, became one of the most technically experienced combat forces in the world in the 1980s. It steadily acquired new equipment, and its pilots accumulated combat practice in advanced techniques such as aerial refueling and the use of precision-guided munitions.²³ But with each advance in its capabilities, the Iraqi air force posed a greater threat to the Baathist regime.

The assessment that "this is a war Iraq can not win and Iran can not lose" had become a cliché by 1988, when Iraq launched a series of offensives and the course of the war changed dramatically.²⁴ Iraq successfully exploited three crucial differentials to stave off defeat for seven years and eventually exhaust the Khomeini regime. First, Iraq possessed a network of roads and railroads paralleling the border—what Jomini termed *interior lines*. These lines of communication allowed Saddam Hussein to move reinforcements to limit or reverse any Iranian attack.²⁵ Second, Iraq expanded its air force and employed it to buy time while reinforcements moved when necessary.²⁶ Third, and most important, Iraq benefited from generous loans and terms of credit provided by Eastern as well as Western sources. This allowed Iraq to invest in modern military technology. Not surprisingly, the tools of modern airpower were a top priority.²⁷ However, Iraq's repression of its air force and its concentration on ground defensive operations until 1988 had the effect of curbing the potential of its abundant military hardware.

Although Iraqi airpower may not have been fully exploited to gain victory, it at least prevented defeat by playing an indispensable role in containing Iranian offensives and preventing breakouts from 1981 through 1988.²⁸ Iraq's air effort in this first Gulf War dwarfed that of the coalition in the 1991 Gulf War (400,000 sorties versus 110,000).²⁹ By 1988, the Iraqi air force probably had more resident combat experience than all of the remaining air forces in the world combined. But Iraq's Baathist elite carefully controlled this most potent instrument of external power, unable to assume it would remain loyal. In summation, while the Iraqi air force was sufficiently well employed to stave off defeat at the hands of an impoverished Iranian army, the penalties imposed by the restrictions it suffered under were made clear when it faced coalition air forces in 1991.

The Contest between Security and Airpower

The particular philosophies and goals of authoritarian states can be as different as North Korean *juche* and fascism, but states that are systemically opposed to liberal democracy often share many common features. Chief among these are concentration of power in a single "political party," some form of national mobilization, and security measures designed to eliminate opposition. Influenced largely by "fascism, Nazism and Stalinism," Iraqi Baathism illustrates the contemporary "state of the art" other authoritarian regimes and future successors can aspire to.³⁰

Few if any states have erected information control mechanisms to rival those installed following Iraq's Baathist revolution of 1968. Under Baath party leadership, the military and the interior ministry developed as many as eight separate but interlocking security services to monitor the population as a whole and report on the others.³¹ The single sanction for disloyalty and, by some accounts, accusations of disloyalty, was (and presumably remains) death. A central aim of all of these

efforts was to increase the security of the regime by politicizing Iraq's armed forces.³²

As the rest of the world was entering the "information age," Iraq developed pervasive measures to control information (which eventually had debilitating effects on the Iraqi military in the 1991 Gulf War). Telephones, radio receivers, copiers, computers, and typewriters had to be registered with the state. Cameras could be purchased, but photography was prohibited without written permission from the interior ministry. Foreign publications were prohibited; Baghdad's five newspapers were all government organs, as were its broadcasting stations. Weather forecasts were state secrets; even current weather reports were forbidden to be published or broadcast throughout the course of the Iran-Iraq War because of their possible value to Iranian military planners.³³

Iraqi officials echoed Iranian practices in the Iran-Iraq War by providing aircrews with their flight plans at the last minute and forbidding mission debriefings.³⁴ The regime also deemed it better to forgo the potential synergy available from coordinating air and land operations rather than risk collaboration, so the Iraqi army and air force were prohibited from coordinating their efforts.³⁵ This prohibition dangerously slowed the collective reaction to Iran's summer 1986 *Karbala* offensive, which penetrated so far into Iraq that it temporarily closed the Baghdad-Basrah highway.³⁶

Iraqi airpower contributed anemically to the battlefield, but achieved eye-catching strategic successes against Iran. Long-range attacks on pinpoint targets such as the Neka power plant on the Caspian Sea coast, Larak Island in the Straits of Hormuz, the Bushehr nuclear plant, and satellite communications stations near Hamadan demonstrated the increasing skill and technical sophistication of the Iraqi air force from 1986 on.³⁷ Yet Iraqi air operations continued to follow the same impractical pattern that plagued Iraq's original air effort of September 1980. Iraq certainly had the military potential to gain the advantages it accrued by August 1988 at a faster rate. The tempo of effort may have been slowed by

limiting the role of airmen in air planning; it most certainly was affected by basing the most effective aircraft far from the militarily optimum site—Iraq's geographic and technical center of Baghdad.³⁸ While it impaired internal air force communications and technical interchanges, the positioning of Iraq's most potent combat aircraft at outlying bases reduced the risks of their use against the regime. Iraqi air forces also rarely flew in large formations (and when large formations flew together they were unarmed) to eliminate the risk of a large force contributing to a coup. This spilled over into the Gulf War of 1991, eliminating Iraq's most worrisome offensive option.³⁹ All these factors confirm the appraisal offered by Anthony Cordesman that the Iraqi air force was "organized and deployed to prevent its use in a coup."⁴⁰ That is, it was fragmented and enmeshed in security procedures that limited its contributions to the war effort.

Airpower and Values

Elaborate security measures like those imposed by Iran and Iraq have clear costs, yet these two ideologically opposed ruling elites each deemed them necessary to the regime's safety. Shifting military priorities from war-fighting effectiveness to internal stability can have debilitating effects.

As these recent examples demonstrate, state value systems may bound modern military capabilities. Rigid command and direction tend to marginalize air forces as instruments of war; each advance in capability that might compensate for inefficient organization makes a repressive state's air force more threatening to the regime it was intended to serve. The values and doctrines required to fully develop and harness the potential of modern airpower clash with those values and mechanisms of state control favored by unpopular or repressive regimes, as the remainder of this article explains.

The security measures imposed on the Iraqi and Iranian air forces by their respective governments attenuated the potential of these

forces to a degree that would be viewed as intolerable by the people and the military professionals sworn to protect the people in contemporary Western states. The luxury of concord in public discourse enjoyed by authoritarian regimes comes at an immense price in accurate knowledge and the feedback necessary to tune government operations. Politicized armed forces, compelled to filter and misreport information, lose effectiveness as instruments of the state. The results of manipulation continue in operation, gaining layers of effects. Natural errors may be statistically distributed and self-canceling in open systems, but imposed biases block such self-regulation. All the armed forces of authoritarian states are clearly affected as military instruments by information distortion, restriction of dialogue, and lack of access to objective sources of feedback.⁴¹ These factors impede air forces disproportionately.

The losses that authoritarian regimes sustain by imposing excessive security measures on their armed forces are proportional to the military possibilities they curtail. Air forces can attack opposing navies, air forces, or armies with great immediacy and effectiveness. They can also attack national war-sustaining means and may destroy or incapacitate specific strategic functions such as internal communications or transportation. The array of airpower's immediate possibilities magnifies the opportunity costs of misapplication and accentuates the importance of air strategy.

In both Iran and Iraq, air strategies appear to have been devised by ruling elites who forbade or dismissed the advice of experienced airmen. It is impossible to say if Iran's religious authorities who oversaw air operations had any understanding of the potential of airpower, but the measures they imposed indicate ignorance of, if not hostility to, the resources at their disposal. Flying then-irreplaceable aircraft without operating IFF equipment subjected Iranian airmen to continuous attack from both Iraqi and Iranian forces. Operating aircraft supplied with only a minimum of fuel—with no reserve for the vagaries of weather, maneuvering, enemy action, or disorientation—guaranteed needless

losses of irreplaceable assets. Likewise, Baghdad's tenuous application of its air force may have stretched out the Iran-Iraq War needlessly. And the awkward locations of Iraq's air bases and Baghdad's restrictions on joint army-air force planning certainly cost soldiers their lives and metered results. Professional airmen in both nations must have understood many of these errors but lacked avenues to communicate even basic professional advice to those in authority.

The understanding required to develop and effectively employ military aviation is technical more than political. However, professional airmen tend to be cosmopolitan, exposed to Western education, and accustomed to thinking rigorously—at least about matters affecting their survival. Iranian airmen were trained in the United States until 1979, while Iraqi airmen traced their traditions to Britain's Royal Air Force and were trained in several European locations in the 1980s.⁴² Authoritarian or xenophobic governments may classify airmen as a potentially threatening group. As Richard Hallion observed, "While Saddam Hussein could rely on like-thinking unsophisticates from his home town of Tikrit to run his army, finding equally doctrinaire individuals who could also fly an airplane was a far more difficult task. (Hitler and Goering had the same problem with the Luftwaffe in the Second World War.)"⁴³

Distorted information can be a death sentence on any sortie. An accurate and thorough preflight briefing arms airmen to minimize risks, affords them the ability to adapt to unforeseen circumstances, and helps them to work together when flying in formation. But to an air force as a body, debriefings are even more important. Debriefings permit organizations to accumulate knowledge, to cease making errors when they are first discerned, to acquire vicarious knowledge that can benefit the whole force, and to hone military capabilities. Debriefings also begin the process of feedback to national decision makers. Regimes that restrict constructive internal communications inadvertently sacrifice external military security.

The airman's appetite for pertinent information is specific but voracious in those par-

"While Saddam Hussein could rely on like-thinking unsophisticates from his home town of Tikrit to run his army, finding equally doctrinaire individuals who could also fly an airplane was a far more difficult task."

ticular areas of professional need; the air planner's needs are synoptic. Accurate reporting is important to any military branch; to the airman it is a *personal* priority.⁴⁴ Information distribution is a predictable source of tension between the power elites and the airmen of centrist states. Societies ruled by tight control of information cannot tolerate individual access to information, free media, or free speech. This creates a natural tension with the survival values and information requirements of aviators.

All types of forces benefit from societies that permit free speech, free competition, and free markets, but air forces exploit these freedoms in unique ways. Unlike soldiers and sailors, aircrews possess the potential to attack any target within an immense radius each time they fly. This power is concentrated in individuals and small crews. Army forces capable of significant action consist of hundreds or thousands of individuals, none of whom can radically depart from authoritative norms. Similarly, naval vessels are crewed by large numbers, and—while a "Red October" mutiny is theoretically possible—no ship (much less a fleet) is likely to be used to displace a government. Centrally controlled regimes typically compensate for this concentration of power in individual combatants by selecting and advancing airmen based on their political reliability rather than their military competence, but this further reduces the utility of the air forces they acquire. For example, if the primary criterion for entering

an air arm is red hair, those with the reddest of hair would be the top candidates, and there would be a cutoff at some degree of redness—regardless of whether hair color indicates skill or fitness to serve.⁴⁵ Even with such selection practices, unpopular or insecure elites cannot afford to trust that their airmen are free of infection from Western ideas.

Western air forces gain advantages stemming from information sharing, the unbiased competition of ideas, scientific objectivity in systems development and testing, and individual initiative. These advantages are likely to remain unchallenged by states that depend for their security on information control and manipulation. The progressive expectation that knowledge accumulates to the benefit of the many is similarly unlikely to benefit repressive regimes. But perhaps the most effective value differential curbing hostile use of airpower is that Western forces are assumed to serve society, not the ruling elite.

Influences of Political Culture on Airpower Doctrine and Strategy

Iran and Iraq used their air forces as terror weapons and aped Adolf Hitler in applying missiles to the same job. The use of air forces for terror was available from the first. It began with German zeppelin attacks on London and other British cities early in World War I. Britain's strategy in response was penned by Winston Churchill in a series of memoranda of September 1914. In essence, he proposed gaining exclusive control of the air. After outlining an array of military measures to defend Britain from air attack, Churchill suggested a way of making lasting gains: "After all, the great defence against aerial menace is to attack the enemy's aircraft as near as possible to their point of departure."⁴⁶

Politically, the priority of gaining control of the air accords with the value that democratic governments assign to the population as their source of power and their responsibility to safeguard. Strategically, gaining control

of the air has proven essential in every campaign of World War II and every interstate war since. The method of gaining lasting advantage in air operations—destroying the enemy air force, preferably on the ground—seems from the evidence of the 1991 Gulf War to be increasingly important. This lesson has not been missed in Russia, which began its suppression of the Chechen rebellion by destroying the two hundred aircraft available to the rebels (who were led by the former bomber pilot Dzakhar Dudayev) in the first day of operations.

Such a promising strategy is unlikely to be ignored by repressive states, but the Iran-Iraq War experience reveals some institutional impediments faced by authoritarian regimes in attempting to gain an air advantage. Instead of attempting to gain air ascendancy, Iran and Iraq continued to attack politically symbolic targets throughout their war. The simplest explanation of this behavior, proposed by a number of analysts, is that neither Baghdad nor Teheran was willing to risk its most flexible offensive tool merely to shield its people.⁴⁷ Instead, these centrist regimes strove to maintain control of the offensive potential of airpower, metering air operations to prevent coup attempts and preserving it in case it might be needed to repress internal foes.

One more political differential stems from the varied purposes states assign to their air forces. Instead of designing their air forces to protect their people and disarm aggressors, authoritarian regimes tend to see airpower as an adjunct to their arm of conquest. In terms of military art, Western states employ air forces as coequals to armies and navies in a "joint" scheme, while air forces designed to serve armies fit a "combined arms" scheme. Several commentators have noted how Iraq followed the combined arms model.⁴⁸ In another interesting parallel, in World War II Allied forces employing a joint operations model gained air superiority and then complete ascendancy over the Axis powers, who generally followed the combined arms model. This was true in every theater save one—the Soviet Union and Nazi Germany both

employed their forces under a combined arms model on the eastern front of the European theater in World War II. It is no accident that this was by far the bloodiest front in the war.⁴⁹

Airpower's Utility

As observers in many nations have noted since the Gulf War, airpower is increasingly likely to establish the outcome of interstate war.⁵⁰ It is a more responsive, potent, and flexible form of military power than any that preceded it. This characterization stems from the speed, maneuverability, and range of aircraft (giving them access to whatever an enemy holds most dear, or, as a corollary, everything an enemy values). The consequent capability of air forces to attack any of an enemy state's instruments of national power provides decision makers a valued array of choices.⁵¹

Liberal democracies have taken extraordinary measures to minimize casualties in war yet retain military capability commensurate with their commitments. Airpower has allowed the United States in particular to not only resolve this dilemma but to acquire a potential "military edge over conventional opponents comparable to that exercised in 1898 by the soldiers of Lord Kitchener over the sword-wielding dervishes of the Sudan."⁵² Other democracies share the same values if not identical wealth and technical achievements. As long as memory of the 1991 Gulf air campaign is widespread, citizens of democratic states will expect their governments in the event of war to use the full potential of their air forces to minimize costs and risks. Those citizens might also judge the wisdom of their governments based on the soundness and foresight of their defense decisions.

Air forces provide democracies with easily shared tools befitting their common values. The evidence indicates that democracies rarely fight democracies and, as the Gulf War demonstrated, can find common cause in opposing aggressive actors.⁵³ One of the least noticed yet most important changes in warfare wrought by airpower is its extraordinary

streamlining of multinational operations. In the 1991 Gulf War, air forces of a dozen nations following a common air tasking order operated seamlessly. The challenge that coalitions have wrestled with since Wellington and Blücher, of concentrating different forces in time and space, dissolves for air forces since they can concentrate in purpose without needing to unite in location. The fluidity of coalition air operations adds to airpower's usefulness to democratic states.⁵⁴

Put simply, airpower concerts with American ideas. It supports collective response and independent strength. It substitutes technology for human risk—and takes the initiative.⁵⁵ The full potential of airpower can be realized by armed forces that systematically accept and apply the Western values of free expression, competing ideas, and individual liberty. No regime opposed to those values has met Western standards for exploiting the potential of airpower to date. Indeed, the institutional dissonance between authoritarian regimes and effective doctrines for air employment indicate that these impediments are unlikely to vanish. Authoritarian regimes are unlikely to choose more effective airpower at the cost of less control.

The Strategic Differential

The priorities and methods of totalitarian states clearly tend to curb air forces so they exclusively serve the aims of ruling elites. In symmetrical conflict, states that hoard airpower to preserve its potential for terror are likely to see that power wither, while air forces that are utilized to shield the citizenry are likely to gain advantage if they are reasonably well equipped and led. States that do not trust their air leaders are likely to employ air forces to suit the desires of their power elites, with little understanding of capabilities, limitations, or opportunities that expert advice would disclose. Consequently, they fail to harness the combination of responsiveness, initiative, and combat power that liberal states expect their air forces to provide.

The modern manned aircraft embodies this value differential in miniature. Contempo-

The most prized military trait of airpower, flexibility, stems from individual performance, trustworthiness, and initiative.

rary multirole aircraft can be armed with a selection of specialized weapons (each of which requires expert planning for optimum results), can range over hundreds of miles at speeds in hundreds of miles an hour, and can perform an array of tasks. Commands composed of many aircraft and crews with good leadership, intelligence, and communications accumulate higher-level skills and military potential. It is the human element in aircrews and air organizations that repressive regimes cannot afford to trust. The most prized military trait of airpower, flexibility, stems from individual performance, trustworthiness, and initiative. The fact that Hitler, Khomeini, and Saddam Hussein increasingly relied on unmanned weapons is striking.⁵⁶

Air forces have proven most capable when employed by liberal democratic states. Liberal democracies have a distinct asymmetric advantage in maintaining air forces to serve their national security needs. Indeed, the opportunities airpower can provide which suit democratic value systems are increasing. For example, stealth and precision weapons offer an extended form of deterrence that could forestall aggression by those who might not fear nuclear deterrence, as Paul Nitze has pointed out.⁵⁷ Similarly, Tony Mason has pointed out the collective security opportunities available in an "era of differential air power."⁵⁸

However, while this potential advantage is inherent in democratic political culture, there is no guarantee that democratic states will exploit their leverage. They may marginalize or even discard this advantage unwittingly.

Just as creating an air force and investing in airpower are military policy choices, the arrangements for obtaining expert air advice, planning, and direction are dictated by defense policy, which may or may not make the critical distinctions necessary to the optimum use of any specialized form of combat power.

As belts tighten in the world's democracies, defense staffs tend to equalize dissatisfaction and seek compromise in the name of "jointness" (or, as some allies term it, "jointery") rather than pursue excellence in the specialized fields of airpower, sea power, and land power. In this atmosphere, compromise can repress expertise and initiative, promoting a form of conformity.⁵⁹ *Uncritical* devotion to harmony and compromise could impose the fetters of an imposed and excessive political reliability on any branch of armed forces.⁶⁰ This is not to say that jointness is harmful to military capability (the reverse should be true, as we saw in World War II), but confused ideas of jointness could curb effectiveness. A *clear* conception of jointness has become a strategic necessity.

To the extent that defense staffs avoid the temptations to arrive at comfortable compromises and instead refine specific military capabilities (provided by elementally different forms of armed force), contemporary defense restructuring could actually lead to leaner, more modern, and more affordable armed forces. Yet, as Eliot Cohen has so sagaciously pointed out, we need to think clearly about our real military strengths.⁶¹ Democratic strategists, policy makers, and citizens should appreciate how their values and freedoms provide a favorable climate for airpower, which in turn shields those who nurture it. Airpower thrives in the salubrious air that liberal democracy provides. It is in the interest of democratic states to fully appreciate all of the benefits their societies provide, including unique defense advantages. Policy makers can do even more, nurturing the contemporary synergy of culture and power that is in their trust. □

Notes

1. In this article, "airpower" follows John C. Cooper's definition—"the total ability of a nation to fly, to act through the air space, to use controlled flight." ("The Fundamentals of Air Power," address to the Library of Congress, 7 January 1948, in Eugene M. Emme, ed., *The Impact of Air Power: National Security and World Politics* (Princeton: D. Van Nostrand Company, Inc., 1959), 128-34. An "air force" is an independent military aviation organization established to develop and employ airpower for national security; an "air service" is a military aviation organization designed to develop and employ airpower for the benefit of a parent military service, such as the Japanese Naval Air Service of World War II. The general term encompassing air forces and air services is *air arm*.
2. Communist regimes have generally averted any challenge air forces might pose to the state or party by organizing air arms subordinate to their armies. Thus, the People's Liberation Army has an air force, but the People's Republic of China does not. North Korea follows the same model. René J. Francillon, *The Naval Institute Guide to World Military Aviation* (Annapolis, Md.: Naval Institute Press, 1995), 51, 125. On the air arms of the USSR and other former Communist states during the cold war, see Michael J. H. Taylor, *Encyclopedia of the World's Air Forces* (New York: Facts on File Publications, 1988). Among World War II fascist regimes, Italy clearly operated an independent air force, Japan clearly did not (instead maintaining army and naval air arms), and Germany's Luftwaffe was a mixed case, but not an independent air arm comparable to the US Army Air Forces of World War II.
3. For example, a broad recent survey of material factors is Christopher J. Bowie et al., *Trends in the Global Balance of Airpower* (Santa Monica, Calif.: RAND, 1995).
4. Stephen Peter Rosen's recent survey shows the scholarly literature of strategic culture largely confined to studies of armies. "Military Effectiveness: Why Society Matters," *International Security*, Spring 1995, 5. The article's brief discussion of air forces indicates that "they will be less affected by the general norms and social structures" of the state than armies. The recent history surveyed in this article indicates the reverse may be true.
5. The air forces of Nazi Germany and the Soviet Union are more accurately categorized as air services of their respective armies. Neither air arm was designed using the context of its service to the state, a requirement that some have called definitive for airpower. See for example W. Barton Leach, "Obstacles to the Development of American Air Power," *The Annals of the American Academy of Political and Social Science*, May 1955, 67-75, excerpted in Emme, 805-13. Soviet air activity before World War II was largely concerned with developing symbols of prestige; while this theme continued after World War II, postwar Soviet aviation was in many cases slavishly derivative of Western air forces and their technologies. Air Vice Marshal Tony Mason, *Air Power: A Centennial Appraisal* (London: Brassey's, 1994), 162, points out that "Soviet advice may even have been counterproductive" to Iraqi airpower development.
6. The performance of the Iraqi air force in Desert Storm has been difficult to assess, first because it flew so little, and second, because of the near vacuum of reliable information stemming from Baghdad. The effects of this limitation are detailed in Barry D. Watts and Dr. Thomas E. Keane and Eliot A. Cohen, *Gulf War Air Power Survey*, vol. 2, pt. 2, *Effects and Effectiveness* (Washington, D.C.: Government Printing Office, 1993), 16-17.
7. Maj Ronald E. Bergquist, *The Role of Airpower in the Iran-Iraq War* (Maxwell AFB, Ala.: Air University Press, 1988), 63-64; Anthony H. Cordesman, *The Iran-Iraq War and Western Security, 1984-1987* (New York: Jane's, 1987), 143; Edgar O'Ballance, *The Gulf War* (New York: Brassey's Defence Publishers, 1988), 123; and David Segal, "The Iran-Iraq War: A Military Analysis," *Foreign Affairs*, Summer 1988, 953.
8. Cordesman (1987), 105, 112, 143; O'Ballance, 71, 87, points out how restricted flying proficiency due to groundings eroded Iranian air capabilities, much as Napoleon's conservation of his fleet during the prolonged British blockade rendered the conserved fleet militarily frail.
9. The timing of Soviet resumption of arms shipments, shortly after Israel routed Soviet arms in the Bekaa Valley campaign, is interesting. O'Ballance, 12; and Lawrence Freedman and Efraim Karsh, *The Gulf Conflict 1990-1991: Diplomacy and War in the New World Order* (Princeton: Princeton University Press, 1992), 279.
10. Neither Iraqi nor Iranian war reporting can be considered reliable, but Iran's tacit admission that its forces flew only a few sorties a day is a good example of the "proportional truth" of official reporting from this war.
11. The mullahs' mistrust of Iranian airmen was doubtlessly magnified by the Iranian air force coup attempt of 1980. Dilo Hiro, *The Longest War: The Iran-Iraq Military Conflict* (New York: Routledge, 1991), 48. On the costs of setting up two rival armed forces, see Segal, 953; and Anthony S. Cordesman and Abraham R. Wagner, *The Lessons of Modern Warfare*, vol. 2, *The Iran-Iraq War* (Boulder, Colo.: Westview Press, 1990), 420.
12. Jeffrey Record, *Hollow Victory: A Contrary View of the Gulf War* (Washington, D.C.: Brassey's [US] Inc., 1993), 64; and Miron Rezun, *Saddam Hussein's Gulf Wars: Ambivalent Stakes in the Middle East* (Westport, Conn.: Praeger, 1992), 47. For a contrary view, see Richard P. Hallion, *Storm over Iraq: Air Power and the Gulf War* (Washington, D.C.: Smithsonian Institution Press, 1992), 128.
13. Cordesman and Wagner, vol. 2, 235.
14. Adel Darwish and Gregory Alexander (pseud.), *Unholy Babylon: The Secret History of Saddam Hussein's War* (New York: St. Martin's Press, 1991), 21, 25.
15. *Ibid.*, 26, 29; Hallion, 129; and Hiro, 21.
16. Rezun, 6-7, 13.
17. Hallion, 129; and Samir al-Khalil (pseud.), *Republic of Fear: The Politics of Modern Iraq* (Berkeley: University of California Press, 1989), 27.
18. Bergquist, 57; Cordesman and Wagner, vol. 2, 81-84; Cordesman (1984), 663-64; and O'Ballance, 42-44.
19. Bergquist, 58; Cordesman and Wagner, vol. 2, 119.
20. Bergquist, 46; and Michael R. Gordon and Bernard E. Trainor, *The Generals' War: The Inside Story of the Conflict in the Gulf* (Boston: Little, Brown and Company, 1995), 180.
21. Cordesman and Wagner, vol. 2, 484, 495; Anthony H. Cordesman, *The Gulf and the Search for Strategic Stability* (Boulder, Colo.: Westview Press, 1984), 653-58; Darwish and Alexander, 105; and Rezun, 17, mention the death of Saddam Hussein's relative and former defense minister Adnan Khairallah in a "helicopter crash" before the Gulf War. The deaths of popular generals in "helicopter crashes" were nearly daily occurrences in the weeks after the end of the Iran-Iraq War.
22. Cordesman and Wagner, vol. 2, 262.
23. *Ibid.*, 236, 242, 363, 473.
24. Reiterated in Rezun, 36.
25. Cordesman and Wagner, vol. 2, 356; Shlomo Gazit, "Introduction: Major Strategic Developments," in Shlomo Gazit and Zeev Eytan, eds., *The Middle East Military Balance, 1988-1989* (Boulder, Colo.: Westview Press, 1989), 13; and Segal, 946-63.
26. Karsh, "Regional Strategic Implications of the Iran-Iraq War," in Gazit and Eytan, 119; and Segal, 950, 958.
27. Dr. Kamran Mofid, "The Gulf War: The Cost of Destruction," in Royal United Services Institute, *Defence Yearbook 1990* (London: Brassey's, 1990); Gazit, 13; and Segal, 958.
28. Karsh, "Military Lessons of the Iran-Iraq War," *Orbis*, Spring 1989, 209. Iran responded by fighting in ways designed to minimize Iraqi airpower capability such as attacking at night and in bad weather; see for example, Richard Jupa and Jim Dingeman, "How Iran Lost/Iraq Won the Gulf War," *Strategy & Tactics*, March-April 1990, 49-55.
29. Cordesman and Wagner, vol. 2, 478.
30. Al-Khalil, 10, 39-40, 71, 72, 83, 189; and Darwish and Alexander, 199.

31. Al-Khalil, 36. Saddam Hussein sought expert assistance in reorganizing the State Internal Security organization from KGB chief Andropov and East German training. Al-Khalil, 12, 66.
32. Friedman and Karsh, 279; Hallion, 129; Hiro, 20-21; and al-Khalil, 11, 31, 278. Record, 81, neatly distills US and Iraqi leadership styles: "professionalism and trust" as opposed to "fear."
33. Al-Khalil, *passim*. For a noncritical survey of Iraqi information restrictions, see for example, The Baghdad Writer's Group, *Baghdad and Beyond* (Washington, D.C.: Middle East Editorial Associates, 1985), 21, 27, 60, 76-79.
34. Gordon and Trainor, 224. The restrictions on Iraqi air force effectiveness are described in Watts and Keaney, 126-58.
35. Gary Waters, *Gulf Lesson One, The Value of Air Power: Doctrinal Lessons for Australia* (RAAF Base Fairbairn, Australia: Air Power Studies Centre, 1992), 36, 123, explains the resulting reduction in military capability.
36. Cordesman and Wagner, vol. 2, 494.
37. Brig Gen (Res) O. Erez, "The Arab-Israeli Air Balance," in Aharon Levran et al., eds., *The Middle East Military Balance, 1987-1988* (Boulder, Colo.: Westview Press, 1988), 179; Levran, *The Military Balance, 1987-1988* (London: Brassey's, 1988), 239-40; and O'Ballance, 182-83.
38. Watts and Keaney, figure 14, Selected Iraqi Air Bases, 150.
39. The practice of forbidding large formations of aircraft from flying together prevented Iraq from mounting a spoiling attack on the Desert Shield/Desert Storm coalition. Such an attack, using an immense formation to saturate and "strip off" the coalition's defensive air patrols, was considered the one type of raid with the slim chance of upsetting the coalition's plans. *Ibid.*, 129, 157; and Hallion, 194.
40. Cordesman (1984), 746. Rezun, 35, accurately pegs Iraqi priorities—protecting the Takritis, the Sunni Elite, the Revolutionary Command Council of the Baath party, the Baath party, and then Iraq.
41. For the effects on the Soviet air arms, see for example, Mason, 210-13.
42. The astonishing variety of Iraqi aircraft and their sources is detailed, for example, in Aharon Levran, ed., *The Military Balance, 1989-1990* (London: Brassey's, 1989), 101-2.
43. Hallion, 129.
44. Dr. Frank Dully of the Naval Postgraduate School, "Survival Values in Combat Aviation," lecture, Shaw AFB, S.C., 14 February 1986.
45. Hallion, 129-30; Waters, 170; and Gordon and Trainor, 352.
46. Winston S. Churchill, *The World Crisis, 1911-1914* (New York: Charles Scribner's Sons, 1928), 327-44, digested as "Air Defense Memoranda of 1914," in Eugene M. Emme, ed., *The Impact of Air Power: National Security and World Politics* (Princeton: D. Van Nostrand Company, Inc., 1959), 27-29.
47. Bergquist, 43, 51, 75; James Bruce, "Gulf War: A Dangerous Legacy," *Jane's Defence Weekly*, 12 November 1988, 1200; and Cordesman (1987), 22.
48. See for example, Erez, 179.
49. David MacIsaac, "Voices from the Central Blue: The Air Power Theorists," in Peter Paret, ed., *Makers of Modern Strategy: From Machiavelli to the Nuclear Age* (Princeton: Princeton University Press, 1986), 637-38.
50. Patrick J. Garrity, *Why the Gulf War Still Matters: Foreign Perspectives on the War and the Future of International Security* (Los Alamos, N. Mex.: Los Alamos National Laboratory, Center for National Security Studies Report no. 16, July 1993), and "Viewpoint: What the Russians Learned from the Gulf War," *Aviation Week & Space Technology*, 5 October 1992, 78.
51. Eliot Cohen, "The Mystique of U.S. Air Power," *Foreign Affairs*, January-February 1994, 109-24; Philip Gold, "What does a 21st century defense require?" *Inquiry*, 1995/1, occasional paper, Discovery Institute, 5 April 1995.
52. Cohen, 111.
53. Waters, 221, 253. This correlation is examined in "Democracies and War: The Politics of Peace," *The Economist*, 1 April 1995, 17-18. In reply, Bruce Russitt, chairman of Yale's Department of Political Science, pointed out statistical evidence supporting the assertion that democracies rarely fight; and Harvard's Andrew Moravcsik pointed out that "democratic pacifism is the closest thing to an empirical law that scholarship on international relations has yet produced." *The Economist*, 29 April 1995, 8.
54. "The air war against Iraq turned out to be an enormous success. One of the reasons for this triumph was the integration of the various air forces into a solid fighting force. Was this so unusual?" Rezun, 94. Unified efforts seamlessly incorporating air forces from several nations have included the defense of Australia in 1942 and 1943, the Mediterranean and Northwest European campaigns of World War II, the Berlin airlift, and United Nations operations in Korea from 1950 to 1953.
55. William J. Perry, "Defense Aerospace and the New World Order," in *The Future of Aerospace* (Washington, D.C.: National Academy Press, 1993), 7-14.
56. Gordon and Trainor, 228; and Hallion, 129, point out the coincidence of Hitler's, Khomeini's, and Saddam Hussein's reliance on missiles.
57. Paul H. Nitze, "Is It Time to Junk Our Nukes: The New World Order Makes Them Obsolete," *Washington Post*, 16 January 1994, C-1.
58. Mason, 235-78.
59. Stifling effects that can result from excesses in the name of jointness were cynically characterized by Dr. Edward N. Luttwak: "Jointness is the virus that gives you the acquired strategic deficiency syndrome," quoted in *Air Force*, April 1995, 65. Examples of the tendency to view airpower contributions through the lens of its contribution to land battle (and resistance to its employment in pursuit of national goals) can be found in Gordon and Trainor, 84, 97, 98, 200, 310-11.
60. Centrifugal reactions to the success of coalition airpower in the Gulf War indicate the extent of tension that post-cold-war downsizing has caused, magnifying the pressures to mix and dilute the separate capacities that distinguish air forces, navies, and armies. For example, two letters by Frederick Kroesen—one in the *Washington Post*, 7 November 1994, 22, the other in the *Washington Times*, 26 December 1994, 18—claimed that airpower failed to gain a single US or UN objective in the Gulf War, whereas four days of land combat gained all of them. A brief reference to the US war plan shows it had six objectives; three were attained by airpower, one by land combat; of the two remaining, one (destroy Iraqi nuclear, biological, and chemical capability) was governed by the state of intelligence and the other (destroy the Republican Guards) should have been a team effort.
61. "American planners should look at what happened [in the Gulf War air campaign] and ask whether these improvisations do not point the way to greater effectiveness. After several decades of insisting that the word *service* means 'parochial,' military reformers might ponder the individual merits of the services, each of which can pool a great deal of operational expertise along with a common world view and an esprit de corps difficult to find among a melange of officers." Cohen, 118. See also Cohen, 116-17, 120, 123-24.



Air Operations in Low Intensity Conflict

The Case of Chechnya

TIMOTHY L. THOMAS

RECENT CONFLICTS in Chechnya and Bosnia indicate that for the immediate future, low intensity conflicts (LIC) will predominate over high-intensity Operation Desert Storm-type scenarios. The sober reality is that these skirmishes, according to Gen Charles Boyd, US Air Force, Retired, "cannot produce an enduring

solution with military force—air or ground—only one that will last until it departs" and that "a reliance on air power alone—the strike option—in this type of terrain with these kinds of targets has never held any real promise of conflict resolution."¹

Boyd's comments appear to hold for the conflict from December 1994 to August 1996

between Russian and Chechen rebel forces. Here, one of the combatants was a former superpower and the other a loose collection of rebels armed only with ground weapons. Against no credible air threat other than antiquated ZSU-23/4 air defense artillery, the Russian air force, while effective, was unable to make a major impact on the course and outcome of the fighting. As RAND analyst Ben Lambeth noted,

Russia's war against Chechnya was emblematic of the security challenges the air force is most likely to face in the decade ahead. The war was regional yet remote from the center of Russia. It featured a technologically unsophisticated yet determined ethnic opponent. It presented no air-to-air threat and offered a permissive environment for attacking aircraft other than at low altitude. . . . Finally, it entailed little by way of an opposing air force or target array and accordingly did not place great demands on the air force for high-technology performance. All in all, despite the occasional effective use of precision-guided weapons against key targets, quantity prevailed against quality in air force operations in Chechnya.²

This short assessment examines two aspects of air operations in Chechnya.³ First, it focuses on which tactics and operations worked (within the context of a Russian military undergoing severe financial and equipment-related hardships that limit training for such operations). Second, it examines which aircraft fared better in the conflict—rotary or fixed-wing.

The Air Threat

Chechnya, a republic located in the southwest corner of Russia between the Caspian and Black Seas (the Caucasus region of the country), actually started its break from Russia on 21 August 1991, two days after the August coup in the former Soviet Union, and declared its independence from Russia on 6 September 1991. Dzhokhar Dudayev, a former general in the Soviet air force, was invited to the post of president by the Amalgamated Congress of the Chechen People from Estonia (where

some Chechens were in exile). Later, he was popularly elected and advocated freeing Chechnya from Russia. Many Russians in the current regime considered the elections illegal and therefore characterized Dudayev's presidency as illegitimate.⁴ Russia's Fifth Congress of People's Deputies not only decreed the elections illegal but also declared Dudayev's regime unconstitutional.⁵ By the latter half of 1993, a Dudayev opposition developed in Chechnya that evolved into a small-scale guerrilla war. By the spring of 1994, the Dudayev opposition called upon Russia to support it and help establish constitutional order. Russia agreed. In November 1994, the Dudayev opposition force, supported by the Russian security services, led an attack to unseat Dudayev.⁶ The operation failed dismally, and Russia decided to intervene militarily.

At the start of the conflict between Chechnya and Russia, Chechen president Dudayev had nearly 265 aircraft. Nearly half of the force had been left by the Russian army when it evacuated the Chechen Republic in 1992. The abandoned aircraft included 80 L-29 Delfin combat trainers, 39 L-39 Albatross trainers, three MiG-17 fighters, two MiG-15UTIs, as well as six An-2 and two Mi-8 helicopters.⁷ Only about 40 percent of the force, however, was combat ready. According to Russian sources, Su-24mr reconnaissance aircraft observed the active preparation of Dudayev's aircraft for imminent combat in November 1994.⁸ This caused Russia to preempt the Chechen preparations with attacks on airfields on the morning of 1 December 1994 with Su-25 aircraft (some say Su-27s also participated).

For two reasons, Chechen aircraft allegedly presented a threat to both the impending ground-troop operations and the civilian population of the Russian Federation: (1) their potential ability to conduct kamikaze-style attacks against Russian nuclear or power plants (by filling up trainer aircraft with explosives and flying them into the structures; the presence of an ejection seat in these aircraft could allow Chechen pilots to turn them into de facto cruise missiles); and (2) their

ability to drop bombs on advancing Russian forces and disrupt their movement. To counter this threat, Russia attempted to destroy Chechen air assets on the runways and, as the war spread beyond Grozny, to use the air force and army aviation in close air support (CAS) and interdiction missions, including the bombing of smaller cities. The air force also bombed Grozny in support of combat forces there, visually turning the city into another Stalingrad.

The Russians initially gathered their forces at airfields in the North Caucasus Military District, with most of the aircraft provided by the Fourth Air Army. They employed aircraft from frontal (high-performance), army, and internal-forces aviation. Each had its own air corridor, figuratively speaking, and its own missions.⁹ Aircraft included 140 combat planes (Su-25, Su-22M, and Su-24), 55 helicopters (Mi-24, Mi-8, and Mi-6), and military transport aircraft (An-12, An-22, An-124, and Il-76). The Ministry of Internal Affairs (MVD) contributed 12 Mi-8MT helicopters.

Chechen air defense weapons included ZU-23-2 mobile anti-aircraft launchers mounted on KamAZ chassis and DShK machine guns mounted on Cherokee Jeeps and Toyota off-road vehicles. They also reportedly had Shilka ZSU-23/4 anti-aircraft guns and Strela-3, Igla-1, and Stinger surface-to-air missile (SAM) systems. The Chechens also used RPG-7 conventional, portable antitank grenade launchers against low-flying aircraft and helicopters.

To prevent Dudayev from constructing an air bridge with a country such as Turkey, Russia's air force used A-50 airborne warning and control system (AWACS) aircraft and from two to six MiG-31 and Su-27 aircraft to conduct combat patrols and serve as an air cap. From all appearances, they were unchallenged and successful.

The Air Operation

The performance of Russia's rotary and fixed-wing aircraft in Chechnya fell below expectations against this lightly armed force.

Problems contributing to the military's performance include rough terrain, harsh weather conditions, lack of training time, aged equipment, and poor stocks of supplies, all of which greatly limited the effectiveness of air operations. Russian pilots tried to offset these limitations with initiative and adjustments after the initial stages of the fighting. New methods were found to acquire targets and to find the right weapon mix. Adjustments were also made in the tactics and techniques of LIC flying against mobile targets that hid among the civilian population. This did little to limit civilian casualties, however, in that ground offensives occurred without preliminary processing of the targets of attack from the air.¹⁰ As a result, the civilian-to-"rebel" death ratio was nearly eight to one, according to former Security Council chief Alexander Lebed.

One Russian analyst observed that the Russian air force apparently learned very little from Desert Storm air operations. The focus on Dudayev's air force deflected attention from the destruction of Chechnya's administrative and military command and control (C²) facilities, communications hubs, and key elements of the infrastructure. Most people believed this to be an intelligence and planning failure of the Military District headquarters.¹¹

Another observation was that this LIC environment offered the same opportunities for the use of information-warfare capabilities as did any large-scale conflict. For example, one recommendation early in the conflict called for dramatically increasing the role of electronic warfare (EW) units and creating a total information vacuum around Chechnya. Another called for the use of portable jammers near guerrilla bases and the suppression of satellite communication channels. Commanders were urged to train, equip, and airdrop raiding and reconnaissance parties into the rear of the Chechens to disrupt lines of communications; further, they were to utilize aircraft to the maximum extent possible to conduct strikes against guerrillas utilizing self-guided (fire and forget) or precision-guided weapons.¹² The Chechens, however,

conducted the most powerful information operations through the mass media, mobilizing local opinion while demoralizing the Russian population. As the chief of the Russian Federal Security Service noted, "Yes, the Russian authorities lost the information war. . . . How splendidly Chechnya information Minister Movladi Udugov is operating, how skillful and adroit he is at feeding the press with all kinds of lies, distortions, and misrepresentations of the facts!"¹³

In fact, the purported use of information-warfare techniques eventually allowed the Russian air force to eliminate President Dudayev. In April, while talking on a cellular phone, he was reportedly targeted by a Russian A-50 aircraft (the Russian AWACS), which is capable of searching two hundred targets at one time. The A-50 relayed the information to an Su-25 ground-attack aircraft that had laser and TV-guided bombs under its wings. A photo taken from the warhead as it approached Dudayev was printed in the newspaper *Argumenti I Fakti*, a publication thought to have close ties with Russian intelligence.¹⁴

Rotary Aircraft

Russia assembled close to 55 helicopters at the start of the conflict. By late March 1995, the number had risen to 105, including 52 Mi-24s. One flight of Mi-9 C² ships was also reportedly present.¹⁵ Five helicopters (two Mi-8s and three Mi-24s) were lost to hostile fire in the first three months of the conflict.¹⁶

Colonel-General of Aviation Vitaliy Pavlov, the commander of ground-troop aviation (an element separate from the air force), had flown missions in Afghanistan and was awarded the Hero of the Soviet Union medal for his bravery. He also flew missions in Chechnya. Pavlov noted that the helicopter aviation grouping was primarily used to transport troops and evacuate the sick and wounded at the start of the conflict. They also supported the movement of columns and acted as communications relays, but only rarely served as attack helicopters—and never bombed targets in Grozny. Initially, only the most experienced pilots participated.¹⁷

Chechnya's terrain, mountainous to the south and on the edges, is mixed with plains throughout the center of the country. Thus, pilots could utilize both target-approach maneuvers, as in Afghanistan (for the mountains) and practice-range maneuvers (for the plains). Pilot tactics included flying at extremely low altitudes and at very high speeds to the targets, thereby limiting Chechen visual detection and response time; approaching targets from different directions; making hard maneuvers before the approach to the target; departing at low altitudes; providing mutual covering fire; and using EW equipment (as well as decoy flares and other devices).¹⁸ For Russian pilots, there were no simulated practice runs, such as those conducted by the coalition forces in Bosnia (using PowerScene imagery software).

Helicopters integrated strikes in coordination with frontal aviation. On occasion, Mi-24 helicopters and Su-25 aircraft conducted operations against guerrilla fortifications. Army helicopters also operated alone in a mode known as "target-of-opportunity roving" and against marked targets or on requests from ground troops.¹⁹ The most intense use of helicopter operations occurred in May 1995, when the antiquated Mi-24 carried out the majority of the fire-support missions. By the end of the month, five to six combat sorties were being flown each day. In addition to supporting advancing units in the central and southern parts of Chechnya, helicopters assisted in searching out Dudayev's sabotage/terrorist detachments that had penetrated the Russian troops' rear areas.

Coordination with ground troops was often difficult and aggravated by the absence of timely and accurate reconnaissance information—the key to the success of the helicopter's mission. Reconnaissance troops, inserted and extracted by helicopters in most instances,²⁰ themselves noted that they were introduced into situations with too much haste and without coordination with infantry subunits or with aviation assets. Reconnaissance missions in Chechnya included the detection of enemy-fire positions, the covert study of the defensive systems of villages

where Chechen rebels were concentrated, and the destruction of individual groups of fighters. Missions were difficult to perform due to a lack of portable radio sets, night-vision devices, silencers for weapons, and binoculars—key items for reconnaissance personnel.

Finally, several misunderstandings occurred between ground-force commanders and helicopter personnel simply because commanders tried to keep their own missions secret, issuing only specific instructions to units working together. As a result, one unit often did not know what the other was doing in an operation.²¹

At the start of the conflict, Russian pilots had only a poor understanding of Chechen tactics, which included controlling mobile air defense weapons via radio and changing these systems' positions constantly. The Chechens also tried to integrate and synchronize the employment of these weapons, attempting to engage targets with the full set of weapons in the inventory: small arms, heavy-caliber machine guns, cannons, and grenade launchers. The Chechens made wide use of ambushes, trying to pin down a helicopter once it entered a zone of effective fire by massing fire from several points. Dudayev's personnel also made good use of communications and intelligence from covert agents. As one pilot noted, "One had the feeling that they knew a great deal. And how many times did it happen where the appearance of helicopters in a particular area was no surprise to the enemy?"²² Dudayev clearly had his forces well rehearsed in Russian air tactics and capabilities based on his experience in the Russian air force.

Russian pilots, on the other hand, had no reliable data on the disposition of Chechen weapons, forcing crews to operate from maximum possible ranges when employing their armament. Some helicopter crews employed a new tactic, that of launching their S-24 unguided rockets with a pitch-up maneuver, increasing the range of the weapon by six to seven kilometers. This allowed pilots to fire without entering the kill zone of the air defense weapons of Dudayev's forces.²³ Although the tactic reduced accuracy, it prob-

ably was a key factor in increasing the number of civilian casualties.

One of the primary Chechen targets for intelligence information was forward air controllers (FAC), always the objects of a special hunt, according to Russian specialists. The Chechens were able to "pinpoint the place where the FAC was going on the air. Only later did motorized riflemen seize the equipment with which Dudayev's personnel were direction-finding the FAC's radio."²⁴ Aviation commander Pavlov noted that FACs were poorly trained for their jobs at the unit level, contributing to such disastrous results.²⁵

One analyst, writing in the Russian air journal *Krylya Rodiny*, noted that helicopter crews had it more difficult than anyone, flying very low in terrible weather and often returning to home base with bullet holes in the cockpit windshield. Statistics indicate that every 10th helicopter participating in the conflict was lost and every fourth was damaged. By the start of August 1995, the Russians had conducted more than 16,547 flights over Chechnya. Nearly 36 percent of the sorties were fire missions, 44 percent were transport-assault (with over 90 percent of the wounded evacuated by army aviation), 8 percent were reconnaissance flights, and the other 12 percent were for special missions such as search and rescue, propaganda, or radio relay.²⁶ This information indicates how the mission posture for helicopters changed as the war continued and the Russians adapted to the situation.

After nearly a year of fighting, Russian pilots made some assessments of their equipment, judging the Mi-24, Mi-8, and Mi-6 helicopters as technically obsolete. These aircraft had limited deployment capabilities in terms of time of day and weather conditions. Newer helicopters, such as the Ka-50 and Mi-28, were not used. The Mi-8MTV2, Mi-8MTV3, and Mi-26 turned in good performances. At the heart of Russia's helicopter modernization effort over the next few years will be the Ka-50 (NATO "Hokum," Russian "Black Shark"), whose signature characteristics are extremely hard to detect. It is designed to provide accurate data on targets, can move covertly into the attack area, and can move into an enemy's

visibility zone only for the flight time of on-board antitank guided missiles (ATGM), which have an 8 km range due to an automatic laser-beam guidance system. The Ka-50 can receive target designations over closed-circuit communications channels and can exchange them with helicopters in proximity or with a ground facility. Last year, the Russian aviation branch had enough money to buy only two—none were used in Chechnya. If Russia is to remain modern and fight these kinds of wars, it needs to acquire 60 Ka-50s annually, according to one analyst.²⁷

Chechnya held many other lessons for rotary-wing pilots. These included limiting damage to residences and civilian installations; overcoming the poor combat flying proficiency of many pilots (due to a lack of flying time, now at one-tenth that of most Western nations); adjusting to an inability to conduct reconnaissance freely (since any village might bristle with fire at any moment); overcoming the reluctance of higher headquarters to supply unmanned assets, such as the Shmel remotely piloted vehicle; and, most important, making corrections to their tactics. One retired Russian colonel blamed pilot performance on the tactics of retaliatory strikes against an enemy who used the principle of attack-withdrawal-attack. This took the initiative away from Russian pilots and led to belated actions and decreased combat capabilities. On the other hand, the colonel added, using precision weapons for destroying small targets logically fits such tactics.²⁸

In February 1996, General Pavlov noted at a conference that Russia had fallen 15 years behind the leading countries in the manufacture of helicopters and that "within the next few years army aviation could cease to exist as a branch of the Russian Armed Forces."²⁹ By the summer of 1997, he talked more optimistically about starting production of the Ka-50, Ka-52 Alligator (based on the Ka-50 and capable of reconning targets and distributing information among helicopters in a battle group), the Mi-28N night version, and a modernized Mi-24; he also spoke of continued research on an unmanned reconnaissance air-

craft that will work in tandem with other helicopters.³⁰

Perhaps the reality is that army aviation has a limited role in LIC as a combat element, since ground-attack aircraft like Su-25s offer more protection (both for the cockpit and for preventing the release of information that might give away their position) and versatility. For example, with mobile weapon platforms, a combatant can sit and listen for the sound of a helicopter blade and ready his weapon for employment. As the chopper passes overhead, it is vulnerable to an RPG or small-arms attack as well as 20 mm rounds. An Su-25 does not offer enemies this pleasure. They hear only the sound of the jet engine as it passes over at two hundred feet and do not have sufficient time to react; further, the 17 mm of titanium around the cockpit deflect even 20 mm rounds. Unmanned reconnaissance aircraft may represent a way of lengthening the service of army aviation in the absence of means to hush rotor noise.

Fixed-Wing Aircraft

Without a doubt, the workhorse of the Russian aviation effort in Chechnya was the Su-25 (NATO "Frogfoot," Russian "Rook"). One analyst succinctly summarized the value of this aircraft:

The experience of air combat operations in the Chechen conflict demonstrated the increased role of close support to ground troops. The participation of attack helicopters in it was limited, and front fighters and bombers could not operate effectively at low altitudes and so were not used due to their high airspeed and the shortage of time to search for targets, aim and employ weapons. . . . This is why the Su-25C—a small, subsonic, reliable and maneuverable aircraft of simple design with a good view from the pilot cockpit—basically was used to support ground troops and for ground-attack operations. . . . Moreover, it has powerful armament, rather reliable navigation and targeting avionics, and armor protection and can operate both from airstrips with an artificial surface as well as from dirt airstrips.³¹

Missions for the aircraft in Chechnya included CAS of troops against small targets in the mountains or on the plains. The Su-25 can attack in mountain gorges due to its special aerodynamic configuration in combination with a high thrust-to-weight ratio. Moreover, it can stay over a battlefield for a lengthy time, making several passes at targets in one sortie. This factor also led the designer to concoct a special titanium armor cockpit to defend the pilot from 20 mm and 23 mm projectiles. Such aircraft proved their resilience in Afghanistan, where attack planes suffered one loss for 80-90 damaged versus 15-20 losses for other types of aircraft.³² However, some Russians put the Su-25 in the same class as the USAF's A-10 and look instead to the Su-39 as the fighter of the future for LIC. They note that experience from LIC and peace operations indicates that attack aircraft should be used

- in direct fire support,
- for selective and precise destruction of enemy pockets of resistance,
- as emergency assistance and fire support for friendly subunits in ambushes or encirclements,
- for air reconnaissance in real time,
- to combat enemy combat helicopters, and
- to block or destroy mobile enemy combat groups.³³

The Su-39 can fulfill these and other missions using advanced day/night sight and navigation systems, advanced electronic countermeasures, precision weapons, and advanced maneuverability and reliability.

The Russians utilized other aircraft during the conflict, as mentioned above. These included aircraft from long-range aviation, frontal aviation, and transport aviation: the Su-22M, Su-24, and Su-27 (because of the lack of an air threat, one rarely saw the MiG-29), as well as the An-12, An-22, An-124, and Il-76. MiG-31 Foxhounds and Su-27 Flankers performed combat air patrol functions, while Tu-22M3 Backfires reportedly dropped night flares and propaganda leaflets.³⁴ The Su-24 seems to have been the fighter-bomber used

most often. By December 1995, Russian pilots had flown more than nine thousand sorties, with more than fifty-three hundred devoted to the conduct of bombing/ground-attack strikes and 672 to aerial reconnaissance (nearly 8 percent). Principal weapons included S-5, S-8, and S-24B rockets and FAB-250 and FAB-5000 high-explosive bombs. When weather permitted, the Russians employed Kh-25ML guided missiles, KAB-500L and KAB-500KR smart bombs, and KAB-1500L bombs.³⁵

Like aviation commander Pavlov, the commander in chief of the air force, Col Gen Petr Deinekin, served as the air force's primary spokesman. He noted that the general thrust of modern-day equipment and armament developments is to cut back to one or two aircraft types in each air component and to rely heavily on precision weaponry. Deinekin assessed the performance of the air force in August 1995 by commenting, "I can attest to one thing—Russian pilots, despite objective difficulties, coped fully with their missions, demonstrating the high effectiveness and reliability of Russian weapons and aviation equipment and their own high skills."³⁶

Not all assessments were so praiseworthy, however. What troubled most pilots was the financial situation of the air force and its direct impact on combat readiness. By some accounts, the lack of funds reduced combat strength by nearly 40 percent. Tactical proficiency constituted another area of concern. One pilot noted that tactical air training had been overcautious for too long, indicating that training went by the credo "take no risk, do not do anything to complicate matters, and avoid innovations." This belief impeded the support of ground troops and will limit the ability of pilots to survive in dogfights with other aircraft. To rid itself of this type of thinking, the air force needs new and improved practice ranges as well as exercises in which "enemy" aircrews are imported and their tactics utilized.³⁷ Finally, many pilots noted the need for a modernization effort to develop some twenty-first-century aircraft and put them into the sky in the next few years.

One of the newest fighter-bombers in the Russian inventory is the Su-34, whose characteristics indicate that it will be able to fight in LIC environments. Intended for combat at low and very low altitudes, this aircraft can attack ground targets at any time of day, regardless of weather, and can use its navigational and special equipment to track the aerial situation as well as discern point targets on the ground. A 17 mm skin of titanium on the cockpit along with a titanium covering on the plane's engines and fuel tanks protects the Su-34 from ground fire. The plane also has some stealth characteristics; a secondary control that allows the navigator to land the plane if the pilot is killed or injured; a standard range of 4,000 km; and a rest area and toilet behind the cockpit.³⁸

Conclusions

"The air force had a golden opportunity in Chechnya to see that air power cannot invariably work its reputed magic in circumstances where the target set is elusive, problems predominate in target location and identification, and there is an ever-present danger of unintended harm to noncombatants."³⁹ The war in Chechnya focused Russian attention on two areas: (1) the effectiveness and future potential of airpower in a LIC environment and (2) the many areas in which Russian aviation needed improvement—from training to equipment and tactics.

Russia's air force and ground aviation now are two of the most experienced forces in the world for this type of conflict, as were the US Air Force and ground aviation after Vietnam. Russian pilots have learned many techniques and tactics that deserve close study. Some of the lessons underscored by the fighting include the following:

- Air superiority is no guarantee of victory, even against a foe with no air force!
- Guerrillas can use high-tech information assets (cellular phones, etc.) as easily as modern armies nowadays, allow-

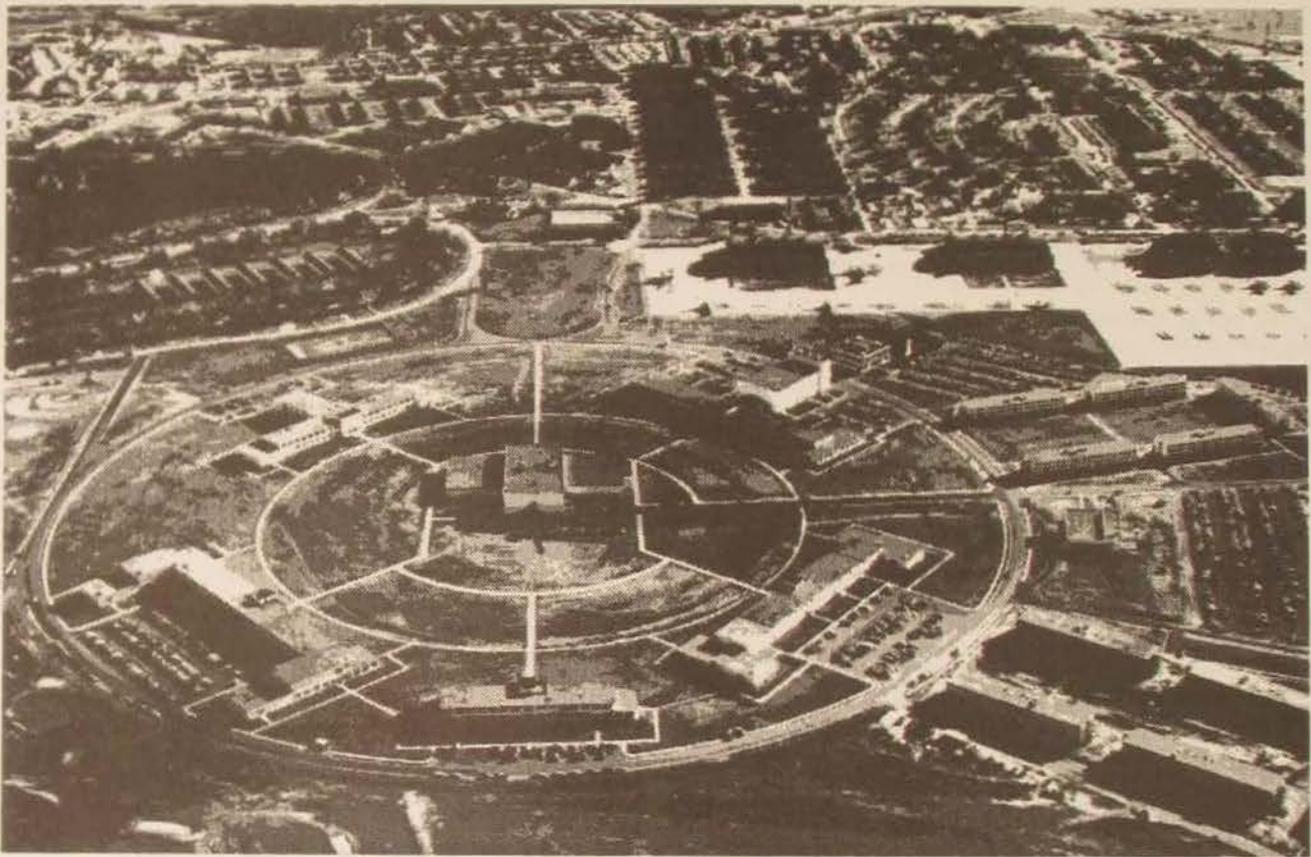
ing them to quickly contact others, mobilize assets, and access information. Plans for suppressing these capabilities need to be made in advance.

- The deterioration of the Russian air force due to a lack of money, training, and supplies greatly affected the course and outcome of the fighting and may have contributed to an increase in the number of civilian casualties.
- Civilian populations will be part of any LIC environment and make an excellent area of operations for any rebel force.
- Ground-attack aircraft, according to the Russian experience, appear to have more utility than helicopters when striking targets in LIC environments.
- Flying in LIC environments will mean finding and defending against mobile targets spread throughout the country and among the civilian population.
- Realistic training is essential to overcome LIC threats. Training hours in the air must be stressful and challenging, and must be supplemented by hours on simulators just before flying a mission.
- Timely and accurate reconnaissance information is vital for pilots.
- Guerrilla tactics must be studied closely.
- Helicopter and frontal aviation strikes must be integrated, and ground commanders must learn to work closely with and put more confidence in pilots.
- FAC training must be integrated into subunit training plans at the earliest possible time. FACs must remain sensitive to guerrilla attempts to capture, mortar, or intercept their positions.

In short, the fighting in Chechnya created another historical chapter in the annals of warfare that will merit study for decades. It represents one of the first examples of a protracted conflict involving one of the former superpowers and is worthy of close attention and consideration. □

Notes

1. Charles G. Boyd, "Making Peace with the Guilty," *Foreign Affairs*, September-October 1995, 37-38.
2. Benjamin S. Lambeth, "Russia's Air War in Chechnya," RAND draft, December 1995, 35. Lambeth's account provides an excellent summary of air operations up to the time he wrote his draft.
3. This view is admittedly Russian. Unfortunately, there simply is not enough information presently available to write on the Chechen view of the problem.
4. "Chechnya," *Moscow News*, no. 50 (16-22 December 1994): 1-2.
5. Valeriy Vyzhutovich, "Chechnya Will Spurn Kremlin's Representatives," *Izvestiya*, 20 December 1994, 2, in Foreign Broadcast Information Service (FBIS)-SOV-94-244, 19.
6. "Chechnya," 2.
7. For the L-39 and the L-29, performance data is as follows:
 - range of flight: 850 km (with auxillary tanks: 1,115 km)
 - minimum flight altitude: 50 m
 - maximum flight altitude: 11,599 m
 - minimum flight speed: 200 km/hr
 - maximum flight speed: 810 km/hr
 Both aircraft have two aerial bombs of 100 kg each or two OB-16 clusters with 32 NURS (unguided missiles) in each. Vladimir Georgiyevich Mukhin, "Military Lessons of the Chechen Campaign: Part One," *Nezavisimoye Voyennoye Obozreniye*, no. 18 (22) (26 September 1996): 2, in FBIS-UMA-96-216-S. For information on the other Russian equipment (aircraft and air defense weapons), see John W. R. Taylor, "Gallery of Russian Aerospace Weapons," *Air Force*, March 1996, 66-80.
8. Vyacheslav Kondratyev, "The Awesome Sky over Chechnya," *Krylya Rodiny*, no. 1 (January 1996): 1-5, in FBIS-UMA-96-055-S, 20 March 1996; on-line, Internet, 21 November 1996, available from <http://fbis.fedworld.gov/cgi-bin/retrieve>. The *Krylya Rodiny* reports are some of the best writings on air operations during the conflict. After the intervention started, Russian authorities uncovered a purported Chechen plan known as "Lasso" that included the destruction of several targets throughout Russia by the Chechen air force. For more information on Russian helicopter support of the Dudayev opposition from September to November 1994, see Vladimir Georgiyevich Mukhin, "Military Lessons of the Chechen Campaign: Part Two," *Nezavisimoye Voyennoye Obozreniye*, no. 19 (23) (10 October 1996): 2, in FBIS-UMA-96-216-S.
9. Sergey Babichev and Vitaliy Strugovets, "Air Carriers," *Krasnaya Zvezda*, 25 October 1995, 2, in FBIS-UMA-95-226-S, 24 November 1995, 36-37.
10. Kondratyev, no. 2, 1-4.
11. Igor Korotchenko, "The Operation in Chechnya: Success or Defeat of the Russian Army?" *Nezavisimoye Voyennoye Obozreniye*, no. 1 (February 1995): 1-2, in Joint Publications Research Service (JPRS)-UMA-95-008, 28 February 1995, 1-4.
12. *Ibid.*
13. Valeriy Vyzhutovich, interview with Sergei Stepashin, in FBIS-SOV-95-043, 6 March 1995, 36.
14. E. Kando, "The Secret of Dudayev's Assassination," *Argumenti i Fakti*, no. 18 (May 1996): 7.
15. Adam Geibel, "The Cruellest War," *Armed Forces Journal*, November 1996, 30.
16. Kondratyev, no. 1.
17. Vitaliy Pavlov, "Pertinent Interview: I Admire My Lads' Courage," *Armeyskiy Sbornik*, no. 4 (April 1995): 4-5, in FBIS-UMA-95-139-S, 20 July 1995, 1-2.
18. Anatoliy Surtsov and Sergey Prokopenko, "Lessons of Combat Operations: A Shooting Sky," *Krasnaya Zvezda*, 18 July 1995, 2, in FBIS-UMA-95-153-S, 9 August 1995, 3-5.
19. Kondratyev, no. 1.
20. Oleg Blotskiy, "Chechnya: A War of Professionals," *Nezavisimoye Voyennoye Obozreniye Supplement*, no. 16 (22 August 1996): 2.
21. Yet another potential problem for army aviation was a planned curtailment in the radio technical-support force. The pilots had protested that a reduction in radio technical-support subunits would lead to a sharp drop in the combat potential of army aviation.
22. Kondratyev, no. 1, p. 4.
23. *Ibid.*
24. *Ibid.*
25. Pavlov, 1.
26. Kondratyev, no. 2.
27. Sergey Prokopenko, "Russia Has Built Strike Helicopters, Let Our Army Have Them," *Krasnaya Zvezda*, 8 February 1996, 1, in FBIS-UMA-96-040-S, 28 February 1996, 63.
28. Aleksandr Borisov, "This Is Not Afghanistan, the Climate Here Is Different. . . ." *Armeyskiy Sbornik*, no. 8 (20 July 1995): 38-39, in FBIS-UMA-95-244-S, 20 December 1995, 19-20.
29. Moscow 2x2 TV, 4 February 1996, in FBIS-UMA-96-031-S, 14 February 1996, 4-5.
30. Vitaliy Yegorovich Pavlov, interview, "Army Aviation on the Verge of Reorganization," *Krasnaya Zvezda*, 16 July 1997, 1-2.
31. Viktor Bezborodov, "The Su-25: A Formidable Aircraft," *Armeyskiy Sbornik*, no. 8 (20 July 1995): 34-35, in FBIS-UMA-95-244-S, 17-18.
32. *Ibid.*
33. Vladimir Bobak, "Su-39 in Local Conflicts," *Military Parade*, September-October 1996; on-line, Internet, 7 January 1997, available from <http://www.milparade.ru/18/62-65.htm>.
34. Lambeth, 9, 25.
35. Kondratyev, no. 2.
36. Pavel Anokhin, interview with Petr Deinekin, "Flying in Your Dreams and in Reality," *Rossiyskiye Vesti*, 17 August 1995, 3, in FBIS-UMA-95-163-S, 23 August 1995, 24-27.
37. Valeriy Veshnikov, "If Flying, Then How to Fly, If Shooting, Then How to Shoot. . . ." *Armeyskiy Sbornik*, no. 7 (22 July 1995): 26-27, in FBIS-UMA-95-188-S, 28 September 1995, 13-14.
38. Igor Alekseyev, "The Su-34: Without Analogues," *Technika-molodezhi*, no. 5, iii, in FBIS-UMA-95-153-S, 6-7.
39. Lambeth, 33.



Air University Recovers from Vietnam and Regains Respect

WESLEY PHILLIPS NEWTON AND JEROME A. ENNELS

BY THE END of World War II, Army Air Forces leaders realized that their decision to close the Air Corps Tactical School (ACTS), while deemed necessary, had been shortsighted. As a result, on 12 March 1946, these leaders, most of whom were ACTS graduates, established Air University (AU) to fill the void left by the Tactical

School's inactivation and to correct many of the problems and deficiencies of the prewar military education system. Like the Tactical School before it, AU's primary mission was to educate Air Force officers in the strategies, tactics, and techniques of airpower employment and to serve as a sounding board for ideas concerning the critical role of airpower

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in future wars. As Maj Gen Muir S. Fairchild, the first AU commander, so eloquently put it, Air University was created to produce air-power planners and leaders who would "design an Air Force so adequate it need never be used."¹

This article examines AU's attempt to accomplish this mission and evaluates the impact of the cold war, particularly the lessons learned from the Vietnam conflict, on those efforts. Although the study covers AU in general, it focuses on the AU professional military education (PME) program and the way that AU schools drifted away from their primary missions of education in the profession of arms and assumed an unofficial role of providing instruction in high-level policy and decision making. The result was a decline in the quality and relevance of the AU PME program and the loss of academic prestige among fellow Department of Defense and sister-service PME schools. This article contends that a persistent struggle to regain respect in the PME arena through major curriculum overhauls, innovative faculty acquisition methods, and new student-selection procedures eventually returned AU to its previous status as one of the premier military education institutions in the world.

Air University was launched at Maxwell Field, Alabama, with well-deserved praise for its founders and mostly reasonable expressions of optimism for its future. But for the first decade of its existence, AU lacked adequate facilities, equipment, and billeting for its students. Indeed, the AU library was scattered among nine different buildings.

All this was understandable, given difficult postwar economic conditions and the priority assigned to operational concerns with the advent of the cold war in 1947. By the mid-1950s, the inadequacies began to be overcome with the completion of five new buildings for administrative and academic purposes and five student dormitories. A permanent home for the library was the centerpiece for this "Academic Circle," later named Chennault Circle. In time, the Air Force Historical Research Center would join the li-

brary—both facilities considered the finest of their kind in the military.²

At the outset, General Fairchild found a problem with the students, many of whom had difficulty with writing.

A much longer-lasting set of problems concerned the nature and quality of students and faculties of the PME schools. It also had to do with what was taught.

Initially and for a number of years, all students and faculty members at Air War College (AWC) and Air Command and Staff School (ACSS) were military. The first two classes were composed of and taught by men with fine war records. The instructors properly focused on an air arm's main business—air warfare—emphasizing lessons fresh from World War II. But within the United States Air Force, born in 1947, the lesson of a strategic offensive against a highly industrialized society became all too pervasive and remained influential far too long.

Lt Gen Alvan C. Gillem II, USAF, Retired, who was in the second class of ACSS, identified a problem with the faculties. When he was there in 1947–48, they were men of stature but generally inexperienced in university teaching methods. When he returned in 1954 as assistant commandant of ACSS, the faculties were "better qualified from the standpoint of teaching techniques" but did not possess "quite the stature of the original group."³ Finding and retaining able faculty became increasingly difficult.

At the outset, General Fairchild found a problem with the students, many of whom had difficulty with writing. Compared to their colleagues in the Navy and the Army ground forces, few air officers had college degrees. Therefore, AU had to offer some remedial work until the Air Force Reserve Officer Training Corps and the creation of the Air Force



Once upon a time—the AWC building as it was. For the first decade of its existence, AU lacked adequate facilities, equipment, and billeting for its students.

Academy in the 1960s overcame this deficiency.⁴

AU headquarters established criteria early on for the quality of officers desired from the various commands. But the commands' headquarters began to evade requests for officers they wished to retain by substituting names of less qualified and valued officers.⁵

From the beginning, AU was charged "to study Air Force responsibilities for national security and to develop recommendations as to long-range Air Force objectives," with AWC students to address these matters in their theses. By 1956, however, AWC no longer expected its students to do so. This loss of expectation could only dim some of AU's luster.⁶

The 1950s saw even bumpier air for AU. In 1950 Maj Gen Orvil Anderson, the first AWC commandant, advocated before a Montgomery civic club that the United States drop A-bombs on the Soviet Union in a preventive war. President Harry S. Truman considered this a clear case of a military commander making an unauthorized and impolitic public statement. Consequently, Air Force chief of

staff Hoyt Vandenberg suspended Anderson from his post; Anderson retired soon thereafter.⁷

In 1950 the Korean conflict produced organizational chaos at AU—specifically, the suspension of AWC, Air University's crown jewel. This action constituted Headquarters USAF's lesser response to strong feelings in the operational commands that AU should be closed and its personnel and students assigned to Korean War duty. Air Command and Staff College (ACSC, formerly ACSS) became an intermediate headquarters—a sort of catchall—under AU headquarters for various other organizations in the AU orbit. New organizations, such as Air Force ROTC headquarters, were assigned to AU, taxing its ability to absorb them.

This Korean-era crisis was gradually sorted out after hostilities ended in 1953. A positive result was the move of the junior-officer PME school from Tyndall AFB, Florida, to Maxwell AFB. Restructured and soon renamed Squadron Officer School (SOS), it joined the other PME schools at Maxwell.⁸

The reputation of the AU PME schools deteriorated in the 1960s. Headquarters USAF finally attempted corrective action in 1968, informing all commands that to retain any officer requested for the PME classes, a command had to present an acceptable excuse to Headquarters USAF.⁹

The year 1964 marked the beginning of the direct involvement of the United States in another major hot war stemming from the cold war—Vietnam. This produced no organizational chaos at Maxwell, but the number of students attending the PME schools dropped significantly.

The AU commander most seriously confronted by the cresting of antiwar sentiment during his tenure was General Gillem, veteran of more tranquil tours at AU. His most pressing concerns included declining AFROTC enrollments and protest rallies conducted by antiwar students, faculty, and outsiders on many campuses. Directed against AFROTC detachments, these rallies were often disruptive and sometimes violent.

Gloom lessened slightly in 1970–71 with a decline of antiwar activities against AFROTC. But enrollment in the General Military Course remained low and would not recover for over a decade. General Gillem visited mainly black campuses such as Grambling State University to seek more black students for AFROTC.

His actions were motivated both by the need for new detachments and by social change. The late 1960s had seen intensification of social ferment in the United States, some of it influenced by the reaction to Vietnam. The ferment was reflected in a new course in the 1970–71 AWC curriculum—Impact of Social and Cultural Changes on United States National Security. Minorities exerted pressure to allow their participation in areas of society previously closed or barely open to them.

Col Benjamin O. Davis Jr. had begun the racial integration of AWC with the class of 1949–50. Women had gained token presence in the 1960s, for the most part in SOS. But by the end of the Vietnam conflict, minorities had made little further progress in student bodies or faculties of the two upper-level PME



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schools. Only social and official pressures over the next two decades would bring real change.

The classes for 1971–72 reached pre-Vietnam levels, and overt hostility against AFROTC continued to decline. Earlier, in 1970, Headquarters USAF had directed AU to undertake project Corona Harvest, designed to extract lessons from the conflict in Southeast Asia. The project soon began producing numerous studies. Corona Harvest, however, disappointed General Gillem, who felt it had been watered down. Like the Vietnam conflict, which was winding down, it was soon phased out.¹⁰



When General Furlong was AU commander, he did suffer one stunning setback. . . . Over his objections, Headquarters USAF terminated AU's status as a MAJCOM, placing it under Air Training Command (ATC). A grim-faced Furlong turned over the AU command flag to the ATC commander in a ceremony of symbolic vassalage.

Vietnam's material impact on AU ebbed. The psychological and educational impact was another matter. After North Vietnam's triumph, all US armed forces were in a state of shock. According to Dr. Richard P. Hallion, the Air Force historian, a "restrospective licking of wounds" ensued.¹¹

In the long restoration, a debate—sometimes ugly—raged about the "whys" and implications of defeat. Initially, within the armed forces as a whole, one found bitter feelings and scapegoating. Accusations spread that the civilian leadership in Washington had tied the armed forces' hands; that the media had wrongly portrayed them; and that

the antiwar movement, led by activists such as Jane Fonda, had betrayed them. Proponents of this argument maintained that these things had produced defeat. At Maxwell, the debate had a natural platform soon after the war. Several retired Army, Air Force, and Navy flag officers—all veterans of Vietnam—talked to PME students about political mismanagement, unfair media image, and betrayal.

Attempts to characterize the early student reaction to this perspective have produced differing interpretations. Earl H. Tilford Jr., an Air Force major who edited the *Air University Review* and later became a civilian faculty member at ACSC, contended that most students accepted the "stabbed-in-the-back" thesis into the early 1980s. But an analysis of AU's reaction to Vietnam by Air Force major Suzanne Budd Gheri in 1985 found that because Vietnam veterans attending the senior PME schools were not involved in major tactical decisions, they were more realistic about cause and effect.¹²

The Gheri study traced the PME schools' attention to Vietnam in their curricula over an 11-year span. From 1974 until 1979, Vietnam found its way into the curriculum only at AWC—and in a limited way at that. Then the other schools followed suit. The higher the level, the more profound the examination of Vietnam.

Increasingly, the schools added hours and depth. Up through the mid-1980s, as the 1985 study illustrated, all schools made a serious attempt to examine causes and effects. While not totally disavowing the stabbed-in-the-back thesis, they focused more and more attention on military mistakes, suggesting that "American military participation in low-level conflict may be unavoidable [and] it will most likely be executed within stringent political constraints."¹³

Tilford observed that by the late 1980s, students were willing to examine the Air Force's own responsibilities for defeat in Vietnam. The colonels at AWC led this open-mindedness.¹⁴

Strategies and weapons such as the bomber and the atomic bomb, although successful in World War II, weighted down Air Force plan-

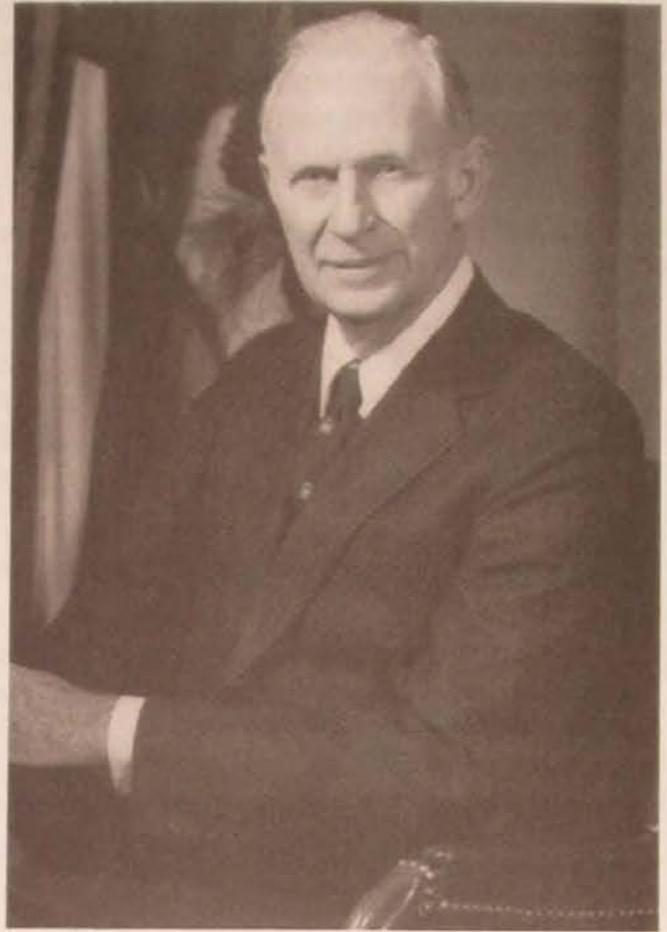
ning and performance. "As a result," wrote Hallion, the United States "essentially disestablished its tactical air forces between 1945 and 1950. . . . One might have expected that Korea would have restored a measure of rationality to postwar defense thinking, but, alas, it did not," for Korea "generally was considered the 'exception' to the anticipated normative war of the future—atomic conflict."¹⁵

Airpower scholar Dr. Stephen L. McFarland, in a one-volume history of the United States Air Force to be published by the Office of Air Force History, describes how an inappropriate strategy from World War II remained in place at the beginning of US involvement in Vietnam. The focus was "almost exclusively on the strategic bombing of chokepoints without regard to the society to be bombed or the type of war to be fought."¹⁶

McFarland, who spent a year at AWC as a visiting professor, credited the successful use of precision-guided missiles and "smart" bombs in Vietnam with sparking "a revision of the traditional doctrine of strategic bombardment." The most significant lesson learned by the Air Force, according to McFarland, was awareness of "the dangers of allowing adherence to doctrine to cloud its military strategy."¹⁷

A decade after the end of the Vietnam conflict, two major books appeared that were highly critical of the Air Force's role in Southeast Asia. Perhaps surprisingly, neither author was an independent scholar with a leftist, pacifist, or an anti-Air Force orientation. *The Limits of Air Power: The American Bombing of North Vietnam* was published in 1989 by Free Press, which often publishes conservative authors. The author, Lt Col Mark Clodfelter, a serving Air Force officer who holds a PhD, a few years later joined the faculty of a new organization at AU—the School of Advanced Airpower Studies. The second book, *Setup: What the Air Force Did in Vietnam and Why*, was published by Air University Press in 1991. The author, Dr. Earl Tilford, a veteran of Southeast Asia, was a faculty member at ACSC, as mentioned earlier.

Both books caused considerable grumbling by people who still adhered to the stabbed-in-



When Secretary of the Air Force Verne Orr asked him how he felt about returning AU to MAJCOM status, Cleveland, despite knowing that Headquarters USAF did not favor such a change, replied affirmatively.

the-back thesis. Yet, one finds no clearer symbol of the Air Force's—as well as AU's—recovery from Vietnam than the fact that these books emerged from the Air Force's own ranks and that their authors were or became part of the AU family.¹⁸

The debate is not over. In 1996 Dr. John Schlight authored *A War Too Long: The History of the USAF in Southeast Asia* for the Office of Air Force History. In its introduction, Schlight writes, "Due to questionable political policies and decision-making, only sporadic and relatively ineffective use had been made of air power's ability to bring great force to bear quickly and decisively."¹⁹

One cannot make a simple analysis of the relationship between the aftermath of the US defeat in Vietnam and the reform of the cur-

ricula, faculties, and student bodies of AU's PME schools during that period. But one must consider the relationship a part of the process of restoration that all the armed forces painfully underwent.

In an analysis of the military services' war colleges in 1987, Dr. Williamson Murray—a historian at Ohio State and formerly a research associate at AWC—characterized AWC “as one of the weakest of the war colleges.”

It is no coincidence that reform began in earnest in 1974 with a symposium of major command (MAJCOM) vice commanders at Maxwell, called by Lt Gen F. Michael Rogers, the last AU commander who was a veteran of World War II. The objective of the symposium was to examine the quality and future of the PME schools.

Although the conferees reaffirmed their commands' support for the PME schools, they made one ominous admission: while officially the Air Force held that ACSC and AWC were equal to the senior PME schools of the other services, Air Force officers considered attendance at the National War College or the Industrial College of the Armed Forces as more beneficial to their careers. Graduates of the Army War College and Naval War College also had higher promotion rates than AWC graduates.²⁰

It was up to AU itself to change the commands' practice of sending less favored officers to Maxwell—despite the 1968 decree—and favored officers to schools such as the National War College. Promotion statistics explained avoidance of the one and preference for the other. Specifically, AWC graduates had a higher passover rate, even in the primary zone. National War College graduates, however, had a higher selection rate, even below the zone.

Change at AU had to come about through planning on the scene. But in the interest of objectivity, commanders who had most or all of their schooling elsewhere could best carry out reform. Three such commanders led AU successively.

Lt Gen Raymond B. Furlong assumed command of AU in 1975. He knew in advance that the PME schools' curricula placed too much stress on national policy making and managerial and supervisory aspects of the role of command—and too little on how to fight an air war. He had received approval from Headquarters USAF to “bring up the war in the Air War College. We are going to study our business.”²¹ Furlong quickly perceived that the new AWC commandant, Maj Gen Stanley M. Umstead Jr., was of like mind and therefore ideal as the point man in implementing reforms.

Umstead took several far-reaching steps. He initiated the application of computers to war gaming, paving the way for a complex gaming exercise designed to address tactical and strategic issues in NATO. Further, when Furlong turned his attention to overhauling the AWC curriculum to reemphasize the business of war, Umstead showed him a letter he had solicited from Dr. I. B. Holley Jr., airpower historian at Duke University and then a colonel in the Air Force Reserve, which contained advice on how to revise the curriculum. Furlong later credited Holley “with being enormously responsible for what happened in the Air War College.”²²

Furlong declared that Umstead had “rais[ed] the quality of the faculty.”²³ Noting that the AWC faculty had a number of senior colonels with their best years behind them, Umstead worked with the Air Staff to cull the deadwood and obtain competent replacements. He began a program of inviting civilian professors to spend a year in residence at AWC and encouraged the hiring of more and better qualified full-time civilian faculty.

Moreover, the AWC commandant did not ignore the quality of the students. He felt that reducing the size of classes would attract quality students. Furlong gave him the green light. They worked with the Air Staff to insure that

AWC began to receive its fair share of the best officers available. Furlong also wanted rated officers, reasoning that AU should educate people who were most likely to see action in future air wars. Headquarters USAF finally allowed 64 percent of a class to be rated. By the time Umstead left for an assignment in the Pentagon in 1977, Furlong could soon see evidence of the gradually increasing quality among both faculty and students.

The AU commander did suffer one stunning setback, however. Over his objections, Headquarters USAF terminated AU's status as a MAJCOM, placing it under Air Training Command (ATC). In 1978 a grim-faced Furlong turned over the AU command flag to the ATC commander in a ceremony of symbolic vassalage.

General Furlong came to realize that, of all AU students, those at ACSC voiced the most criticism of their curriculum. Consequently, in his last year as AU commander, 1978-79, the spotlight finally began to shift at ACSC to the Air Force's main business.²⁴

Lieutenant General Umstead returned to Maxwell in 1979, replacing General Furlong. The new commander found that reforms he had initiated, such as computer war gaming and the AWC curriculum area known as Military Employment, had matured in his absence. Expanding the program of noted visiting professors, he also increased the number of civilians on the AWC faculty. Umstead averted a move to close SOS, resulting from charges that it placed too much emphasis on athletics and that it was a waste of junior officers' time; the general directed that its curriculum be overhauled.²⁵

Like his two immediate predecessors, Lt Gen Charles G. Cleveland, who replaced Umstead in 1981, had not attended any of the AU PME schools in residence. Among his most successful projects designed to reemphasize the Air Force's main business was the establishment of a real-world war-gaming center with the most advanced technology available. Another was the establishment of the Center for Aerospace Doctrine, Research, and Education (CADRE), whose mission was to foster thinking about airpower in the modern world

through research, publications, computerized war gaming, and the examination of doctrine and theory. In 1983, when Secretary of the Air Force Verne Orr asked him how he felt about returning AU to MAJCOM status, Cleveland, despite knowing that Headquarters USAF did not favor such a change, replied affirmatively. Shortly thereafter, the AU command flag was returned to a proud General Cleveland.²⁶

Events in the 1990s have shown the uncertainty of commanding respect. In 1994 AU again lost its MAJCOM status when it was placed under Air Education and Training Command.

In an analysis of the military services' war colleges in 1987, Dr. Williamson Murray—a historian at Ohio State and formerly a research associate at AWC—characterized AWC “as one of the weakest of the war colleges.” This was true, he claimed, despite “substantial efforts to upgrade it [in the] late 1970s. . . . Maxwell saw a significant increase in the time spent addressing war, strategy, and operational art. But the reformers eventually left Maxwell.”²⁷

In 1987 the House Armed Services Committee's Panel on Military Education, chaired by Cong. Ike Skelton (D-Mo.), examined the nation's PME school systems. It concluded that the US system was equal to foreign systems but needed to improve “jointness,” emphasize strategic thinking, and enhance overall quality. Several years later, the congressman found that improvements had been made. Undoubtedly due to the efforts of Generals Furlong, Umstead, and Cleveland, as well as his own panel's recommendations, Skelton found that at AU generally—and its faculties particularly—“the cream has finally risen to the top.”²⁸

By the end of the 1980s, AU's PME schools were also receiving their fair share of students who represented the cream of the crop. Grati-

fyingly, promotion rates for both faculty and students exceeded 90 percent.²⁹

But events in the 1990s have shown the uncertainty of commanding respect. In 1994 AU again lost its MAJCOM status when it was placed under Air Education and Training Command. Another event, however, had an ameliorating effect on this loss. Just as ACTS transferred from Langley Field, Virginia, to Maxwell Field in 1931, so did the Air Force

Doctrine Center transfer from Langley AFB to Maxwell AFB in 1997. Even though this newcomer reports directly to Headquarters USAF, it will use AWC and ACSC students as sounding boards for its developing ideas.³⁰ Thus occurred a recognition of the historic roles of both the Air Corps Tactical School and its successor, Air University, in educating future leaders and in developing fundamental doctrine.

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2. For a general treatment of these events, see Jerome A. Ennels and Wesley Phillips Newton, *The Wisdom of Eagles: A History of Maxwell Air Force Base* (Montgomery, Ala.: Black Belt Press, 1997).

3. Lt Gen Alvan C. Gillem II, USAF, Retired, interviewed by Wesley Phillips Newton, 15 November 1993, 4 April 1994, and 28 May 1996.

4. Kenneth Schaffel, "Muir S. Fairchild: Philosopher of Air Power," *Aerospace Historian*, September 1986, 169-70.

5. Gillem interviews, 4 April 1994 and 28 May 1996.

6. Robert Frank Futrell, *Ideas, Concepts, Doctrine: A History of Basic Thinking in the United States Air Force, 1907-1964* (Maxwell AFB, Ala.: Aerospace Studies Institute, Air University, 1971), 725-26.

7. *Montgomery Advertiser*, 1 September 1950 and 1 January 1951; *Alabama Journal*, 31 August and 1-2 September 1950; and *Washington Post*, 7 October 1950.

8. Marvin I. Cohen and Richard H. Jackson, "History of the Air Command and Staff College, 1946-1966," Study no. 18 (Maxwell AFB, Ala.: AU History Office, 1966), 1-3; Robert W. Schmidt, "History of the Air War College, 1946-1966," Study no. 17 (Maxwell AFB, Ala.: AU History Office, 1966), 11-12; "Operation New Home" (Maxwell AFB, Ala.: AU History Office, 1955); and Jerome A. Ennels, "A Short History of Air University" (Maxwell AFB, Ala.: AU History Office, 1996), 10-12. The standard account of the USAF in Korea is Robert F. Futrell's *The United States Air Force in Korea, 1950-1953* (New York: Duell, Sloan and Pierce, 1961).

9. Gillem interviews, 4 April 1994 and 28 May 1996.

10. Gillem interview, 28 May 1996; History, AFOTC, vol. 1, 1 July 1970-30 June 1971, 1-7; History, Air University, vol. 5, 1 July 1970-30 June 1971, 1-41; History, Squadron Officer School, vol. 1, 1 July 1970-30 June 1971, 1-4; History, Air University, vol. 1, 1 July 1970-30 June 1971, 1-13, 21-22, 31-32, 40-41; and History, Air University, vol. 1, 1 July 1971-30 June 1972, 1-7, 19-22, 24-25, 30, 83-84, 101.

11. Richard P. Hallion, *Storm over Iraq: Air Power and the Gulf War* (Washington, D.C.: Smithsonian Institution Press, 1992), 83.

12. Earl H. Tilford Jr., interviewed by Wesley Phillips Newton, 6 January 1997; and Maj Suzanne Budd Gehri, USAF,

"Study War Once More: Teaching Vietnam at Air University" (paper presented at the Southeast Conference on Asian Studies at Duke University, 19 January 1985).

13. Gehri.

14. Tilford interview.

15. Hallion, 14-15.

16. Stephen L. McFarland, *A History of the United States Air Force* (forthcoming).

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18. Mark Clodfelter, *The Limits of Air Power: The American Bombing of North Vietnam* (New York: Free Press, 1989); and Earl H. Tilford Jr., *Setup: What the Air Force Did in Vietnam and Why* (Maxwell AFB, Ala.: Air University Press, 1991).

19. John Schlight, *A War Too Long: The History of the USAF in Southeast Asia, 1961-1975* (Washington, D.C.: Air Force History and Museums Program, 1996), introductory statement.

20. "Talking Paper on Vice Commanders," PME Symposium, 25-26 September 1974, and "Proceedings of the Vice Commanders," PME Symposium, 25-26 September 1974, AU History Office, Maxwell AFB, Ala.

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22. *Ibid.*

23. *Ibid.*

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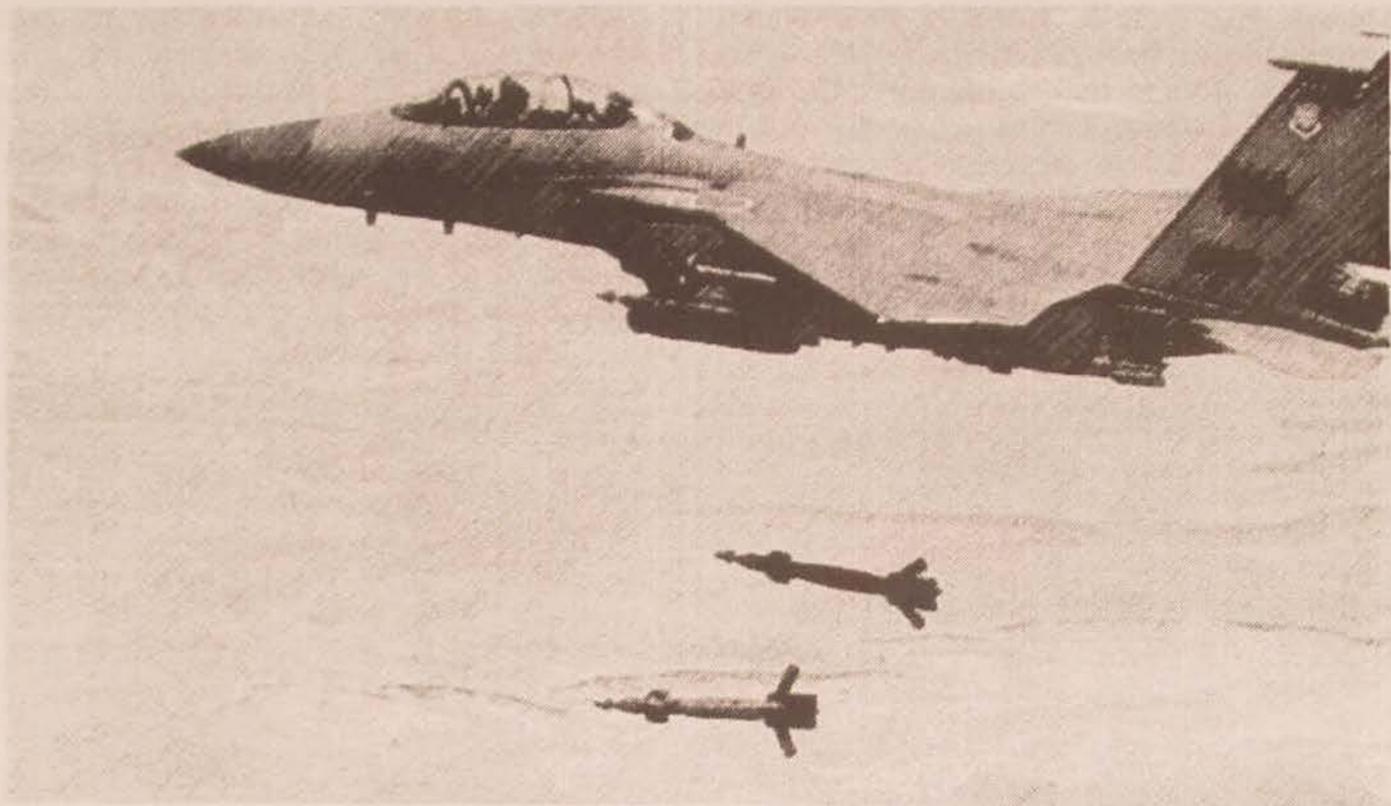
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Air Occupation

Asking the Right Questions

MAJ MARC K. DIPPOLD, USAF



Among the many devices by which domestic factions avoid joining the essential, but all too touchy issues, is to debate the timing of a crucial decision without ever discussing whether or not the move should be made at all.

—Fred Charles Iklé

ONE OF Col John A. Warden's controversial ideas is that airpower permits the virtual occupation of enemy territory by aircraft without requiring a potentially entangling and costly ground occupation. Although this concept of air occupation has received some attention lately, the idea is not new. Unfortunately, the age of the concept has not added clarity to its definition. Many of the related studies and arguments focus too much on the "how" and not enough on the "why." As alluring and parochially rewarding as air occupation may seem, the US Air Force (USAF) cannot afford

to commit dwindling resources to missions or capabilities that are not compatible with US foreign policy or the service's core competencies. We need to understand the definition and implications of air occupation because the question may not be "can we?" but "should we?"

To many people, the increasingly frequent use of the term *air occupation* is the equivalent of distant war drums—a precursor to the upcoming battles over the dwindling budget and relevance in the post-cold-war environment. This subject is clearly polarized between those who love and those who hate the concept. Adding fuel to the fire is the Quadrennial Defense Review (QDR) directed by the Armed Forces Structure Review Act of 1996. The charter of this review is to determine the defense strategy and establish a Revised Defense Program through the year 2005. No doubt, the USAF should focus on

key strategic, rather than supporting, roles and missions in order to preserve its autonomy.¹ The USAF's survival as a dominant service will hinge on where it focuses its scarce resources to prepare for the challenges of the twenty-first century. If current trends continue, when the ball drops in Times Square on 1 January 2000, the USAF will be a smaller service, subsisting on an ever-shrinking defense budget. By the year 2000, the US armed forces will lose another 64,000 active-duty troops, leveling at approximately 1,418,000—35 percent smaller than the cold war force of 1987.² Procurement has stagnated for more than a decade, but fiscal year (FY) 1997 was supposed to be the turnaround year. Unfortunately, or some may say predictably, the FY 1997 procurement budget dropped again, "falling to the lowest level since before the outbreak of the Korean War."³ As a share of US gross domestic prod-



Eagles in the Gulf. Air warfare remains distinctly American—high tech, cheap on lives, and quick; to America's enemies—past, current, and potential—it is the distinctly American form of military intimidation.

uct (GDP), defense spending dropped to 3.2 percent in 1997 and is forecast to drop to 2.7 percent in FY 2002—less than half the 6.3 percent of GDP allocated to defense in the “growth” years of the mid-1980s.⁴ In fact, the USAF Program Objectives Memorandum 98 (POM FY 1998–2003) leaves \$15.7 billion of validated, unfunded requirements.⁵

In this fiscally constrained environment, the adage “be careful what you wish for—you may get it” should be on the minds of airpower advocates coveting the air occupation mission. It could very well be a double-edged sword that expands the relative influence of the USAF but also saddles it with a complex, persistent, and costly mission. For example, the trend of open-ended commitments of US airpower-only force packages to “stabilize” scenarios (e.g., Operations Provide Comfort and Southern Watch in Iraq) would accelerate if the concept of air occupation is embraced by our leaders. How far can this “residual” airpower role be stretched before it affects our ability to respond to major contingencies or a true peer competitor (e.g., China)?

The USAF must ensure that it asks the right questions before embarking on a serious campaign to “win” the air occupation debate. The discourse on the concept of air occupation has swirled primarily around issues of how airpower could be used in an occupation role. Typically, the focus is on innovations in sensor and weapon technology that could reduce or eliminate the need for troops on the ground. The USAF Scientific Advisory Board identified numerous sensor requirements for the twenty-first century: low-cost, space-based surveillance systems on small satellites launched on demand; broadband low-frequency synthetic aperture radar (SAR) to detect concealed targets; unattended seismic, acoustic, or chemical ground sensors; and detectors placed in food, equipment, manufacturing facilities, or even in personnel to measure anxiety and stress.⁶

Of course, sensors are not a panacea. During the Vietnam War, the United States had the Ho Chi Minh Trail “wired like a pinball machine” with sensors but still failed to stop the flow of North Vietnamese men and sup-

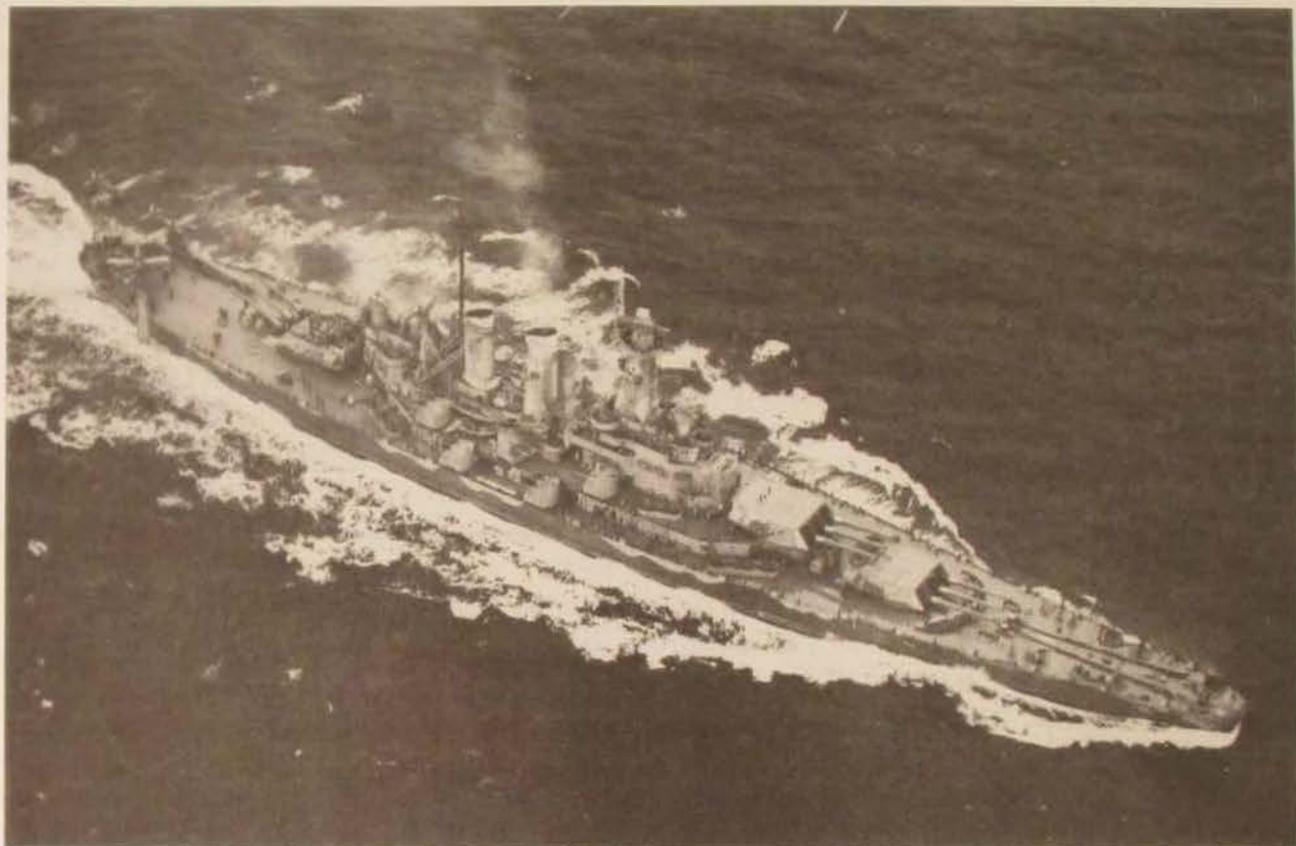
plies.⁷ Even if the sensors of the twenty-first century are more reliable, control requires not only situational awareness but also the political will and capability to influence or stop unacceptable activity. In a politically sensitive environment, nonlethal weapons would be invaluable—weapons that incapacitate rather

The USAF's survival as a dominant service will hinge on where it focuses its scarce resources to prepare for the challenges of the twenty-first century.

than kill, or disable rather than destroy equipment. These include, for example, caustic substances that destroy a weapon's sensors or lasers that blind the operators; “infrasound” that disrupts human beings' capacity to function or foam so sticky they cannot move; and lubricants so slippery that equipment cannot maintain traction.⁸ Before initiating a costly sensor and nonlethal-weapon shopping spree, the USAF must first ask and answer two important questions:

- What do we mean by the term *air occupation*?
- What are the US foreign policy implications of air occupation?

In the minds of many airpower enthusiasts, the USAF may have already conducted air occupation campaigns, but is this justification that we *should*? We must develop consensus on a proper definition as it relates to objectives and tasks—only then can we assess the likely implications and utility of the concept to our national leaders. If air occupation does not align with anticipated US foreign policy, then we cannot afford to commit scarce resources and assets to a “product” with no market. Conversely, if air occupation is a likely tool that our national leaders will demand, then we must understand the implications. As the only full-time airpower service, it is the responsibility of the USAF to define



The battleship—symbol of old-style, coercive gunboat diplomacy. Some analysts contend that airpower may replace naval power as the United States' weapon of choice in international conflicts short of war. In fact, it probably already has.

and explore the implications of air occupation.

What Do We Mean by Air Occupation?

Airpower is the most difficult of all forms of military force to measure, or even to express in precise terms.

—Winston Churchill

The term *air occupation* usually elicits either a visceral response or a parochial mantra. A typical rejoinder to an air occupation advocate is "airpower has never held ground." In many cases, people who debate the viability of air occupation talk past each other because the terms of reference are inconsistent. Adding fog to the doctrinal land-

scape is the grab bag of related terms used by airpower advocates: *air control*, *air dominance*, and *air pressure*. *The American Heritage Dictionary* defines *occupation* as "the invasion, conquest, and control of a nation or territory by a foreign military force." According to Gen Ronald Fogleman, former USAF chief of staff, "In Iraq, we have used land-based and carrier-based air forces to maintain an air occupation of Iraq for the past five years. That operation has contained Iraq, it has enforced UN sanctions, and it has compelled Saddam Hussein to accept the most intrusive UN inspection regime in history."⁹

If we turn to official joint and USAF doctrine for descriptive guidance, we find that none of the previously mentioned terms—or the word *occupation*—are defined in Joint Pub 1-02, *Department of Defense Dictionary of Military and Associated Terms*; Air Force Manual (AFM) 1-1, *Basic Aerospace Doctrine of the*

United States Air Force; or the draft of the new Air Force Doctrine Document (AFDD) 1, *Air Force Basic Doctrine*. In order to truly understand what air occupation means, we must define the objectives and tasks associated with the mission. Ultimately, this process will clarify the concept and help us decide if the term *air occupation* is appropriate.

Air Occupation Objectives

Common objectives for gaining control over enemy territory are to coerce the opposition, enforce sanctions, obtain a buffer zone, obtain raw and natural resources, control cultural assimilation, annex territory, and exact revenge. Depending on the objectives, Paul Seabury and Angelo Codevilla define enforcement options that include merely making the enemy government relinquish its unacceptable objectives (e.g., the British following the American Revolution) or at worst, "replacing its government and cleansing the defeated society of those responsible for the conflict, punishing it, and exacting reparations" (e.g., those parts of Germany occupied by the Soviets after World War II).¹⁰ It is important to note that the attainment of these objectives does not necessarily require actual fighting. Merely the threat of force has prompted some twentieth-century governments to abandon contentious objectives (e.g., Taiwan) or relinquish control of their country (e.g., Haiti).

So, what are the objectives of air occupation? Do we mean to imply that airpower is appropriate for all occupation objectives and scenarios? More than likely, airpower is most applicable to those less-intrusive scenarios with objectives that involve coercion, enforcement of sanctions, and creation of a buffer zone—influencing another state but not replacing a government or annexing territory. "The Gulf War confirmed the Air Force's ever-increasing ability to destroy military things and people, but airpower did not demonstrate an ability to change governments."¹¹ In the Gulf War Air Power Survey, Richard Hallion described how air occupation was employed in Operation Desert Storm:

"Airpower can hold territory by denying an enemy the ability to seize it, and by denying an enemy the use of his forces. And it can seize territory by controlling access to that territory and movement across it. It did both in the Gulf War."¹²

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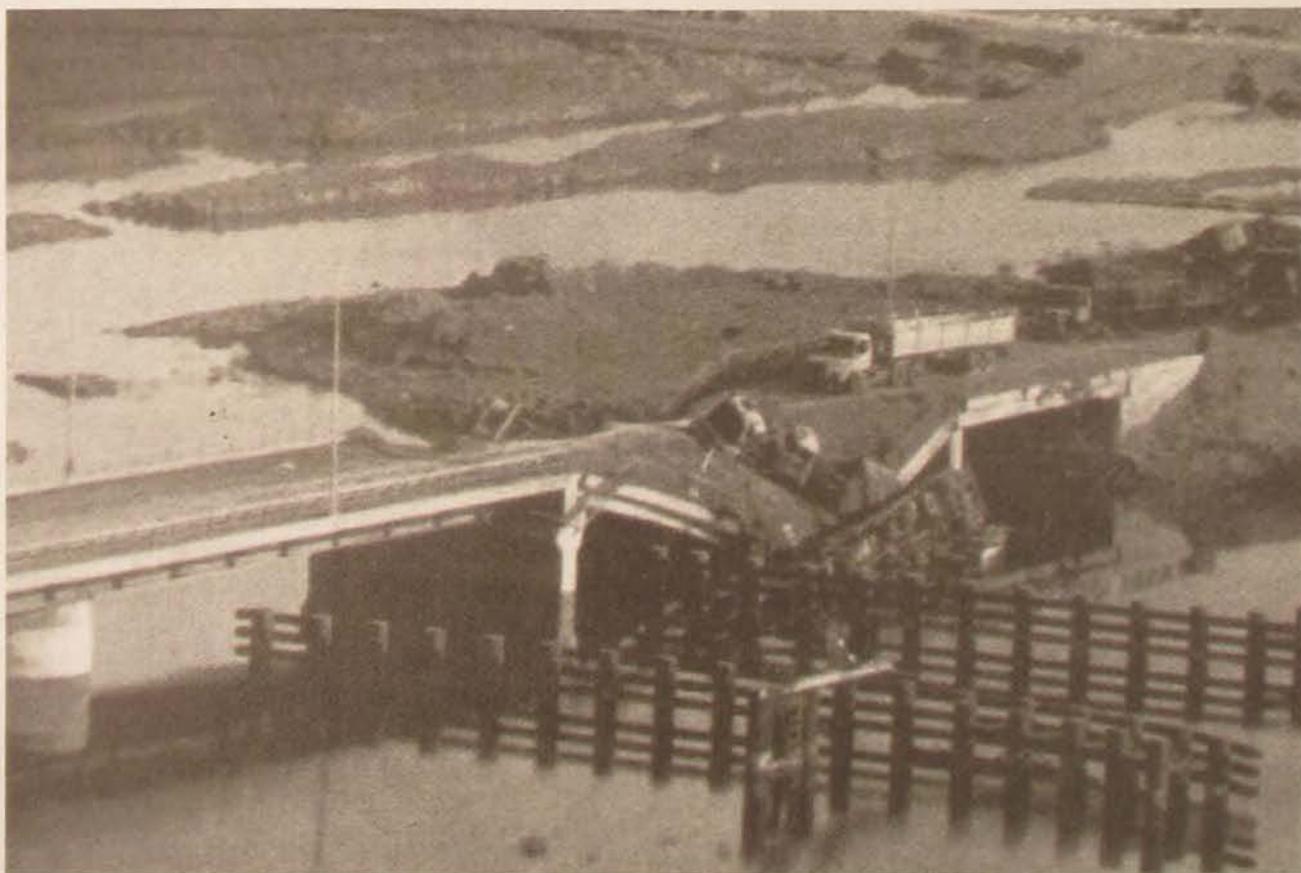
The people who decide whether or not to use airpower should consider the scale of conflict or effectiveness of the cease-fire; the number, discipline, and accountability of contending parties; the efficacy of local government; the degree to which law and order exists; and the willingness of the population at large to cooperate.¹³ The Soviet occupation of Afghanistan from 1980 to 1986 eventually relied almost entirely on airpower.¹⁴ Failure to understand the contextual elements and their impact on airpower ultimately led to an embarrassing and costly Soviet defeat. By recognizing that air occupation applies only to a subset of the military occupation objectives, we can focus on a more realistic and manageable set of tasks to achieve the mission.

Air Occupation Tasks

Carl Builder identified four tasks the USAF must accomplish to operate in what he calls the constabulary role: immediately engage and suppress heavy weapons fire; stop surreptitious flights by low and slow flyers; suppress street disorders and violence; and insert/recover a small package of people and equipment in austere conditions.¹⁵ Although these are important tasks, air occupation entails more than merely functioning as air police. The search for applicable occupation tasks could begin with Army doctrine.



What do you call tanks, trucks, and bridges? Targets. Airpower can hold territory by denying an enemy the ability to seize it, and by denying an enemy the use of his forces. And it can seize territory by controlling access to that territory and movement across it.



Army Field Manual (FM) 100-5, *Operations*, outlines postconflict operations that appear to be likely occupation tasks: control population and refugees, control prisoners, mark minefields, destroy unexploded ordnance, provide emergency health service and humanitarian assistance, provide emergency restoration of utilities, and support the social and civil-affairs needs of the population.¹⁶ If we dig deeper, we find another set of possible occupation tasks defined in FM 100-23, *Peace Operations*: observation and monitoring of truces and cease-fires, restoration and maintenance of order and stability, protection of humanitarian assistance, guarantee and denial of movement, enforcement of sanctions, and the establishment and supervision of protected zones.¹⁷ Unfortunately, this comparative method exemplifies a common handicap of airpower advocates—our dependence on Army terminology. According to airpower historian Phillip Meilinger, “the Army provided a ready vocabulary for early airmen, but by adopting a lexicon that centered on surface warfare, advocates of land-based airpower became trapped in a prison house of language. They continued to rely on an adopted language that not only circumscribed their thinking, but also included an increasingly inadequate collection of terms and categories to describe the nature of air warfare and its objectives.”¹⁸

This warning invites the question, Do we merely step through the tasks of a traditional military occupation and apply airpower, or do we start with a blank piece of paper? Rather than build our definition on a classical perception that relegates airpower to a merely supporting role, we should reconsider the likely air occupation objectives: coerce the enemy, enforce sanctions, and deny the use of territory. Air occupation tasks to achieve these objectives would include a combination of presence, intelligence, surveillance, reconnaissance, humanitarian airdrops and airlift, and punitive strikes. The last two tasks provide the “carrot and stick” of coercion and enforcement. If we stopped there, we would forgo a tremendous tool: aerial psychological operations. In his book *Occupation*, Eric

Carlton makes a very important point: “Control is normally achieved through a combination of force which induces compliance, and persuasion and/or indoctrination which generates a sense of commitment. In other words, control is either attained by compulsion, which in the end, is frequently counter-productive, or by some kind of value-consensus which is often very difficult to effect, but which can pay handsome dividends.”¹⁹

Many of the studies addressing the concept of air occupation focus on coercion but fail to explore value control, which was so expertly employed by Gen Douglas MacArthur during the occupation of Japan after World War II. Of course, fear that Japan would fall into the sphere of communism was the primary motivation for the seemingly altruistic US occupation policy: “Never before in recorded history had a great power moved in upon another, taking over its affairs almost completely at first, gradually relinquishing control, and finally restoring sovereignty with such a minimum of friction and such a large measure of benevolence.”²⁰

Some form of physical repression may be necessary, but focusing on the cultural aspects to exploit the population’s existing system of checks, balances, and norms is the key to long-term success. In fact, psychological operations to win the hearts and minds of the population are probably easier to conduct without the intrusive “in your face” presence of ground troops. Some ready examples of aerial psychological tasks are leaflet drops, television programming, and radio broadcasts—this would also include denial of these mediums to subversive groups.

Accomplishing air occupation tasks to achieve the associated objectives may require nothing more than combining existing technology and systems in new and innovative ways (e.g., gunships; unmanned aerial vehicles [UAV]; airborne warning and control system [AWACS] aircraft; joint surveillance, target attack radar system [JSTARS] aircraft; V-22 Ospreys; and space-based assets). As we consider the possibilities, one nagging question persists: given the doctrinal void on the sub-

ject of occupation, is *air occupation* an appropriate term?

Some form of physical repression may be necessary, but focusing on the cultural aspects to exploit the population's existing system of checks, balances, and norms is the key to long-term success.

Appropriateness of the Term Air Occupation

Conventional international law recognizes only one form of military occupation: belligerent occupation. According to the Hague Regulations and the Fourth Geneva Convention of 1949, "as long as the territory as a whole is in the power and under the control of the occupant and as long as the latter has the ability to make his will felt everywhere in the territory within a reasonable time, military occupation exists from a legal point of view."²¹ The classical definition of belligerent occupation recognizes that armed conflict is not always a prerequisite. In some cases, merely the threat to use force coerced a government to relinquish control of its territory (e.g., Haiti). Article two of the Fourth Geneva Convention states that "belligerent occupation and the responsibilities of occupants shall apply even to an occupation that meets with no armed resistance."²²

If the operation is labeled an "occupation," the occupier is bound by international law to certain responsibilities: the occupying power is not permitted to annex the occupied territory, is expected to "respect and maintain the political and other institutions that exist, and is responsible for the management of public order and civil life in the territory under its control."²³ The purpose of the law of occupation is to prevent the imposition of disruptive changes in the occupied territory and balance the occupant's military requirements with humanitarian interests.²⁴

The utopian nature of the law of occupation has prompted the United States and other states victorious in war to avoid labeling operations in conquered territory as occupations, thus precluding the restrictions and responsibilities. Common excuses include the following: the use of force was in support of another state whose government asked for intervention (e.g., the Soviets in Afghanistan and the United States in Grenada); the occupants were interested in permanent control over enemy territory (e.g., Iraq taking Kuwait and Indonesia taking East Timor); or disputes by warring factions over the historic ownership of territory (e.g., Israeli-occupied territories). Another more recent excuse for not invoking the term *occupation* is to avoid creating the impression that the occupant plans to stay in the territory for a long time (e.g., Operations Provide Comfort and Southern Watch in Iraq).²⁵

Clearly, use of the term *occupation* is a contemporary taboo that places a cloud of doubt over the utility of the term *air occupation*. Rather than carry all the baggage associated with *occupation*, perhaps we should consider an alternative term.

Alternative for the Term Air Occupation

As mentioned earlier, many terms compete with *air occupation* in the intellectual marketplace: *air control*, *air pressure*, and *air dominance*, to name a few. Unfortunately, none of these prevailing terms adequately captures the air occupation objectives and tasks defined earlier. Air control and air pressure are not appropriate because they appear to focus exclusively on coercion. Although air dominance is the most likely alternative, it is normally associated with air superiority and air supremacy—a prerequisite but not the underlying goal. Regardless of whether we conducted air occupation before or after hostilities, the primary desire would be to achieve our goals without war. Surely we would not conduct air occupation for its own sake, but to achieve political objectives—a better state of peace. As Capt James Poss of the Naval War College theorized, how is that different from

the gunboat diplomacy the US Navy employed for years?²⁶ Sir James Cable defined gunboat diplomacy as "the use or threat of limited naval force, otherwise than as an act of war, in order to secure advantage, or to avert loss, either in the furtherance of an international dispute or else against foreign nationals within territory or the jurisdiction of their own state."²⁷

Ultimately, gunboat diplomacy was nothing more than intervention: "the interference of one state or government in the affairs of another," according to the dictionary definition. Although hesitant to introduce another term into the arena, the USAF could reduce some of the intellectual resistance to air occupation by using the term *air intervention* instead. This could be used to capture the military operations other than war (MOOTW) missions that can be conducted exclusively with airpower: enforcing sanctions, enforcing exclusion zones, and conducting peace operations. In fact, if we take the pulse of current doctrine and politically correct thinking, it appears that occupation has been renamed peace operations, which are "military operations to support diplomatic efforts to reach a long-term political settlement and categorized as peacekeeping operations and peace enforcement operations. Peace operations are conducted in conjunction with the various diplomatic activities necessary to secure a negotiated truce and resolve the conflict. Military peace operations are tailored to each situation and may be conducted in support of diplomatic activities before, during or after conflict."²⁸ For example, if we insert airpower into the definition for *peace enforcement* found in Joint Pub 1-02 (23 March 1994), it would read, "application of airpower or the threat of its use, normally pursuant to international authorization, to compel compliance with resolutions or sanctions designed to maintain or restore peace and order."

There are two primary advantages to using the term *air intervention*. First—and most important—it unloads the parochial and legal baggage associated with *occupation*. Second, using *intervention* links the concept to the

extensive intellectual discourse on why nations interfere with the affairs of another state. Air intervention should be "marketed" to the combatant commanders in chief (CINC) as merely one of the many tools available to deal with MOOTW scenarios. It is not surprising that AFDD 2-3, the USAF doctrine document on MOOTW, does not mention the concept of air occupation—after all, it is a taboo term. Removing the conceptual shackles by using a different term may be the catalyst that invigorates the USAF to explore—and eventually define—what it believes to be true about the exclusive employment of airpower to coerce and control.

US Foreign Policy Implications of Air Occupation

Airpower is an unusually seductive form of military strength, in part because, like modern courtship, it appears to offer gratification without commitment.

—Eliot Cohen

Director, Gulf War Air Power Survey

Just as in war, one can also apply airpower in MOOTW to achieve political goals. The concept and practice of exclusive reliance on airpower to achieve national objectives is nothing new—historic precedents exist. The question is, Can we conclude that our leaders will call upon airpower to conduct air occupation missions in the future? If we determine there is no demand for air occupation, we must decide whether the product is worthy of the time and energy necessary to create a market for it. Alternatively, if we believe that air occupation will be a popular military tool in the future, we must ensure that we understand the implications and shape expectations. To assess the air occupation market, we can project into the future using the current national security strategy (NSS) as a predictor of need. Of course, actions speak louder than words—to capture this variable, we can extrapolate from the US intervention trends of the last 15 years.

Historic Precedents—Air Control

In 1950 Elvira Fradkin conceived of an example of military air control theory. She proposed creating a United Nations Air Police Patrol (UNAPP) to allow the United States and Soviet Union to disarm by entrusting the premier instrument of military power (i.e., airpower) to the United Nations.²⁹ Her justification for using air policing was simple: "Airpower has the advantage of immediate availability as a disciplinary force. It has the further advantage of being able to exercise discipline without interference in the normal routine of any nation's peaceful domestic affairs. And in the third place it can reach any area on the earth's surface without effective intervention."³⁰

Gill Wilson, president of the National Aeronautic Association at the time, stated that "the use of an international air police by the United Nations has intrigued the imagination of many; national sovereignty cannot exist without control of the air."³¹ Although Fradkin's disarmament hypothesis is questionable, she did broach an interesting proposition predicated on the inherent strengths of airpower to unilaterally influence and control the actions of another nation.

A more practical precedent for air occupation is the British air control experience in Iraq from 1920 to 1939. Anyone who has followed the air occupation debate is probably weary of comparisons with the British in 1920, but the similarities are striking and worth repeating. Although victorious in World War I, Britain still "had to deal with restive populations and disorders of all sorts in its empire."³² Tribal warfare and border conflicts were common in the Middle East and Africa—as is the case today. Costs associated with garrisoning all these locations were tremendous and quickly became unacceptable to the British people. As a cheaper alternative, the Royal Air Force (RAF) proposed the exclusive use of airpower to control the territories of the empire. This proposal was accepted, and in 1919 Winston Churchill declared that "the first duty of the RAF is to garrison the British Empire."³³ This initiative

not only filled a need for the British government but also prevented the RAF from being downsized, allowing it to capture a larger share of the dwindling military-resources pie. For more than eight years, the RAF successfully accomplished the air-control goals of long-term political stability, pacification, and administration.³⁴

Reemergence of the issue of air occupation or air control is not surprising. The US economic "empire" spans the globe—a world torn by increasing ethnic, religious, and nationalistic tensions. The task and costs of protecting our interests in this volatile environment are enormous. Some people may say that the rekindling of the air occupation discussion is driven by the USAF's fear of downsizing initiatives—specifically, the QDR. Although this may be true, it does not discount the precedence of achieving political goals through the exclusive employment of airpower to successfully control activity on the ground. Of course, we must be cognizant of the fact that this took place in a low-threat environment, in the desert, and with very limited objectives. In fact, these conditions are very similar to those that exist in Operations Southern Watch and Provide Comfort in Iraq. Obviously, a Vietnam or Bosnia scenario offers a distinctly different set of challenges. Regardless of the threat environment or geography of future US interventions, the NSS should still apply.

National Security Strategy

The central goals of the United States, as defined in the current NSS, are to "enhance our security with military forces that are ready to fight and with effective representation abroad, bolster America's economic revitalization, and promote democracy abroad."³⁵ The underlying premise of the document is that economically stable and democratic states "are less likely to threaten our interests and more likely to cooperate with the United States to meet security threats."³⁶ At first glance, this may seem utopian; nonetheless, the desire to enlarge the community of "secure and democratic nations" was used as justification for the US intervention in



Enforcing sanctions and creating buffer zones—Operation Provide Comfort. Of the many historic occupation objectives, air occupation most likely applies to less intrusive scenarios that attempt to coerce, enforce sanctions, or create buffer zones.

Haiti.³⁷ Of course, this discounts the fact that preventing a potential refugee crisis on the shores of Florida, a key electoral state, was politically expedient. The NSS supports the concept of a less intrusive air occupation option—allowing the indigenous society to resolve its problems and using the military merely to provide a window of opportunity: “We recognize, however, that while force can defeat an aggressor, it cannot solve underlying problems. Democracy and economic prosperity can take root in a struggling society only through local solutions carried out by the society itself. We must use military force selectively, recognizing that its use may do no more than provide a window of opportunity for a society—and diplomacy—to work.”³⁸

The NSS defines three categories of national interest that merit the use of US armed forces: vital interests that affect the survival and security of the nation (e.g., defending US borders and US economic vitality); important interests but not vital to national survival (e.g., Bosnia); and humanitarian interests.³⁹ Although humanitarian interests are probably more numerous, the NSS is hesitant to employ military force in these situations because “the military is not the best tool to address humanitarian concerns.”⁴⁰ On the other end of the spectrum are the less numerous vital interests, which most likely would require the focused efforts of all aspects of the military instrument of power since the stakes are too high.

This still leaves a sizable number of prospective important interests. NSS criteria for the use of military force in these situations include a high probability that forces can achieve the objectives, assurance that costs and risks of their use are commensurate with the interests at stake, and evidence that other means have been tried and have failed to achieve the objectives (e.g., Haiti and Bosnia).⁴¹ Given the fact that these are only *important* interests, the threshold of acceptable pain is likely to be quite low. This is exacerbated by the general NSS criterion for the use of military forces anytime: a reasonable likelihood of support from the American people and their elected representatives.⁴² Any significant risk to American lives will probably be perceived as unacceptable.

All these factors are predictors of a market for a less costly and lower-risk air occupation option. If one accepts the premise that *peace operations* is a politically correct way of saying *occupation*, then the following NSS statement would indicate not only a market but also a "growth" market for air occupation: "In addition to preparing for major regional contingencies and overseas presence, we must prepare our forces for peace operations to support democracy or conflict resolution. From traditional peacekeeping to peace enforcement, multinational peace operations are sometimes the best way to prevent, contain or resolve conflicts that could otherwise be far more costly and deadly."⁴³

Actions—Intervention Trends

The NSS allows us to project the "intent" of the US government, but this is only a recipe of foreign policy—the proof is in the pudding. Previous actions may be a better predictor to extrapolate US intervention policy into the twenty-first century. The United States has never been shy about involving itself in the internal affairs and domestic politics of other nations to satisfy its national interests. The use of gunboat diplomacy and marines was a staple of the US political-military landscape in Central America. Although US operations are usually cloaked in the guise of moral

crusades, few of the early interventions were conducted "exclusively to promote the rights of individuals and groups over the rights of state sovereignty."⁴⁴ The majority of these forays were prompted not by vital interests but by important interests.

Since 1945 over 160 major conflicts have occurred, and the US military was deployed over 242 times. In January 1990 alone, 32 major armed conflicts occurred—of these, 29 were ethnic, religious, or racial.⁴⁵ The list of major US interventions over the last 15 years is, depending on one's point of view, either impressive or depressing: Beirut 1983, Grenada 1983 (Urgent Fury), Panama 1989 (Just Cause), Kuwait/Saudi Arabia 1990–91 (Desert Shield, Desert Storm), Iraq 1991 and continuing (Provide Comfort, Southern Watch), Somalia 1992 (Restore Hope), Haiti 1994 (Uphold Democracy), and the continuing saga in the former Yugoslavia (Provide Promise, Deny Flight, Sharp Guard, Able Sentry, Deliberate Force, Joint Endeavor).

In addition to the standard bogeymen (e.g., terrorism, weapons of mass destruction [WMD], religion, ethnicity), there are other reasons that this trend may continue—if not accelerate. First and foremost is the fact that we are no longer constrained by superpower competition with the Soviet Union and therefore may perceive intervention as less risky.⁴⁶ Another predictor, exemplified in the NSS, is the emphasis on democracy and human rights in US foreign policy. This may mean that the United States will increasingly justify intervention to promote American values as well as defend American interests.⁴⁷ Nonetheless, American economic interests will remain a driving factor. In fact, this may explain why intervention sentiment is still so strong even though the threat of communism and its containment are no longer paramount. Stephen Shalom labeled this underlying economic motivation theory the "Imperial Alibis."

The Soviet Union did indeed behave in an imperial manner and did have armed forces far larger than needed for its legitimate self-defense. But U.S. officials have always exaggerated the Bolshevik bogey in order to justify their own inflated military machine,

which has primed the U.S. economy and been deployed against the forces of social change in the Third World that challenge U.S. hegemony and economic interests.⁴⁸

This poignant statement suggests that US policy will likely continue to be driven by economic interests—that is, capitalism. Even if we accept this premise, there will still be “calls for intervention anywhere there is disaster, disorder, or other large scale suffering that exceeds the capacity or inclination of a regional government.”⁴⁹ British air vice marshal R. A. Mason highlighted an interesting paradox that may also expand US involvement in regional conflicts:

If regional conflict or instability derives from ethnic, racial, national or territorial disputes, those neighboring countries with the greatest interests at stake may also be those whose intervention is likely to be regarded with the greatest suspicion by one or more of the contestants. Conversely, if disinterest is to be a criterion of military intervention to resolve a conflict, sustain peace or even protect humanitarian activities, what motivation will compel a state to allocate resources and perhaps incur casualties for a cause in which by definition it has little, if any, interest?⁵⁰

The United States will likely feel compelled to intervene in these regional conflicts for moral reasons, regardless of the NSS. Thus, although the recipe may call for limited and focused use of military forces, credibility as a benevolent superpower may demand more. Regardless of “why” the United States chooses to intervene, risk aversion will be a paramount component. Many times this has led to the selection of airpower to minimize the risk of casualties. “Air warfare remains distinctly American—high tech, cheap on lives, and quick; to America’s enemies—past, current, and potential—it is the distinctly American form of military intimidation.”⁵¹ In fact, a Brookings Institution study that examined 215 international incidents short of war between 1946 and 1975 involving the United States concluded that land-based airpower was the most effective form of military power.

It would appear that positive outcomes occurred more frequently when land-based combat aircraft were used than when major ground force or naval force components were introduced. It is worth noting that, like nuclear-associated units, land-based aircraft were never used as a latent instrument. It is likely that target actors view the distinctive capabilities of these two types of forces with greater alarm and that they also perceive their use as signaling greater determination on the part of U.S. policy makers.⁵²

Implications

The US Navy has a long tradition of using sea power—or gunboat diplomacy—for coercive diplomacy. Some analysts contend that “airpower may replace naval power as the United States’ weapon of choice in international conflicts short of war.”⁵³ In fact, it probably already has. If we are able to intervene successfully without risking a significant number of lives or incurring high logistics costs, we may find it easier to consolidate domestic and international will. The big payoff for air occupation could be the ability to intervene sooner, when the risks are lower and the chances of success greater.⁵⁴ A telling example is Bosnia. How much easier would the conflict resolution be in this now war-torn region if we had intervened before the atrocities and ethnic cleansing of the 1990s had occurred? The underlying economic problems that ultimately rekindled the ethnic embers would have been far easier to deal with in an atmosphere of only “historic” tension. Nonetheless, we must be wary of mistaking air occupation as a quick fix to problems that require a long-term commitment to achieve lasting conflict resolution. Looking back at the British air control experience in Iraq, “the most serious long-term consequences of ready availability of air control was that it developed into a substitute for administration. The speed and simplicity of air attack was preferred to the more time-consuming and painstaking investigation of grievances and disputes.”⁵⁵

A primary concern should be the fear of making intervention too easy by substituting airpower for logic. We may find infeasible

interventions being executed because we have significantly reduced the cost of being wrong. "The availability of low-cost, low-risk options borne from new techniques and new technologies may tempt us to make the mistake of intervening in unwarranted cases, intervening because we *can*, rather than because we *should*" (emphasis added).⁵⁶ In fact, many of the early US interventions were characterized by unclear goals that made the definition of success (i.e., a better state of peace) nearly impossible to determine.⁵⁷ The dilemma of deciding if we should become involved is only going to get more difficult as we face a growing constellation of ethnic, religious, and nationalistic conflicts. In addition, if the scenario is uncertain, the decision to extricate ourselves may be equally difficult. The current operations designed to "protect" the Kurds and Shiites in Iraq are perfect examples of this dilemma: what is the *achievable* end state that will signal success and allow total redeployment of US airpower? US foreign policy and intervention trends indicate a growing need for a less costly and lower-risk alternative to "troops on the ground." Airpower could fill this need, but there are dangerous implications that the USAF must be prepared to cope with—in this case, ignorance is not bliss.

Conclusion

My message . . . is that the pioneering days of aviation are not over. Fully developing and exploiting airpower is an enduring challenge. In particular, the Air Force has specific responsibilities for ensuring airpower serves the nation which we must discharge ever more effectively in the future.

—Maj Gen Charles D. Link

Air occupation is an intellectually interesting yet contentious concept. This is familiar territory for airpower advocates who have faced skepticism for decades—in many cases, a by-product of promising too much. Of course, if we allowed our vision and theories

to be defined only by what the "masses" thought was possible, we would probably still be relegated to mail delivery and observation duties. As the only full-time airpower service, the USAF has a singular responsibility to explore and validate new applications of airpower and space power. We must not allow ourselves to get stuck in the rut of "mainstream" doctrine. In the words of Carl Builder, "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."⁵⁸

Although Builder makes a valid point, evolving doctrine should also be flexible and honest enough to exclude new airpower roles that are unnecessary or frivolous, even if they are technologically possible. There must be more to airpower theory than "we can, therefore we should." In a world of dwindling budgets, the USAF must be honest brokers with the nation's limited resources. Consequently, it must be wary of accepting roles and missions that will have little impact on the vital interests of the nation but consume tremendous resources, either because of their singular cost or uncontrolled frequency. The only way to bring clarity to what Builder labels the "doctrinal frontier" is to ask and answer the right questions early in the process.

What Do We Mean by Air Occupation?

The term *air occupation* can be very perplexing. Unfortunately, neither *air occupation* nor *occupation* is defined in joint or USAF doctrine—only the legal implications of the term *occupation* can explain this void. Of the many historic occupation objectives, air occupation most likely applies to less intrusive scenarios that attempt to coerce, enforce sanctions, or create buffer zones. Probable air occupation tasks to achieve these objectives would include a combination of presence, intelligence, surveillance, reconnaissance, psychological

operations, humanitarian airdrops and airlift, and punitive strikes. The USAF may reduce some of the intellectual resistance to air occupation by using the term *air intervention* instead. This would unload the parochial and legal baggage associated with *occupation* and link it to the extensive discourse on intervention theory.

US Foreign Policy Implications of Air Occupation

General Fogleman equates the problems of today's complex, multipolar world to the heads of the mythical serpent Hydra—when one is cut off, two grow in its place.⁵⁹ Although the USAF cannot solve all our nation's military problems alone, it may be able to solve some of them. The concept and practice of exclusive reliance on airpower to achieve national objectives is not new—historic precedents exist. The USAF must define those situations in which exclusive use of airpower may be the most desirable and effective course of action. The warning from Dr. Larry Cable should be heeded to ensure that "jointness" does not become dogma: "Correctly employed joint oriented doctrine allows the orchestration of complementary capacities for the several forces under a unitary chain of command. Improperly employed it allows for the policy equivalent of the Special Olympics in which everyone gets to play and everyone is rewarded from mere participation regardless of the effectiveness or success of their having taken part."⁶⁰

The current NSS criterion for costs and risks that are commensurate with the interest at stake, coupled with US intervention trends, indicates the likelihood of a growing market for an air occupation option. The big payoff for air occupation could be early consensus to intervene sooner, when the risks are lower

and the chances of success greater. Nonetheless, we must be wary of mistaking air occupation as a quick fix to problems that require long-term commitment to achieve lasting conflict resolution. Our task is to ensure that US leaders understand the allure of "low cost" intervention and guard against its misuse. A primary concern should be the fear of making intervention too easy and substituting airpower for logic—intervening because we *can* rather than because we *should*.

Bottom Line

Even if one disagrees with the broad answers provided in this article, the questions are still valid and must be answered before embarking on a serious campaign to "win" the air occupation debate. Air occupation—alternatively, air intervention—is a viable concept as long as we understand that it is not appropriate for all scenarios. As the only full-time airpower service, the USAF must develop and publish air occupation doctrine to provide guidance on what it believes to be true about applicability, objectives, tasks, techniques, and procedures. This doctrinal development and assessment process should include the "battle labs" recently created by the USAF to provide "a place where new ideas will be taken seriously."⁶¹ Although the USAF should focus on key strategic, rather than supporting, roles and missions to preserve its autonomy, it must also ensure that the concept of air occupation is not oversold to the point of creating a market that dominates its existence. Every sortie and dollar committed to unnecessary roles and missions is a resource lost to preparing for the military's primary task, as defined in *Joint Vision 2010*: to fight and win our nation's wars.⁶²

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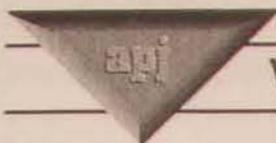
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62. *Joint Vision 2010* (Washington, D.C.: Joint Chiefs of Staff, 1996), 4.



Way Points

A mind stretched to a new idea never goes back to its original dimension.

—Oliver Wendell Holmes

UNINHABITED COMBAT AERIAL VEHICLES: REMOVE THE PILOT?

ANDREW A. PROBERT

In *New World Vistas*, the Air Force Scientific Advisory Board recommended that the Air Force pursue development of uninhabited combat aerial vehicles (UCAV). This awkward but politically correct name refers to aircraft capable of delivering weapons without “on-board presence of pilot or aircrew.”¹

UCAVs have the attention of people who develop new technology and new air-vehicle concepts. Without a user-stated need, such as replacement of aging F-16s with Joint Strike Fighters, technologists are forming their own ideas of what the UCAV should be able to do. Many of these people have been in the business of developing piloted aircraft, so their starting point for formulating a UCAV concept seems to be based on the idea of removing the pilot from a fighter aircraft. This approach is not necessarily wrong but could be constraining because of presumptions that UCAVs will operate like piloted aircraft.

Because of these assumptions, technologists are now preparing to spend research and development (R&D) resources to figure out how to do combat flight operations without a pilot on board. However, before R&D resources are spent, we should make sure we are solving problems that need to be solved. We need to ask some basic questions that could affect the ultimate cost and complexity of the system. For example, do we need to operate from a runway? Must the UCAV fly over and among civilians? Does it need to fly in formation? Is air refueling necessary? Must it drop expensive smart munitions?

Before proceeding to design a fighter without a cockpit, developers should step back and look at the attributes a weapon system should have. My premise is that if the above questions are asked, the answers will come back negative. A resulting system will more closely resemble a cruise missile rather than a piloted aircraft in terms of size, cost, and method of

launch, except that it will drop its warhead and come back for a quick turnaround for another mission.

Desirable UCAV Attributes

Characteristics that one would wish to see in a UCAV include affordability, lethality, survivability, supportability, deployability, flexibility, and responsiveness.

Affordability

Since aircraft cost is roughly proportional to size, the vehicle should be as small as possible. And since range and payload determine size, vehicle and operational concepts that minimize required range and payload weight would have an advantage in unit production cost.

To minimize range requirements, one should free the UCAV from runways and airfields to allow forward basing. It could rocket-launch from a truck, like the old ground launched cruise missile. But how could one recover it in the field? Perhaps it could land in any open field on air bags, rather than wheels, that would inflate immediately prior to touchdown. A slow final approach similar to that used in short takeoff and landing (STOL) operations would minimize bounce and roll.

To minimize payload weight requirements, one should use small bombs in UCAVs and minimize the onboard sensor suite. A cheap UCAV that drops an expensive smart bomb wouldn't help overall affordability, so the system should be able to precisely deliver cheap, unguided munitions.

To minimize the number of personnel required to operate UCAVs, one should make each vehicle as autonomous as possible, while maintaining the flexibility to react to the fluid mission environment. Remote teleoperation would be impractical and costly. A controller/operator should be able to give orders to multiple UCAVs, with each UCAV having the onboard smarts to generate and fly an appropriate trajectory, given the mission's constraints and the current situation.

Lethality

Piloted aircraft must stand off for survivability, making guided munitions necessary. A small UCAV could take advantage of low signature and high maneuverability to safely release cheap, unguided ordnance very close to the target. With no humans aboard to black out, G-force levels could be increased. If a "smart" bomb's terminal guidance package were on the UCAV, the vehicle could be used to provide smart guidance for a "dumb" bomb until reaching very close range, at which point the UCAV would release the unguided ordnance and snap into a high-G escape maneuver. The short range at release would ensure accuracy.

Survivability

One should expand survivability to include the time between flights, since forces should not be vulnerable to attack while on the ground. Given the threat posed by enemy cruise missiles, runway-based strike assets will be vulnerable to cruise missile attack.² Dispersed basing schemes would make UCAVs harder to locate and attack.

One should also note the difficulty in shooting down a cruise missile flying at very low altitude.³ The same problem would apply to the enemy in attempting to shoot down our UCAVs. For that reason, UCAVs should have the capability to navigate and attack from very low altitude, if necessary for survivability.

Supportability

UCAVs should be easy to maintain in the field. They should be modular and reliable so that when parts do break, one can simply throw the modules away. Remaining serviceable modules could be matched to make a functional UCAV.

Deployability

When the air expeditionary force arrives, the reception may not be friendly. For that reason, UCAVs should be able to arrive by air and launch a strike prior to landing. This means launching from the wing of a B-52 or from the back of a C-17. Further, one should provide only a minimum of support gear and personnel. The number of UCAV controllers and control stations per UCAV should be kept small.

Flexibility

Single-purpose systems should be avoided. Commanders in chief would like their in-theater systems to be able to respond to any need. (Note the pictures of F-15E Strike Eagles loaded wall to wall with fuel tanks and air-to-air missiles in Operations Desert Shield/Storm.) UCAVs shouldn't be designed with only one mission in mind.

Responsiveness

A UCAV would take full advantage of the "system of systems" and "information dominance." Reliance on off-board sensors would minimize the onboard sensor suite requirements as well as provide greater situation awareness and flexibility. A UCAV and its operator would be aware of the updated battle situation and be able to adjust to changes in threats or weather. The target might be changed at the last moment by command and control.

A UCAV battle manager or controller wouldn't be capable of replanning the details of each UCAV mission for each threat update off the network broadcast. Consequently, the UCAV must have significant autonomous

capability to respond to threat updates and replan its mission in flight within the constraints of its fragment of the air tasking order and fuel availability. A robust onboard flight-management capability would help to minimize the data-link bandwidth required. The operator would also need to have the ability to immediately assume direct manual control over the UCAV's flight path to respond to real-time maneuvering requirements.

Affordable UCAV Concept

Considering these desirable attributes, an affordable UCAV would be capable of dispersed forward basing, as well as air and sea launch. An operator controlling multiple UCAVs would direct them to targets. Reconnaissance assets would provide the operator with target imagery and coordinates. The UCAV would precisely drop small, cheap bombs from low altitude using onboard terminal guidance seekers.

With this concept, one does not need to develop technology to permit many of the flying operations performed by pilots. That is, UCAVs don't need to do the following:

Operate from Airfields

Such a requirement would introduce questions of how to safely move them around an airfield in large numbers, before and after flight, among piloted aircraft.

Fly among Civilians

There are concerns about how a UCAV would "see and avoid" other air traffic, a requirement for all piloted aircraft in controlled airspace in visual conditions. A small UCAV designed for deployment by means other than its own power would have no need to fly over and among civilians.

Fly in Formation

Pilots fly in formation to reduce the air-traffic-control burden, for mutual support in visual and sensor search, and for offensive coordination. These requirements do not apply to UCAVs. They wouldn't fly through busy airspace or have to land on a busy runway when operating from remote forward sites. Off-board assets that make up the system of systems would supply mutual support in sensor coverage. And the remote human UCAV controller would handle strike coordination.

Air Refuel

For deployment, UCAVs could be carried under the wing of a B-52, in a C-17, or on a boat—or they could be prepositioned. Forward basing (land or sea) or air launch would extend the combat range. The use of small bombs and limited sensors would reduce payload weight and extend range.

Drop Smart Munitions

Survivability and lethality would be achieved through small size, low altitude, and maneuverability, rather than by standoff weapon delivery. Close-in weapon release would assure the accuracy of unguided ordnance.

Conclusion

An affordable UCAV won't be an aircraft without a pilot. It will be more like a returnable, controllable, responsive cruise missile.

Wright-Patterson AFB, Ohio

Notes

1. *New World Vistas: Air and Space Power for the 21st Century: Aircraft & Propulsion Volume* (Washington, D.C.: USAF Scientific Advisory Board, 1995), 12.
 2. See "Cruise Missile Threat Spurs Pentagon Research," *Aviation Week Space & Technology*, 14 July 1997, 44-57.
 3. *Ibid.*
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The value of history in the art of war is not only to elucidate the resemblance of past and present, but also their essential differences.

—Sir Julian Corbett

Ricochets and Replies*Continued from page 3*

an example. Excuse me, Colonel Drew, but over the last 19 years, I have been asked to plan, program, budget, and develop management-information systems; to schedule and manage resources; and to lead people. I have never been asked to devise military strategy. My business degrees were hardly irrelevant in accomplishing any of these tasks. Would I have been a more effective leader with a degree in military history? Would my people have been more efficient or effective if I spouted Clausewitzian theory to them? I think not. What then is irrelevant—the degrees I use or the professional military education (PME) I have completed and then, to a great extent, have immediately discarded?

Colonel Drew calls for Air Command and Staff College (ACSC) and Air War College (AWC) commandants with greater experience in academia. He's wrong! Air University needs leadership with a broad background; we need commandants with a balance of academic and operational experience. We call them "general officers" because they're supposed to have general backgrounds—a decent understanding of many subjects rather than a detailed emphasis on a small subset. Overemphasis on academia leads to turbulence and confusion in curricula. What do tomorrow's leaders need more—an understanding of the Peloponnesian War or an understanding of the role space plays in future war fighting? Until recently, AWC placed more emphasis on the former.

We emphasize the importance of the right level of PME at the right time. I contend that the knowledge represented by a graduate-level business degree is far more relevant to field grade officers than is 90 percent of the current AWC curriculum. As for elimination of nonresident PME programs, fine! Personally, I would have spent much more time over the last year with "relevant" personal professional development, but I was too busy reading literally thousands of pages of an AWC seminar curriculum that is out of touch with today's operational Air Force.

Colonel Drew's suggested actions will place yet another barrier before true operational leaders who are attempting to rise to leadership positions. In his envisioned world, we have leaders who are "well schooled in the theory, doctrine, and history of aerial warfare." Those leaders have been to school at Maxwell—probably twice. All they are missing is the ability to operate their weapon systems effectively or to relate to their people. The key has always been, and always will be, balance. From Foulois to Fogleman, our truly outstanding leaders have found the balance between academia and operations. Spare me (and my Air Force) from leaders who can't lead a unit into combat because they have overemphasized doctrine and have never learned how to refuel or put bombs on target. Perhaps I'm just one of those illiterate truck drivers.

Lt Col David J. Maher, USAF
Colorado Springs, Colorado

**COLONEL DREW: "YOU'RE EXCUSED"
(THE AUTHOR RESPONDS)**

My article obviously touched a very sensitive and emotional nerve in Lieutenant Colonel Maher. I appreciate his concerns and opinions. I am sure they are strongly and honestly held. Three of his points deserve special comment.

First, let me assure him that I harbor no ill will toward people with business degrees. My first graduate degree was an MBA, which proved very helpful in conducting my daily, routine managerial duties as an Air Force officer. Had I been a factory owner, a corporate executive, or a small-business owner, it would have been equally useful in conducting my routine managerial duties.

The universal managerial utility of a business education, however, reinforces a basic premise of my article (i.e., we don't need business managers masquerading as wartime military leaders). Rather, we need military leaders educated (and trained and experienced) in the profession of arms, in our most basic mission—preparing for and waging war. I don't worry very much about how officers

cope with routine management problems. I do worry a great deal about how officers perform when suddenly and unexpectedly thrust into the "Black Hole" air strategy cell in Riyadh, or the combined air-operations center in Vicenza, or similar functions in future crises. The people responsible for sending American airmen into harm's way must be much more than skilled managers.

Second, I am surprised that Lieutenant Colonel Maher opposes the concept of school commandants with at least some experience in academe. Apparently he would have us continue our 50-year tradition of assigning well-rounded but academically inexperienced senior officers to these important billets. At the same time, he bemoans an irrelevant and out-of-touch Air War College curriculum. Perhaps he should ponder the influence of a school's leader on a school's curriculum.

Third, the experience of nearly every modern air force indicates that the most vexing problem airmen face in wartime is *not* the technical challenge of putting bombs on target. Rather, the most vexing problem lies in the intellectual challenge of selecting the best targets to bomb with limited aerial assets. It is a problem that our downsized force will exacerbate. Success in this intellectual challenge will come only to airmen well schooled in the theory, doctrine, and history of aerial warfare.

Dennis M. Drew
Maxwell AFB, Alabama

DISSENT AS A CAREER ENHANCER

It seems to me that the role of *Airpower Journal* as the home for professional dialogue in the Air Force depends on one major factor. The *Journal* must be the place where one finds serious disagreements over professional issues spelled out and debated.

If the *Journal* is to achieve that role, I think (at least) two conditions are necessary. First, your readers must see the *Journal* take on and explore contentious issues. Second, your readers must be convinced that the *Journal* is

the place where they can forcefully express loyal dissent without penalty. In fact, you should take the position that forceful expression of loyal dissent is a career enhancer—you help your boss and the leadership make better decisions, which you then support.

If, as editor, you want to pursue this line, you might consider some of these potential topics as suitably contentious:

- What were the *real* lessons learned from Desert Storm or the Blackhawk shoot-down?
- Do you really have to be a below-the-zone selectee to get a promising or challenging job and have a big future in the Air Force as an officer?
- Are late bloomers protected by the personnel system?
- Do we need more "service" or more "self-interest" in our expectations of Air Force people? Can we afford to expect more "service" of our people?
- What will "space power" mean in 20 years? How will it work with airpower?
- What is the Air Force, at its core, really about?

Lt Gen Bradley C. Hosmer, USAF, Retired
Alexandria, Virginia

PRIVATIZING AIRPOWER JOURNAL

My gut reaction to the privatization idea suggested in your editorial for the Fall 1997 issue is negative. I think that *APJ* has always been a freer and opener forum for debate than some people have made it out to be, and it enjoys more autonomy now than it used to. Both the US Naval Institute (USNI) *Proceedings* and the *Marine Corps Gazette* are peculiar to those professions, and we cannot duplicate them. I would guess that any privatized USAF journal would resemble *Air Force Magazine* or *Strategic Review* much more than *Proceedings*. This would be especially true if the Air Force Association, through its Aerospace Education Foundation, were part of the sponsoring organization. What you suggest would put you into direct competition with *Strategic Review*

and *Air Force Magazine*. And, if privatizing *APJ* did not work out, it might be very difficult to come back home. We need to be careful about what we pray for—we might get it!

USNI was established a long, long time ago under conditions that were unique and that cannot be duplicated now. The Navy officer corps was a sleepy, slow-paced organization. There was no satellite TV and Monday night football, and there was nothing to do on blockade duty other than read and write—or fall into depression. It was similar in the “From Here to Eternity” Army Air Corps. Now, especially in the Air Force, the life of the officer is much busier and less contemplative. At least the free government distribution puts *APJ* in front of the officers, and some of them will pick it up to read if they cannot find a *Golf Digest* to browse. That will yield more

visibility for your writers than would initially (and maybe always) be the case with any USAF private journal—and that is the payoff for them. Now, if you could add more substantial monetary awards without going outside the government, that would supplement some professional satisfactions.

In my time, and I think still, Annapolis graduates understand that it is a part of their professional obligation to subscribe to *Proceedings*—and if they are to become full-fledged professionals, to be published in its pages. To make that happen in the USAF context will take a lot more than privatization—and many, many decades of change.

Dr. David R. Mets
Maxwell AFB, Alabama

It is not big armies that win battles; it is the good ones.

—Maurice de Saxe, 1732

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

—Mark Twain

Peacekeeping: Outspoken Observations by a Field Officer by James H. Allan. Praeger Publishers, 88 Post Road West, Westport, Connecticut 06881, 1996, 200 pages, \$55.00.

Since the end of the cold war, the United States has become progressively involved in a number of United Nations (UN) peace missions. Because there is ample potential for the United States to continue to be a critical component of such operations, American policy makers, commanders, and service members are well served by garnering the lessons learned from previous efforts. James H. Allan, a retired Canadian colonel, has contributed substantially to our understanding of United Nations peace operations with *Peacekeeping: Outspoken Observations by a Field Officer*, which draws on his experiences while wearing the blue beret in Cyprus, Syria, Israel, Lebanon, Egypt, Jordan, Iran, and Iraq.

Allan's *Peacekeeping* is not another memoir; instead, it is a compendium of case studies and hard-hitting observations on peacekeeping, past, present, and future. This book is unique with its perspective into the daily events and relationships which are germane to peacekeeping. While reading academic works or policy proposals, a person can easily forget the dirt or mud, heat or chill, boredom, and human friction inherent to peace missions but these facets are central to Allan's easily read volume.

At the core of Allan's observations is the understanding that peacekeeping does not bring about long-term conflict resolution. Whereas Americans may be obsessed with quick solutions to problems and are not overly concerned with historic enmities, other cultures can be enthralled with ethnic hatred and fear of their neighbors. Peacekeeping essentially provides a respite from war by maintaining truces, but it does not furnish a conclusion to conflict. Only when it is politically and economically advantageous to the opposing belligerents do

conflicts become resolved. This ambiguity must be grappled with by those involved in peace operations.

Though loyal to his fellow peacekeepers, Allan lambastes the UN as a dysfunctional, self-perpetuating bureaucracy. He trops the UN's civilian leadership located in New York and points to the chief administrative officer (the senior civilian responsible for logistical, supply, and administrative matters) billet as the Achilles' heel of every peace mission he participated in. Allan also notes that the UN lacks an effective institutional memory, failing to learn from past problems, and that the inability to provide accurate and detailed maps is just one of the frequently repeated tactical snags.

Allan relates there are many requirements in the trenches for peacekeeping. Tough-mindedness, humor, and calmness are crucial for those interposing themselves between belligerents. Peacekeepers must be effective ombudsmen and be patient and tolerant while confronting truce violations. They must also be firm, though shrewd enough to impose their will without causing either of the opposing sides to "lose face." He clearly advises the reader that the people in positions of local power on both sides are likely to have gotten their rank by zealotry, not open-mindedness or intelligence, and that such individuals are not well-suited to cooperate, compromise, or be truthful.

Allan also lists three key characteristics of successful peacekeeping operations—acceptance, impartiality, and minimum use of force. The first includes political and financial responsibility by contributing UN members, acceptance of the peacekeepers' presence by the belligerents, and acceptance by the peacekeepers of their nonwar-fighting role. The second is strict impartiality. The third characteristic is the absolute minimum use of force. Defusing a crisis with violence places the peacekeepers on one side or the other. This in turn destroys impartiality, as well as acceptance by the opposing parties, and makes the peace-keeper part of the conflict instead of a promoter of peaceful methods of overcoming difficulties.

For Allan, peacekeeping is more apt to be successful, in its limited way, when it stands between

two sovereign states rather than between intrastate forces. In his view, civil wars and failed states are not the place for UN peacekeepers. He believes that the UN should delegate peace enforcement and humanitarian operations to regional organizations such as the Organization of African Unity. In addition, he strongly opposes a standing UN force for peace missions. His disenchantment with the civilian administrative system of the UN leads him to believe that a UN version of the French Foreign Legion would be inefficient and corrupt beyond measure.

Overall, *Peacekeeping* is an insightful, carefully worded work with only two glitches: its excessive price and its mention in passing of Germany as a permanent member of the UN Security Council. Without a doubt, Allan's fine book will prove to be a superb benefit to any scholars, soldiers, or policy makers searching for a no-holds-barred assessment of UN peacekeeping by a well-experienced practitioner of such operations. It is highly recommended.

Capt Jeff Kojac, USMC
Camp Pendleton, California

Elements of Military Strategy: An Historical Approach by Archer Jones. Praeger Publishers, 88 Post Road West, Westport, Connecticut 06881, 1996, 264 pages, \$24.95.

Military historian Archer Jones uses history in *Elements of Military Strategy* in two ways: for a source of ideas about military strategy and for examples illustrating the elements by showing their application to specific campaigns and for understanding the role of strategy in military operations. The focus is on American military land, sea, and air campaigns from the English colonists' warfare against the Native Americans in the middle 1600s to the Gulf War in the early 1990s.

An unusual historical perspective defines the parameters for examining each campaign. The objective for military strategy is depletion of an adversary's military. Armed forces have the strategic means available for depletion of combat (combat strategy) and depriving the opponent's armed forces of supplies, weapons, recruits, or other resources needed to function (logistic strategy). Four possible combinations make up the strategic means: combat and persisting, combat and raiding, logistic and persisting, and logistic and raiding. The strategy of any military

operation is almost certain to fall into one of these combinations.

Areas also effect operations—from either within a base area, from a remote base area, or a mixture of base area access. For most of warfare's history, armies have obtained the bulk of their supplies, especially food, from the area in which they campaigned. An example is the US Army in the 1876-1877 Great Sioux War. Forces operate from a remote base area if they remain long in one place, as in sieges, or are too large for the region to support. They include land forces dependent on distant bases and sea and air forces, which generally need a remote base. The 1940-1945 commerce-raiding war in the Atlantic illustrates this. A profound example of operations with a mixture of base area access is the American involvement during the Vietnam War.

In examining the nature of military operations, Jones strives to show how the role of strategy employs Aristotle's ancient analytical tool of the four causes: material, formal, efficient, and final. In a military operation, the material cause is the armed forces. Tactical doctrine, the base area, and other logistic arrangements constitute the formal cause. The efficient cause is the military organization, and the final cause is the objective of the battle, campaign, or war.

The case study applied the most is the US war against Japan in World War II, because it furnishes excellent examples of independent and interdependent land, sea, and air operations. All the case studies, some more so than others, contribute to the author's distinctive historical methodology, notable for original conceptualization.

If there is a weakness, it lies in the lack of visible documentation and sources. Although the book is obviously well researched, there is no tangible evidence as proof.

While *Elements of Military Strategy* can be difficult to wade through in certain spots, this should not deter true students of military history and strategy. Readers interested in the subject will enjoy thinking about a historical approach that is different and challenging at the same time.

Dr. Frank P. Donnini
Newport News, Virginia

The Transition to Democracy in Latin America: The Role of the Military by Bruce W. Farcau. Praeger Publishers, 88 Post Road West, P.O. Box

5007, Westport, Connecticut 06881-5007, 1996, 200 pages, \$55.00.

The post-cold-war era has produced a surprisingly excellent spate of books on national security issues and the military institutions of Latin America. Author Bruce W. Farcau is a career foreign service officer, US Department of State, with career assignments in Bolivia, Ecuador, Spain, France, and the Dominican Republic. His present work is a detailed analysis of civil-military relationships and a survey of professional values and military-to-military relationships.

The book has a strong historical section on military regimes in Latin America: their genesis, main trajectories, and demise. Farcau's dynamics are verifiable; his arguments are compelling. Next comes the strongest part—a section each on the specific dynamics of civil-military and military-to-military relations within the army officer corps in Bolivia and Brazil. From long years of study and experience in this sector, I recognized a previously unpublished gold mine on this delicate topic.

The summary portions of Farcau's meticulous study are less clear. He recognizes the acceptance of democratic values but is unwilling to predict strong adherence to constitutional obedience. He suggests that the post-cold-war army officer in his two subject countries will not revert to coups d'état that proclaim a long-term modernizing strategy, as happened in the 1970s. Rather, he sees the military officer possibly playing the role of temporary peace-maker and power broker, should the civilian politicians once again revert to the destructive bickering—bordering upon abdication—that brought the soldiers out of the barracks in times past.

Two other items merit attention. The scope of the book is overtitled, for it really contains two superb case studies on emerging military values in two key South American nations—not an even coverage of democracy's pathway throughout the region's military leaders. The airpower student might well remember that air force officers in the two subject countries tend to profess a less politicized values system closer to the engineering model—a tendency shown from variant positions by John J. Johnson's *The Military and Society in Latin America* (1964) and by Roderic Camp's *Generals in the Palacio: The Military in Modern Mexico* (1992).

The military forces of Latin America are over-studied as a political pathology—a condition produced by residual vestiges of the Black Legend, portraying all things Hispanic as innately violent, cruel, and cowardly, and by the merger of radical

Protestantism with neo-Marxism in US academic circles during the latter half of the cold war. Bruce W. Farcau's carefully researched work is a welcome and major contribution to the cognitive side of the literature.

Dr. Russell W. Ramsey
Fort Benning, Georgia

"Good to Go": The Rescue of Capt Scott O'Grady, USAF, from Bosnia by Mary Pat Kelly. Naval Institute Press, 118 Maryland Avenue, Annapolis, Maryland 21402-5035, 1996, 337 pages, \$27.95.

In early June of 1995, the nation held its breath waiting to discover the fate of Air Force captain Scott O'Grady. The Bosnian Serb surface-to-air missile (SAM) that destroyed Captain O'Grady's F-16 began a series of events culminating in O'Grady's successful rescue by members of the United States Marine Corps. This story is brought to life in *Good to Go*. A blow-by-blow account by the actual soldiers, sailors, airmen, and marines involved in the rescue moves the reader from the relative "peace" of the Deny Flight operation, through the realization that we had lost an F-16 and its pilot, to an intense rescue of Captain O'Grady and a hair-raising flight back to freedom through the SAM- and anti-aircraft-artillery-filled Bosnian countryside.

All of the accounts in the book are taken from interviews conducted with the primary players, including Adm Leighton Smith, who was commander in chief of US Naval Forces Europe and Allied Forces Southern Europe, as well as Marine Corps corporals who were on the helicopters that rescued Captain O'Grady. Their personal stories and accounts of these events bring the seriousness of the situation quickly into focus. On every page, one finds the total dedication, commitment, and determination to bring O'Grady out of Bosnia alive.

Organizing the events chronologically, Mary Pat Kelly allows the reader an unobstructed view not only of the players but also of what information they had and didn't have when they made their decisions. Crisis planning is never easy, especially with the ever-present fog of war. By comparing times and locations, we gain better understanding into this kind of stress-filled situation in which so few of us participate yet need to be prepared to handle. *Good to Go* is a well-written account of an important lesson in cooperation and teamwork. Mary Pat Kelly has given us a valuable tool that we

should use again and again—and not just read once and place on the bookshelf.

Capt Chris Golden, USAF
Yakima, Washington

So Many, So Much, So Far, So Fast by James K. Matthews and Cora J. Holt. Government Printing Office, Washington, D.C. 20318, 1995, 318 pages.

Since the end of the Gulf War, much has been written about the hundred-hour ground war and thousand-hour air war; unfortunately, little has been written about the ten-thousand-hour logistics war. *So Many* helps fill this void with an excellent analysis of the strategic air, land, and sea deployment of Operations Desert Shield and Desert Storm from the perspective of US Transportation Command (USTRANSCOM). Written by the command's historian and director of its research center, Dr. James Matthews, and its Freedom of Information and Privacy Act officer, Mrs. Cora Holt, this book does for strategic lift what Gen H. Norman Schwarzkopf's *It Doesn't Take a Hero* did for the Desert Storm ground war.

The authors use primary historical sources, interviews, extensive research, and their actual experiences to describe in layman's terms the herculean effort of USTRANSCOM from 7 August 1990 to 10 March 1991 in moving and then sustaining over 540,000 US troops, their equipment, and supplies from hundreds of locations throughout the world to Southwest Asia. This effort equated to moving all the residents of Wyoming and their personal belongings to the Persian Gulf in just five months. The reader quickly realizes that this enormous movement didn't just happen but was made possible by years of planning, analysis, and the existence of USTRANSCOM.

Matthews and Holt clearly describe how the strategic airlift system created aluminum "air bridges" over the North Atlantic, Europe, and Southwest Asia in minimum time but not without major problems. Every six weeks throughout this war, active duty, guard, reserve, and allied aircraft, as well as the Civil Reserve Airlift Fleet (CRAF), flew the equivalent of one 19-month-long Berlin airlift. The authors note that Iraq may have been deterred from pushing into the strategically crucial and oil-rich Al Jubayl-Dhahran area of Saudi Arabia because of Military Airlift Command's (MAC) ability to fly in 30,000 troops in less than two weeks and the ability of prepositioned ships located at

Diego Garcia to "marry up" with these troops in only seven days.

Chapters on sea lift, overland transportation, and containerization provide equally detailed analysis. The authors skillfully juxtapose detailed statistics with often entertaining anecdotes that describe how everything worked or, in some cases, did not. The sea lift was so enormous that at one point there was one ship every 50 miles between the continental United States (CONUS) and Southwest Asia. Further, heavy use of containers (along with the 463L pallets used for the airlift) created a critical shortage worldwide.

Several themes run through this book, the first of which is the importance of joint and multinational operations and the critical role of USTRANSCOM in orchestrating the entire strategic lift. Through its three components—MAC, Military Sealift Command (MSC), and Military Traffic Management Command (MTMC)—USTRANSCOM quickly evolved into a war-proven command. Second, thousands of dedicated people—active duty, guard, reserve, and civilian—met the challenge despite grave risks to themselves. Matthews and Holt note how CRAF crews flew into airfields without adequate chemical warfare training and how C-141s, C-5s, C-130s, other aircraft, and merchant marine shipping never stopped their missions despite Scud missile attacks and the constant threat of chemical weapons.

A third theme comes out distinctly: Carl von Clausewitz's concept of friction (what can go wrong, will) and the ways that USTRANSCOM's people and components successfully worked around problems such as C-141 structural cracks; ineffective command, control, and communications; and poorly prepared deploying units. The authors spare no criticism of this operation and clearly state how USTRANSCOM used this experience to lay the groundwork for years of improvement.

A fourth theme is that a worldwide Defense Transportation System (DTS) doesn't just happen but requires extensive planning, significant funding, well-trained and dedicated people, modern equipment, and proven leadership. Due in part to the enormous success of USTRANSCOM and the stark revelations of many DTS shortcomings, plans for long-overdue improvements have finally been getting increased funding. The final theme is the critical importance of strategic mobility to US defense strategy—especially in view of the current reliance on "swinging" huge forces in just weeks between two Gulf War-sized major regional contingencies (MRC).

So Many is an invaluable contribution to military studies in general and to joint/multinational operations in particular. The authors have produced a highly detailed and fascinating book about the biggest strategic lift of modern times and its crucial role in defeating the forces of evil in Southwest Asia. I strongly recommend it to all operators, planners, and logisticians, as well as all students in professional military education schools and others who are interested in learning how military operations really work—as opposed to learning how they appear to work according to Hollywood. This is a book you should *not* miss.

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A Yankee Ace in the RAF: The World War I Letters of Captain Bogart Rogers edited by John H. Morrow and Earl Rogers. University Press of Kansas, 2501 West 15th Street, Lawrence, Kansas 66049, 1996, 259 pages, \$24.95.

In the introduction to *A Yankee Ace in the RAF*, Earl Rogers—who edited the work with Prof. John H. Morrow—writes, “Most letters are written by ordinary people.” Letters and diaries, two of the greatest pillars of historical research, were indeed written by men or women who never considered themselves out of the ordinary. Those who find themselves in a war want to record their experiences and thoughts. This is the great value of this book. Capt Bogart Rogers recorded his wartime experiences and was insightful as well as articulate. The reader is treated to a view of the Great War that is stripped of its popular romanticism.

The air war over the trenches was anything but romantic, and the pilots and observers who flew were not the last vestiges of chivalric knighthood. They flew in flimsy planes without parachutes, facing horrible death from incineration or from crashes that were almost always fatal. Like the infantrymen in the lice-infested, mud-filled trenches, the men in the air faced death, disease, and suffering. What separated them from their comrades on the ground was that they made the battlefield three-dimensional. They did not enter mortal combat by “going over the top”; instead, they flew into battle from an airfield.

Bogart Rogers, from Los Angeles, was a student at Stanford University when the United States declared war in April 1917. Like many young men, he was anxious to get into the war, and this led him to

join the Royal Air Force (RAF). Rogers started training in Canada, and he began a series of lengthy letters to his sweetheart, Isabelle Gibson Young, who also was at Stanford.

The war in the air was a young man’s war, and from Rogers’s letters, one sees his transition from callow youth to mature air-war fighter. In a letter written on 4 September 1918, Rogers describes his reaction to the death of a popular comrade who was shot down in flames. On 6 September 1918, he tells Isabelle about a fight in which he believed he downed two German aircraft. He describes the death of a friend and the shooting down of a German observation aircraft with the detachment of a veteran pilot. Indicative of his veteran’s status, Rogers is never pleased with the training and preparation of the new “young” pilots sent to his squadron. Rogers himself was only 21 years old in 1918. His letters also address the officers’ mess, billets, the countryside, and the devastation of war.

On 11 November 1918, Rogers wrote to Isabelle, “People can prate until judgement day about war being the salvation of nations . . . but I know that it will never be worth the sacrifice. It’s all wrong.” In May 1919, Rogers returned to California, and a year later he married his sweetheart from Stanford. He went on to have a successful, event-filled life.

Fortunately, Isabelle preserved all of his letters. They have been skillfully edited and annotated by Earl Rogers—Captain Rogers’s son—and John H. Morrow, professor of history at the University of Georgia and noted scholar of World War I aviation. Their book provides great insight into the life of an American who became an RAF ace. Because of the quality and quantity of Rogers’s letters, the reader has the rare opportunity to look into the life of a man who fought the world’s first war in the skies. *A Yankee Ace in the RAF* is a serious contribution to our growing understanding of the Great War.

Dr. James J. Cooke
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Eisenhower versus Montgomery: The Continuing Debate by G. E. Patrick Murray. Praeger Publishers, 88 Post Road West, P.O. Box 5007, Westport, Connecticut 06881-5007, 1996, 202 pages, \$59.95.

While concentrating on the arguments over Eisenhower’s “broad front” theater strategy following the Normandy breakout, *Eisenhower versus*

Montgomery offers many useful insights into problems of logistics, coalition warfare, senior command, and, perhaps above all, use of memoirs. The focus in the book—the primary basis for its organization—is the chronology of postwar publications on the debate, rather than the events, concerning the design and execution of the strategy.

The result is an interesting survey of many relevant publications of participants and historians but a disjointed and unconvincing assessment of the issue itself. Accordingly, the book's major sources are the books and articles produced by interested parties, their defenders, and historians. Although the bibliography claims use of a substantial volume of archival materials in the United States and Great Britain, one sees little evidence of that. Primarily, Murray evaluates the accounts of the participants (and their motives) rather than the decisions they reached. This approach is less serious than might otherwise be the case, however, since the book achieves its main purpose.

The author seems inconsistent in his evaluation of the issues, clearly siding with what became the American point of view and referring to the "myth" that Eisenhower had failed to grasp a chance for quick victory in 1944. Yet, in his conclusion he states that the broad front was a political necessity, while the single-thrust idea was "an operational necessity." Political necessity triumphed, says Murray, because Eisenhower was a coalition commander and because the forces of each nation had to play a role in Germany's defeat.

Eisenhower versus Montgomery is useful, primarily for its many insights into the strengths and weaknesses of Eisenhower and Montgomery as senior commanders. Raised in very different traditions and with very different lifestyles, they almost never had any face-to-face contact and rarely even spoke to each other. Murray concludes that Montgomery visited Eisenhower's headquarters only once during the entire war and that Ike visited Montgomery a mere 15 times. (Of course, Kay Summersby could not accompany Eisenhower on these visits, since Montgomery banned women from his 21st Army Group.) By way of contrast, Bradley and Eisenhower met at least 47 times. Further, Ike spoke to Bradley on the secure phone constantly but rarely called Montgomery. In fact, at one point during the Battle of the Bulge, Eisenhower was even unaware if Montgomery possessed a secure telephone line. Readers should also note Murray's distinction between the dual questions of strategy and command in considering the strategic options of 1944. This included, but was not limited to, the question of whether Eisenhower

himself should be the ground-forces commander as well as theater commander, or whether he should have either Bradley or Montgomery assume direct overall control of the land campaign.

Finally, this useful volume should stand as a word of caution to people who rely upon memoirs. For many years, the Eisenhower-Montgomery debate centered around personalities and cold war politics as much as the issues themselves. All things considered, this well-written little book has many points to recommend a careful reading. It is too bad that the price is so high.

Dr. Daniel J. Hughes
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Deterrence in the Second Nuclear Age by Keith B. Payne. University Press of Kentucky, 663 South Limestone Street, Lexington, Kentucky 40508-4008, 1996, 168 pages, \$26.95.

Success can be a dangerous thing. In the minds of most military and political leaders, the collapse of the Soviet Union and consequential end to the cold war meant a complete validation of nuclear deterrence through mutual assured destruction (MAD); indeed, the entire subject of nuclear strategy, so "hot" just a decade ago, now appears passé. Dr. Keith Payne, editor in chief of *Comparative Strategy* and adjunct professor at Georgetown University, has written a brief but refreshingly original book that serves as a much needed wake-up call for people who believe that nuclear strategy can now be safely placed on the back shelf in this post-cold-war world while we focus our attention elsewhere. The truth is, the deterrence challenge has gotten far more complex.

Nuclear strategy has usually been characterized by the division of the defense community into bipolar camps: people either believed in maintaining parity/superiority in strategic forces and were known as hawks or in MAD (as Payne calls it, "assured vulnerability") and were known as doves. Payne goes beyond this either/or thinking, insisting that we need a new synthesis from both viewpoints to develop an effective strategy in this Second Nuclear Age. Although he recognizes that the use of deterrence is and always has been "the acme of skill" (to borrow from Sun Tzu), his central thesis is that "there are virtually no grounds—other than intuition or hope—for making sweeping claims about the effectiveness of nuclear deterrence

throughout the Cold War, or to predict how future challengers will behave in response to familiar deterrence policies under various hypothetical conditions."

Payne convincingly substantiates his position with historical references to World War II as well as the Persian Gulf War, which show the difficulty of wielding the deterrence tool, so simple in theory, in a crisis. For example, the Iraqis were (apparently) deterred from using chemical/biological weapons of mass destruction by their mistaken perception of a nuclear response, even though the American government internally dismissed such a possibility out of hand. Oddly, had the American government made its position clearer (that the response would be conventional in nature—not nuclear) the Iraqis might well have acted otherwise.

Dr. Payne's masterful analysis concludes with a reexamination of ballistic missile defense and a discussion of why a limited defense system is an essential ingredient of America's future security. Military officers and senior civilian leaders involved in the formulation of nuclear strategy and war planning have a compelling need to read and think about this book.

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The Vietnam, Victory Option by Norborne Robinson III. Gram Press, P.O. Box 1825, Middleburg, Virginia 22117, 1996, 248 pages, \$35.00.

The title of Norborne Robinson's book led me to believe it would provide a serious discussion of an alternate strategy to achieve the national objectives of the United States in Vietnam. I expected the author to propose this strategy and then support his rationale with research and sound documentation. Unfortunately, this was not the case. Instead, the book devotes most of its 248 pages to background information, focusing only partially on Southeast Asia. Although some of this information is pertinent to our involvement in Vietnam, much of it is not. My other major concern is the limited amount of scholarly documentation, which made it difficult to distinguish the author's opinion from fact. I might have accepted this approach had the author provided a detailed biography identifying his background and qualifications to draw these conclusions. This information, however, was too general to be helpful.

So what was the victory option? The proposed strategy called for airpower to destroy selected

dikes on the Red River in North Vietnam. Breaching these dikes would devastate North Vietnam's rice production, which was highly dependent upon the dikes to control the river during flood stage and to provide water for rice cultivation. The strategic objective was destabilization of the Hanoi regime and its capacity to wage war. By collapsing the war effort in the North, the war in the South would come to an early halt. To avoid starving the North's population, the South Vietnamese government would provide food by means of coastal relief stations established with US assistance through a series of amphibious landings.

Robinson promulgated this strategy in 1967 via an unofficial document known as the "Linchpin Memo," distributed on Capitol Hill. Concerned that such a strategy might draw direct Chinese intervention, President Johnson did not accept this strategy or similar proposals for escalating the bombing campaign. The author does make the valid point that the potential for Chinese intervention was not seriously studied.

The book also suffers from a number of flaws, ranging from typographical errors to notes that do not correspond to the referenced text. Further, the single black-and-white map of Southeast Asia was of poor quality and offered little detail; there is no bibliography; and the index lists only individual names, not specific subjects. In short, the book's format and documentation do not measure up to what one expects from a serious academic work. Consequently, I do not recommend *The Vietnam, Victory Option* to readers of *Airpower Journal*.

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American Army Doctrine for the Post-Cold War by John L. Romjue. Military History Office, US Army Training and Doctrine Command, Fort Monroe, Virginia, 1996, 160 pages.

In today's age, the United States Army has no immediate concern for a Soviet-backed attack against the Fulda Gap and Western Europe. No longer is it necessary for the Army to stave off a smashing T-72 attack across West Germany's borders in the hopes of airlifting American troops and equipment to resupply and counter Soviet land gains. How has Army doctrine changed after the fall of the Soviet Union and the threat of an all-out conventional war with the Warsaw Pact nations?

John L. Romjue presents an interesting, but somewhat vague, look at the US Army Training and Doctrine Command's (TRADOC) current views of the doctrine of the Army in dealing with post-cold-war threats.

Romjue provides an outstanding background of the process to change the cold war doctrine, known as AirLand Battle, into the doctrine of today. This was the foremost doctrine to last the Army until the end of the cold war, basically from 1982 to 1993. AirLand Battle doctrine provided the Army with its rules and instructions for such conflicts as the Persian Gulf War. The main thrust of the doctrine was the "deeper view of the battlefield," meaning to attack the enemy's advance combat units and his follow-on echelons, therefore disrupting his ability to arrive at the battle. This doctrine was rightfully rethought as the Soviet Union had become a gaggle of independent states. The North Atlantic Treaty Organization's (NATO) fear of the European conventional invasion of Western Europe became defunct around 1990-1991, and with that change, the AirLand Battle thinking needed adjustment.

What bothers me in the post-cold-war rethinking is that the leaders of the 1990s' military doctrine decided to remain consistent with the National Military Strategy and apply doctrine to combat in large land campaigns as well as operations other than war. There are far fewer chances for the United States to become involved in such an enormous war—requiring a large land battle—other than on the Korean peninsula or in the Middle East if the rogue nations of Iran and Iraq get anxious and land hungry. The most important aspect of the post-cold-war doctrine is the necessary importance of operations other than war.

In the final formulation of the new doctrine, an Army-Navy doctrinal meeting was held as an indication of the "growing reorientation to support of the land warfare mission." This is a surprising development, as the Air Force was somehow left out of the meeting. The Air Force was not even slightly mentioned in Romjue's book as the prime mover of rapid deployment forces to any potential areas of conflicts. The Navy has no rapid response to regional conflicts other than prepositioned supply ships, for example, in Diego Garcia. This type of Army-Navy meeting of doctrinal issues is clearly a "nonjoint" perspective in the sense that the Air Force had no representation to influence the formulation of new ideas for doctrine at this meeting.

Despite what small disagreements I may have with the formulation of this doctrine, TRADOC introduced FM 100-5, *Operations*, on 14 June 1993. Based on this new doctrine, the Army's post-cold-

war fundamentals included more than just general, conventional conflict. Included in the new doctrine are such obvious operations as peace enforcement, support to insurgency, antiterrorism, counterdrug operations, disaster relief, and non-combatant evacuation operations.

Besides the operations noted above, nine principles of war were expressed as foundations of Army operations: a defined, obtainable *objective*; exploiting the *initiative*; *massing* overwhelming combat power; *economy of force*; *maneuver*; *unity of command*; *security* against unexpected enemy advantage; *surprise*; and *simplicity* of plans and orders.

Above all in this new Army doctrine is the ability of the Army to help enhance US strategic power projection capability. Force projection is important in every operation and deserves highly detailed consideration in planning measures such as intelligence, mobilization, deployment, and logistics difficulties. Some of these various measures do have their own manuals and are too numerous to be discussed in this review.

John L. Romjue presents a thorough view of the new Army doctrine in *American Army Doctrine for the Post-Cold War*. This is a good overview of the history, the making, and the explanation of the doctrine. Based on the National Military Strategy and the National Security Strategy, this doctrine could easily relate to all services in their force considerations and structures and also in their operational fundamentals of the post-cold-war era.

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U.S. Civil-Military Relations edited by Don M. Snider and Miranda A. Carlton-Carew. Center for Strategic and International Studies Books, 1800 K Street NW, No. 400, Washington, D.C. 20006-2202, 1995, 224 pages, \$18.95.

The Center for Strategic and International Studies (CSIS) cosponsored a symposium on civil-military relations in September 1994. This book, edited by Don Snider—John M. Olin Professor of National Security Studies at West Point—and Miranda Carlton-Carew—senior research analyst at CSIS—is an anthology of that conference. The views presented in this extraordinary book represent some of the best and most current thinking in the civil-military relations arena.

There is a feeling that today's US military is very different from that of 1989. The future of the armed

forces has been anything but certain, the military having undergone a major demobilization coupled with changes in mission. This, according to the editors, is the result of four trends that are "straining" civil-military relations: changes in the international system and our US strategic response, the rapid drawdown of the military, the increased role of nontraditional missions for the military, and domestic demands on the military's and society's cultural imperatives.

Many of the contributors are concerned with the concept of cultural imperatives as regards today's civil-military relations. Some of these imperatives are expressed by authors who adamantly oppose the current administration's policy of "interfering" in military matters. They believe that the top military professional, the chairman of the Joint Chiefs of Staff, should have an even stronger voice in articulating military matters. Others have no doubt that the military must be curbed because it is too vociferous and intrusive in politics.

The contributors almost totally agree that the study of civil-military relations has changed little since the publication of Huntington's *The Soldier and the State* and Janowitz's *The Professional Soldier*. Throughout the cold war, the task of confronting the Soviet threat and operating in the nuclear age kept the military focused on containment strategy while the industrial complex built the appropriate weapons and the civilian leadership financed the cost. Change began with the Goldwater-Nichols Department of Defense Reorganization Act, the demise of Soviet-US competition, and the increased use of the military in domestic and international humanitarian operations. Although the contributors do not believe that the military is out of control, they do call for a fundamental examination of where civil-military relations are heading and an examination of how "joint" the military services have become.

David R. Segal, professor of sociology and government at the University of Maryland, doesn't particularly subscribe to the "crisis" notion, believing instead that the balance of influence in government has shifted in favor of the military. What many academicians did not see, according to Segal, was the "sociological" impact of Goldwater-Nichols, which requires the services to cooperate rather than compete for budget dollars and weapons systems. The "conquer and divide" technique, formerly used to ensure that Congress had another means to control the military, now has much less impact. Many of these intellectuals did not foresee that making advanced graduate degrees all but mandatory for promotion in the officer corps

would result in a military that was more politically astute when dealing with civilians and legislators in matters of budget and policy. Finally, many scholars did not realize that by 1994—when four out of five legislators, the commander in chief, the secretary of defense, and other key administration officials would have no military experience—these civilian leaders would be susceptible to undue influence by the military.

U.S. Civil-Military Relations not only encompasses current thinking about a very important subject but also traces the historical and cultural roots. Further, it serves to remind military members that pressures to reduce spending, increase mission requirements, and expand demobilization will continue. The divergent and well-reasoned perspectives of the contributing authors make this book a must read for military members in both the active and reserve components.

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Military Leadership: In Pursuit of Excellence, Third Edition edited by Robert Taylor and William Rosenbach. Westview Press, 5500 Central Avenue, Boulder, Colorado 80301-2877, 1996, 235 pages, \$59.00 hardback, \$19.95 softcover.

Following in the best traditions of the first and second editions, the third edition of *Military Leadership: In Pursuit of Excellence* is a valuable contribution to the military leader's toolbox. Both our officers and enlisted professionals should add this book to their personal library. The book is logically divided into five major sections. The first section, titled "Leadership in Perspective," is designed to accomplish two major objectives. One is to "level the playing field" so that all readers will understand the context of the remaining sections. The second is to help the reader define *leadership*, a word and concept that all but defies any true definition. Armed with these two building blocks, the reader can use the remaining sections as the resources they were meant to be. The second section, "Lessons from History," tries to prove to the reader that the problems and challenges we face day-to-day as leaders are not new. Leaders throughout history have struggled with the very same challenges and their solutions might be applicable today. Even if we cannot gain insight from historical solutions, those who thought critically about leadership and put those thoughts to paper prove to us that we may

just be "reinventing the wheel." The third section deals with a subject that is too often neglected in our learning about leadership: followership. Remember, it makes no difference what our position is in the Air Force—from the day-one basic trainee to the chief of staff—we are all followers; we all report to someone. To wrestle with issues of followership in a book devoted to military leadership is a breath of fresh air. Too often we overlook followership as an important trait in our subordinates and in ourselves. Yet, as the Air Force evolves into a leaner, more capable force, good followership will be essential to allow decision making at the lowest level and initiative to try new approaches to old problems, freeing up our bosses' time for the activities they should be focused on. The fourth section deals with the "Climate, Culture and Values" of the leadership environment. The issues of how your people interact with each other and with those outside of your organization, how well the mission is understood and internalized, and how you set and enforce standards are all covered under the umbrella of climate, culture, and values. The nation trusts us with its most valuable treasure, its sons and daughters (and some very valuable monetary and equipment resources as well). How we develop an environment for effective mission accomplishment and the required personal growth of our future leaders may be the most important job military leaders have. The fifth section is entitled "The New Realities" and focuses on some of the current leadership dilemmas and how one might approach them. Issues such as women and gays in the military and exchanges between industry and the military for mutual growth and development are just two of the topics brought into the light for candid discussion. Should the military be used as a vehicle for social change? The answers to these questions and others are directed at military leaders of all levels.

This book provides a wealth of information for military leaders, but not as a single reference. *Military Leadership: In Pursuit of Excellence* makes a wonderful beginning to any warrior's quest for knowledge about leadership, but it cannot and should not be the end to any leadership development program. There is no end.

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Future War: An Assessment of Aerospace Campaigns in 2010 by Col Jeffery R. Barnett. Air University Press, 170 West Selfridge Street,

Maxwell AFB, Alabama 36112-6610, 1996, 169 pages.

Future War proposes that Pax Americana will be short-lived. In 10 to 20 years, niche competitors will threaten US interests. In 15 years, a peer competitor may emerge with power comparable to that of the United States.

Barnett postulates that warfare will focus on basic precepts that constitute a revolution in military affairs (RMA). Future wars will focus on information, both obtaining it and denying it to an adversary. Centralized command, control, coordination, computers, and intelligence (C⁴I) is the wave of the future. Signature reduction, mass, shock, and speed are vital to penetrate enemy defenses, which should then be attacked in parallel. Target discrimination and precision munitions will be fundamental in warfare.

The author provides a road map for military success—unfettered resources and boundless access to technologies. He also presents a recipe for total economic defeat by failing to grasp the social and political cost of fielding systems such as stealth bombers while also moving new programs into the force structure. No nation can afford such a dream without tremendous social dislocation and political upheaval. No nation could develop, manufacture, and integrate a full spectrum of novel systems in 20 years. Although Barnett is correct in saying the battle for space will be a feature of future wars, he is wrong to suggest that money, technology, or time is available to build space programs in 20 years.

Barnett postulates a "high-end" war against a similarly equipped adversary. The future does not hold such a threat. Many theorists suggest that future conflicts will be low intensity engagements, operations other than war, involving enemies other than traditional nation-states. "Goldplated" weapons are not the most efficient response to guerrillas or terrorists.

Future War paints a strategic vision, but it fails on other fronts. Barnett suggests that commanders separated from their staff and troops constitute an effective control technique. C⁴I is a useful command tool, but leaders must be involved directly and in person to assess the morale of their troops and feel the pulse of the battlefield. This is a time-tested and proven concept. Commanders must lead from the front, or they are doomed to a bunker mentality and failure. The author fails to consider an enemy's ability to attack or respond, hoping that the overwhelming shock effect of a single attack would drive an enemy to surrender. Barnett pre-

sents an alternative future of some merit. The United States must pursue key technologies and weapons aggressively. He provides valuable thoughts on novel employment concepts and serves notice that information, C⁴I, penetration, and precision target identification and engagement are essential concepts in future conflicts. Further, he provides some operational areas worthy of examination, including space-based warfare, battlefield awareness, and leverage-of-decision loops. But he fails in his understanding of political-economic realities.

With no peer or even viable niche competitor on the horizon, the nation is unwilling to dedicate more money for defense. Without public support, Congress will not fund costly and risky undertakings such as the militarization of space. Barnett does not understand research, development, and acquisition processes. It takes time and money to move from basic research to production of sufficient numbers of a weapon system to make a significant difference in battle. It takes time to develop employment doctrine and train on new equipment. One need only review the future defense plan, service modernization programs, and the Department of Defense budget to realize that the bulk of the author's vision is a pipe dream. The national will, the manufacturing base, and the funding levels of military research and development all work against the dawning of a new era of warfare in the next 20 years. His awe of technology overwhelms his knowledge of application of this technology. The mere fact that an emerging capability exists does not translate into a full-fledged ability to incorporate it into war.

In conclusion, Barnett seems to advocate that the United States prepare itself for the wrong war with unnecessary weaponry at the expense of tested principles of war and at an unacceptable cost to the people of the nation.

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Future War: An Assessment of Aerospace Campaigns in 2010 by Col Jeffery R. Barnett. Air University Press, 170 West Selfridge Street, Maxwell AFB, Alabama 36112-6610, 1996, 169 pages.

This book offers a peek at the little-explored subject of conflict in the twenty-first century. What will conflict be like? What does it matter? In *Future War*, Barnett explores the answers to these questions as they apply to aerospace forces in a

state-versus-state conflict. Already widely published in newspapers and military journals, he brings a wealth of academic and operational experience to this effort.

Aiming squarely at Air Force officers, he describes an ongoing revolution in military affairs (RMA)—one being underwritten by advances in technology but yet to spawn the doctrinal changes necessary to take advantage of them. He describes the technological advances and then proposes doctrinal changes that must occur if the United States—and the Air Force in particular—are to survive.

The author holds that to be successful in the future, the United States must prosecute "parallel war," the simultaneous attack of enemy centers of gravity across all levels of war, at rates faster than the enemy can repair and adapt. Barnett borrows the term from Col John Warden, with whom he worked in the Checkmate planning cell during the Gulf War. Although he acknowledges that it is not a new theory, he argues that only recently has technology allowed execution.

Four developing areas will forever change the way wars are fought. Advances in information will permit rapid gathering, fusing, and analysis. Advances in command and control will permit near-real-time decision making over a broader scope. Advances in penetration, primarily due to stealth, will make even the most robustly defended targets vulnerable to attack. And advances in precision will permit large-scale attacks on both fixed and mobile targets.

Importantly, the United States will not be the only state using these advances. The author concludes that over the next 10–15 years, two classes of adversaries will take advantage of these technologies and rise to challenge US interests. "Peer competitors," capable of militarily challenging the United States, would have as their goal capturing a vital interest of the United States and then defeating the US military response. "Niche competitors," on the other hand, would be incapable of defeating the United States on a broad scale. Instead, their goal would be to make the cost of US involvement prohibitive. The author paints a picture of these adversaries owning thousands of stealthy cruise missiles (which peers could manufacture and niches could purchase). Against that backdrop of what the future will be like, the question "What does it matter?" suddenly becomes clear.

Barnett argues that doctrinal changes must occur to take advantage of this technological revolution, and he makes several proposals in the context of the four technological areas. He warns that these

will be hard-fought changes since they will "challenge career paths, hard-won modernization programs, professional military education, and a host of other facets crucial to success in war."

Because of the book's focus on the future, it is necessarily light on research and heavy on deduction. Unfortunately, the author stumbles here. For example, technology advances will allow the joint force air component commander (JFACC) to operate from the continental United States (CONUS) but apparently will not be sufficient to allow theater-based access to CONUS databases or to enable operations while deploying. He argues for a multi-theater JFACC with a consistent concept of operations but does not tackle the sticky problem of what happens when the JFACC is also combined force air component commander (CFACC). His arguments for a JFACC operating closer to planners and targeters imply that such operations will occur at Headquarters Air Force, and they fly in the face of joint operations mandated by the Goldwater-Nichols Department of Defense Reorganization Act. Further, his arguments for centralized execution of air-defense assets ignore the fact that this is the key vulnerability in an air-defense system, not to mention that it runs counter to Air Force doctrine. Still, these inconsistencies affect only the author's specific recommendations; they do not undercut his basic thesis.

You should read this book. Its real value lies neither in the accuracy of its projections nor in the efficacy of its specific proposals, but in opening the door to serious future debate. Ultimately, USAF leaders must either make doctrinal and organizational changes or procrastinate and risk defeat from a competitor who does not make the same mistake.

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The First World War: A Complete History by Sir Martin Gilbert. Henry Holt and Company, 115 West 18th Street, New York 10011, 1996, 615 pages, \$19.95.

At least a dozen one-volume histories of the First World War have been published since 1950. This book is a useful, if limited, addition to that collection. Gilbert, Winston Churchill's official biographer and author of 20 other major histories (as well as a dozen historical atlases), attempts a more detailed look than other authors, while trying to

convey the immense scope of the conflict. He draws from a rich variety of sources, weaving his narrative through every front and campaign, however obscure. Much of the book is given over to anecdotes of the famous, or those who later became so. Churchill is prominent here, as one would expect, but so are many of the war poets, authors, painters, musicians, philosophers, and others who gave us the war's rich literary and artistic heritage.

The book also contains a great wealth of factual detail. Here readers can find (if they look very closely) the number of German U-boats in service and sunk during the war, the name and fate of each major surface combatant taking part in the first naval assault on the Dardanelles on 18 March 1915 (including the exact number of sailors drowned on each ship sunk), the names of each Irish guardsman killed at Loos on 27 September 1915, the exact number of horses and mules killed at Gallipoli, and on and on. Indeed, the wealth of detail is the book's great weakness. Facts bombard the reader like an Allied rolling barrage, and to much the same effect: the ground is muddied, but the objective is not attained. The reader becomes bogged down in a mass of picayune details and loses sight of the grander scope of the war.

Part of the problem here is in the writing; other books have told the story better and have better conveyed that grander scope. Gilbert's workaday prose suffers in comparison with the likes of Cyril Falls's elegant *The Great War* (Putnam, 1959) or S. L. A. Marshall's splendid *World War I* (American Heritage Press, 1964—a minor masterpiece of the military historian's art and arguably the best single-volume history of the war). There is so much here that the book often reads like a travel diary or a clerk's tally sheet. The narrative often devolves into a bland catalog of facts, with no attempt made to provide insight into why an event happened or why a leader made a given decision.

Note, for example, Gilbert's description of the taking of Riga in 1917, an event that marked the Germans' first use of experimental infiltration tactics on a large scale (a fact noted by almost all the other one-volume histories): "During the first week of September [1917] the Germans achieved two victories at the extremities of the Eastern Front. On September 3, after a massive bombardment with more than 100,000 gas shells, German troops drove the Russians from the Baltic port of Riga. On the Roumanian front, at Marasesti, the Germans advanced five miles on an eighteen-mile front, taking 18,000 prisoners." And that's *it*—another item in the catalog, a few statistics, and no insight. Too much of the book is this way.

Nevertheless, the book does have its strengths. The thread of lucid narrative emerges in the last two chapters, which concern the postwar environment and memorials of the war. Much of the outstanding poetry written during the war is excerpted here, as are substantial passages from wartime memoirs. Gilbert also attempts to trace the wartime evolution of certain ideas and ideologies through the lives of prominent advocates. Bolsheviks, Mensheviks, nascent Fascists, Zionists, German Spartacists, Irish nationalists, and pacifists are all here. Five sections of excellent photographs supplement the text. The book also boasts a good set of maps, but these are placed inconveniently, at the end of the narrative, and not close to the relevant text, as in Gilbert's *The Second World War: A Complete History*.

In sum, there is nothing new here, and much of what is old is hard to find within the vast clutter of facts. This book is not the best choice for the general reader looking for a solid, easily read account of the war. It may, however, be a useful addition to the library of a professional military reader or historian seeking to supplement one of the better-rounded histories.

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Frontline Airline: Troop Carrier Pilot in World War II by John R. Lester. Sunflower University Press, 1531 Yuma, Manhattan, Kansas 66502-4228, 1994.

Frontline Airline is an interesting and enjoyable account of an airlift pilot in the Pacific theater. The author, Lt Col John R. "Bob" Lester, USAFR, Retired, uses his personal experiences recounted after 50 years to create a well-written memoir about a crucial but often ignored piece of military history—airlift.

The book begins with Lester's receipt of his "call to duty" in February 1943 and progresses through basic training, flight school, and finally action in the Far East. Lester recounts in often vivid detail milestones in his transition from civilian life to becoming a first lieutenant in command of C-46s and C-47s. Most of this book consists of copies of his orders, letters home to his parents and wife, and personal anecdotes. Lester skillfully organizes these with historical background.

The author's odyssey continues with basic training in Atlantic City, New Jersey, long before casinos

arrived. He establishes several basic themes in the book's first chapter. The first is his fond recollection of an America that was "united in purpose, supportive of its military, and accepting with firm values." The second theme concerns an America that was a sleeping giant, quickly awakening to its potential as it fought the battles of World War II. The third addresses the inevitable growing pains of a peacetime military suddenly expanding enormously to meet imminent threats. The fourth theme, repeated in thousands of other wartime books, is the journey of a young person through military training, courageous combat, and back to civilian life. Lester uses effective and colorful "war stories" to illustrate these four themes throughout his book.

His two months in basic training were marred by frequent hazing incidents, profane language by drill instructors, and midnight exercises of questionable value. One interesting memory featured Lester's belief that the most dangerous aspect of basic training was exposure to disease; he was hospitalized for measles for two weeks, and several other cadets died of meningitis. Later in the Pacific, malaria would take its toll.

After basic, Lester completes preflight and primary flight training, experiences that proved to be very similar to modern-day undergraduate pilot training (UPT). Classroom study alternated with classes in physical fitness and actual flying in PT-23s, PT-9s, and AT-29s. Washing out and getting killed were always on every cadet's mind, and the author recounts how the Army Air Corps lost almost as many in flight training as it did in actual combat. He also states how washing out was a "fate worse than death."

Finally, after completing advanced flying training, Lester gets his silver wings, a commission as a lieutenant, and an assignment flying C-47s in Troop Carrier Command. The primary purpose of this command was to "put paratroopers and gliders into combat behind enemy lines." As Lester finishes his final training in the C-47, he gets married. As a sign of the times, he makes a point of recounting how he had to get permission from his and his fiancée's parents before the wedding. Another example of American values from that era involves the treatment that he and his crew received when they flew cross-country to gain flying time. Almost always, they were treated like royalty, with restaurants, businesses, and others going out of their way with hospitality. Often, this goodwill resulted in many evenings of heavy drinking and late evenings on the town.

Finally, he gets orders to deploy. From this point, the book gains momentum as Lester is finally thrust

into action in the Pacific, and his cache of war stories begins to grow quickly. His first stop in a combat zone was on the island of Biak in northern New Guinea. On their first day, Lester and his crew attempt to rescue a downed Australian pilot. They use a PBY flying boat even though they know it is unsafe to fly, proceeding despite being hung over from drinking scotch. Unfortunately, the Japanese have killed or captured the downed pilot, and Lester and his crew barely make it back to Biak without killing themselves. This war story shows how attitudes towards safety and heavy drinking have changed dramatically in the Air Force over the decades, but it also shows how courage has not changed.

Although Lester and his crew saw little combat, they did not escape the horrors of war. They flew numerous aeromedical evacuation flights from Leyte to Manila, witnessing B-29 and B-32 crews making emergency landings at their base after attacking Japan. Ironically, botulism either killed or made seriously ill the entire crew of one bomber, while another bomber barely landed with heavy battle damage and half the crew dead or seriously wounded.

Lester recounts both serious and humorous memories of his time in the Pacific, doing so with emotion and historical accuracy. He describes an open-air Easter mass in April 1945 that brought tears to the eyes of most of the men. According to Lester, this event reaffirmed the statement that "there are no atheists in foxholes." These poignant and often moving stories are balanced by many humorous ones, such as his being the first American seen by the citizens of a Japanese village during the postwar occupation. He walks into an elementary school, and the children are petrified of him because of all the wartime propaganda that depicted Americans as evil. Lester simply tells the kids they have the day off—which breaks the ice and tension in both the school and the entire town.

Lester's accounts of postwar Japan bring the book to a close but not before he gives his opinions on the morality of war and the impact of the war on him. He strongly supported the atomic bombings as a way to lessen casualties in the long run, and he clearly has no regret about the devastation the war brought to Japan. Indeed, estimates predicted that an invasion of Japan would have resulted in the destruction of at least 30 percent of Air Corps transports.

Frontline Airline is a well-written, concise memoir of an airlifter who served his country with distinction and pride. John Lester accomplishes what he set out to do: provide the reader with an

accurate account of his service as a C-46 and C-47 pilot. By weaving together numerous war stories, both humorous and deadly serious, he creates an interesting read that is a true contribution to the very small number of books on airlift. For people interested in air mobility, I highly recommend *Frontline Airline*. In fact, I even recommend it to the fighter pilots who read books.

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Dominant Battlespace Knowledge: The Winning Edge edited by Stuart E. Johnson and Martin C. Libicki. National Defense University Press, Fort Lesley J. McNair, Washington, D.C. 20319-6000, 1995, 149 pages.

The authors of this monograph examine what has been billed as the third revolution in military affairs—namely, information warfare. However, even that term does not adequately describe what battlefield dominance encompasses. The ability of sensors to work with precision weapons to strike at a wide range of targets before the enemy can react is the essential goal of battlefield dominance. However, achieving this revolution in military affairs requires significant developments in intelligence, surveillance, and reconnaissance; command, control, communications, computer applications, and intelligence; and precision force. Merging our increasing capacity to continuously gather real-time, all-weather information with our ability to process and make sense of this voluminous data builds the realm of dominant battlespace knowledge.

Utilizing contingency scenarios (Southwest Asia and Korea), one chapter points out that this new capability permits the shifting of war-fighting assets from strategic to more immediately effective tactical targeting; flattening hierarchies; and changing the planner's role from strategic allocator to resource assembler. Operating inside the enemy's decision-making loop is the key to dominant battlespace knowledge.

Examining the concept of dominant battlespace knowledge from all aspects, the authors explore the changes the United States might have to undergo and the degree to which the enemy can adapt or attempt to subvert this new strategy. Although no foe is capable of doing so at present, the authors argue that the United States must push forward in this revolution and bring about the technological and strategic innovation necessary to ensure that it

remain a world leader. The book is thus also an argument that the military continue to receive the investments necessary to achieve these goals. As the revolution continues, formal changes in the structure and training of the US military will have to occur. It is here that institutional resistance causes military revolutions to pass to other countries, since some cannot realign themselves to take advantage of certain changes.

Dominant Battlespace Knowledge is a must for any strategist and information warrior. It illustrates that there is more to information warfare than computers and that structural changes to allow the United States to exploit these changes and revolutions in military affairs are very far reaching. New acronyms and concepts that require some background knowledge make the book slow reading. The importance of dominant battlespace knowledge, however, requires military officers to grasp and implement this concept.

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Troubled Partnership: A History of U.S.-Japanese Collaboration on the FS-X Fighter by Mark Lorell. Transaction Publishers, Rutgers University, New Brunswick, New Jersey 08903, 1996, 469 pages, \$24.95.

The last decade has seen the growth of cooperative weapons-development ventures between nations as a means of sharing the cost of expensive weapons development. The FS-X, a program between Japan and the United States, grew out of Japan's desire to develop a "modern Zero of the Post-war era" and the US attempt to kill or control the program. Mark Lorell's *Troubled Partnership* takes a detailed look at the FS-X program, focusing on technology transfer and the long-term implications of cooperative development programs for the American aerospace industry and US security policy. The book is the result of a RAND research project from the early 1990s and is intended to guide "US government officials in formulating better policies and strategies for effective military technology collaboration with Japan and other allies." As such, this book is not intended for casual reading.

Japanese industry and the defense establishment wanted to develop an indigenous fighter to reduce their reliance on other countries for the design of military weapon systems. They obtained

some experience through licensed assembly of various US aircraft, including the F-15, and through building the Mitsubishi F-1. The FS-X was the next step forward. Eventually, the program came to the attention of the United States. US industry perceived a shrinking market for military aircraft and feared increased competition from Japan and Israel (the Lavi aircraft). Additionally, the US government was concerned about the widespread proliferation of sophisticated weapon systems. The United States wanted to persuade the Japanese to purchase or license-produce an F-16 or F-18 variant, arguing that it would save money. Advocates in Japan resisted since they wanted to gain experience and know-how by building their own fighter. Due to US pressure applied to Japan's political leadership, the Japanese agreed to joint development.

Lorell points out that the United States lacked a coordinated "game plan," while the Japanese knew exactly what they wanted. Both sides made mistakes. The United States underestimated Japanese technological development, while the Japanese underestimated the difficulty of systems integration and the associated costs of development. The US Congress became concerned about the program when it was portrayed as a threat that could destroy the US advantage in commercial aviation. The author correctly points out that Japanese industry gained more from building components for the Boeing 777 than from the FS-X.

Eventually, the F-16 was adopted as a baseline for the design, with Japan doing most of the development in composites, avionics, and flight-control systems. According to *Troubled Partnership*, Japanese industry redesigned nearly 95 percent of the standard F-16. Japan met most of its original goals for developing an indigenous fighter without the high cost. The United States gained insight into Japanese technology and industrial processes, including the process for producing a cocured composite wing. Several of these processes were later used by Lockheed Martin on the F-22.

Mark Lorell does an admirable job of using primary source material, interviews, and periodicals to accurately portray events and their relevance. The book contains a good overview, and each chapter focuses on a particular aspect of the program. Lorell leads the reader through the maze of commissions and agreements that defined the program. The final chapter is an excellent summation of the lessons learned. Unfortunately, *Troubled Partnership* concludes prematurely. Did the final product justify the pain and agony that all sides went through? If Lorell had continued the story, the reader would have discovered that the first proto-

type flew on 26 March 1996 with test pilot Maj Teruyoshi Miwa at the controls. The fourth prototype, which had the cocured composite wing box built by Lockheed Martin, first flew on 24 May 1996. The Japanese cabinet approved the purchase of 130 aircraft and designated the production aircraft the F-2 support fighter. *Troubled Partnership* should be on the reading list for every policy maker and action officer.

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The New Tug-of-War: Congress, the Executive Branch and National Security by Jeremy D. Rosner. The Brookings Institution, Department 029, Washington, D.C. 20042, 1995, 118 pages, \$10.95.

Collective Insecurity—U.S. Defense Policy and the New World Disorder by Stephen J. Cimbala. Greenwood Press, 88 Post Road West, Westport, Connecticut 06881, 1995, 240 pages, \$59.95.

Nuclear Proliferation: Diminishing Threat? by William H. Kincade. Institute for National Security Studies, US Air Force Academy, 2354 Fairchild Drive, Suite 5D33, Colorado Springs, Colorado 80840, 1995, 56 pages, free.

Strategic Views from the Second Tier—The Nuclear Weapons Policies of France, Britain, and China edited by John C. Hopkins and Weixing Hu. Transaction Publishers, Rutgers—The State University, New Brunswick, New Jersey 08903, 1995, 279 pages, \$21.95.

The United States, Japan and the Future of Nuclear Weapons edited by Rosemarie Philips. Carnegie Endowment for International Peace, 2400 N Street, NW, Washington, D.C. 20037, 1995, 179 pages, \$12.95.

The cold war justified the possession and stockpiling of nuclear weapons. Over the decades, concern about these weapons grew to the point that some nuclear-weapon nations created the Nuclear Nonproliferation Treaty (NPT), and most of them agreed to its provisions. However, after signing the NPT, these same nations quadrupled their inventories. Now that the cold war is over and one-time adversaries are "partners for peace," many parties feel that the five nuclear powers no longer need their very large nuclear arsenals. However, these

nations argue that (1) they have to keep them because others have them, (2) they need them to defend against strategic uncertainties, (3) they cannot be sure that Russian democratization and marketplace reform will work, and (4) they need to ensure that rogue states like Iraq and North Korea do not develop nuclear weapons and pose a threat to international peace and security. The five books reviewed here counter these arguments with answers, solutions, and information that increase immeasurably the small number of facts regarding the role of nuclear weapons within national security dimensions.

In *The New Tug-of-War*, Jeremy Rosner, special assistant to President Clinton from 1993 to 1994, makes a detailed analysis of post-cold-war changes on national security policy between the National Security Council (White House) and Capitol Hill. Because the Hill believes that nuclear warfare is no longer inevitable, it is paring budgets, shifting security spending, and decreasing deficit pressures accordingly. Rosner contends that Congress is intent on dominating the budget and is not likely to relinquish control again. Therefore, the more savvy members of the executive branch (especially the Department of Defense [DOD]) should pay close attention to upcoming budget battles because they are likely to be contentious and could lead to a feeling of insecurity in a nation obsessed with global security.

Collective Insecurity is one of Prof. Stephen Cimbala's better works. He offers an excellent analysis of where US nuclear warfare strategy has been, up to the demise of the Soviet Union, and then describes in superb detail the major problems of nuclear disarmament in a time when nations professing to abhor nuclear weapons are proliferating them. Chapter 7 offers an excellent synopsis of the book, with its description of nuclear realism, a concept that helped to stabilize a bipolar world but now—for all the same reasons—threatens to destabilize the post-cold-war international environment of multipolarism.

Cimbala also addresses what the military's coercive capability has become and will continue to become with the elimination of nuclear weaponry. "Military persuasion" is the use of armed forces for purposes other than destruction, and these armed forces use either "coercive" or "basically noncoercive" actions to carry out their missions. Coercive actions include blockades, ultimatums, maneuvers accompanied by threat, and faits accomplis, while noncoercive actions run the gamut from civic actions to military diplomacy (confidence-building measures). Re-

ardless, nuclear warfare is a thing of the past. Future warfare, according to Cimballa, is "likely to be marked by a mixture of high technology equipment and low technology strategy."

William Kincade, associate professor at American University in Washington, D.C., discusses in *Nuclear Proliferation: Diminishing Threat?* how the pace of nuclear-weapons testing and deployment has slowed in recent decades while nuclear knowledge has increased. This knowledge illustrates a point neglected in much nonproliferation literature: *the crucial demarcation line in the current phase of the nuclear era lies between nuclear-weapons initiatives and viable, deployable nuclear forces.* Kincade calls for a new mind-set in the examination of nonproliferation opportunities and techniques for ending nuclear weaponry, but he urges a very different perspective.

The Clinton administration has already adopted this attitude by discarding the Bush administration's threat-based approach in dealing with former Soviet republics that possess nuclear weapons. Clinton used a conciliatory policy with the Ukraine that proved successful in eliminating that country's nuclear weapons. The administration's approach to North Korea's drive to build a nuclear weapon, emphasizing rewards rather than punishment, has met with mixed results so far. Only toward Iraq has the administration kept up the pressure, using the stick every time Saddam gives only partial or temporary compliance. According to Kincade, any way of handling nonproliferation by an administration will cause problems until we can improve the outdated mind-set of the cold war.

Strategic Views from the Second Tier, edited by Dr. John Hopkins and Dr. Weixing Hu, is a collection of papers presented in June 1993 during a research conference that explored the new strategic environment that "second tier" nations (France, Britain, and China) now find themselves in following the end of the cold war and the collapse of the Soviet Union. Their roles as independent deterrents in international politics have either been neglected or taken for granted. For example, France, Britain, and China account for less than 10 percent of the nuclear strength of the United States and probably 7 percent of that of the former Soviet Union. However, as the former Soviet Union and America draw down their nuclear stockpiles, this percentage gap will narrow considerably—to about 50 percent by the year 2000. This ratio, according to the authors, will influence future nuclear strategies and arms control. These three countries will have to be considered in all future negotiations if global nuclear disarmament is to become a reality.

Strategic Views from the Second Tier is a very important book, not only for examining nuclear-weapons policies of second-tier nations but also for understanding their rationale, deterrent strategy, and arms control policies. Because there is very little literature on these subjects, this work makes a significant contribution.

The Future of Nuclear Weapons presents the June 1993 conference report of the US-Japan Study Group on Arms Control and Nonproliferation after the Cold War. The purpose of the meeting was to deepen the understanding between the United States and Japan on sensitive arms control and nonproliferation issues since many people feel that Japan will go nuclear to protect itself as the US withdraws its presence from Japan, Korea, and Okinawa. Both sides wanted to head off potential conflicts by identifying opportunities for constructive partnership in promoting progress toward a nuclear-free world.

The group addressed seven key issues, the first of which entailed the desirability of eliminating nuclear weapons. The group concluded that such a proposal "is a plan for making the world safe for conventional warfare." A nuclear-disarmed world would be inherently unstable because, at the first sign that one state might be in noncompliance, the others would follow suit, lest they acquire or reacquire nuclear weapons too late.

The second key issue dealt with the future of the NPT. Since neither nation could agree, the study group urged that the nuclear powers give nonnuclear countries some consideration by concluding a comprehensive test ban treaty and further reducing nuclear weapons. Issues three through six addressed overcoming obstacles to a comprehensive test ban, dismantling and disposing of nuclear weapons, cutting off exports of weapons-grade fissile material, and understanding the role of civilian plutonium production in the context of global and regional energy needs and nonproliferation concerns.

The seventh issue dealt with arms control and the reduction of tension in East Asia. Japan is eager to use the regional forums of the Association of South East Asian Nations (ASEAN) to discuss issues of tension reduction. The United States has always been cool to the idea of regional security dialogues, viewing them as a potential threat to the role of US security in the region. However, that attitude is changing, and some progress is being made to expand the dialogue and reduce the nuclear-acquisition needs of nations in the region.

These five books make an important contribution to the issues of nonproliferation and the reduc-

tion and final elimination of nuclear weapons. Each postulates a world in which nuclear warfare is not an option. Whether this assumption will make operations other than war (OOTW) the wars of the future or will make conventional wars like Desert Storm the norm, no one knows. However, all the books stress that the day of deterrence is quickly coming to an end. Some of the books entertain the possibility of a new wave of nuclear-weapons acquisition by countries who would challenge American military power. A retired Indian army chief of staff who was discussing lessons of the Gulf War allegedly said, "Do not fight the Americans without nuclear weapons." Such statements do not augur well for the future of warfare. Policy planners should take note of these books and use their well-thought-out ideas to help determine whether the threat of nuclear warfare can really be put to rest or whether it will continue to be the sword we cannot sheath.

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Old Soldiers Never Die: The Life of Douglas MacArthur by Geoffrey Perret. Random House, 201 East Fiftieth Street, New York 10022, 1996, 663 pages, \$32.50.

After reading and enjoying Geoffrey Perret's previous works—*There's a War to Be Won* and *A Country Made by War*—I approached this book with great anticipation but wondered how he would make the switch from narrative history to biography. I had one more reason to read this book. Perret's last book, *Winged Victory*, was a one-volume history of the Army Air Forces in World War II, and I was curious to see if the author would incorporate airpower into his new work. I was not disappointed. Some readers will consider *Old Soldiers* a standard biography of a great general. If they look carefully, however, they will find a discussion of airpower hidden within these pages. Airmen should read this book because Perret shows an unknown side of the icon-warrior of the Pacific. General MacArthur was as pro-air as one could get—something MacArthur's other biographers allude to but not as strongly. Perret describes the general's doubts as to the efficacy of airpower, his education at the hands of Gen George C. Kenney, and his final conversion to the true faith during World War II.

Perret describes the key role airpower played in MacArthur's Pacific strategy. Once Kenney proved

the effectiveness of airpower in New Guinea, MacArthur structured his ground campaigns around it. Until the invasion of Leyte in October 1944, Allied forces in the Southwest Pacific advanced no further than the range of Fifth Air Force fighters. MacArthur paid heavily for that leap. When Navy carrier air departed, leaving the ground troops vulnerable, the general vowed never to carry out another operation without land-based airpower.

It is not necessarily the fact that Perret relates MacArthur's love of airpower—all of MacArthur's biographers have stressed the importance the general placed on airpower and the close relationship he had with Kenney—but the way he tells it. For instance, note the way D. Clayton James, in volume two of *The Years of MacArthur*, relates the story of what happened when land-based airpower finally arrived in Leyte on 27 October:

Monsoon rains and frequent Japanese air attacks during the week following the capture of Tacloban airfield made it difficult for the engineers to lay the 2500 feet of steel matting for a runway for the waiting Fifth Air Force fighters on Morotai. . . . When the first two squadrons of P-38s landed at the field on October 27, MacArthur and Kenney were waiting to greet the pilots as they stepped down from their fighters. (P. 568)

James's recounting of the episode does emphasize MacArthur's interest in his airmen. But compare James's passage to Perret's:

Two days later MacArthur was having lunch when he heard a familiar sound, the engines of P-38s being throttled back. Kenney had ordered half the 49th Fighter Group to fly up from Morotai. . . . MacArthur called for his car and headed for the airfield to greet the thirty-four fighter pilots. He shook hands with the first three as they descended from their planes onto the half-finished strip. One of them was the AAF's top scoring ace, Major Richard Bong, with twenty-eight victories to his credit. "You know how glad I am to see you," he told them, beaming. He turned to the journalists who were clustering around. "The Fifth Air Force has never failed me." (P. 429)

These are slight, but significantly different, ways of telling the same story.

Perret weaves airpower vignettes throughout *Old Soldiers*. Some of these are subtle. For instance, when MacArthur attended a strategy conference in Hawaii in 1944, he arrived, Perret points out, wearing his A-2 flying jacket (p. 403). That A-2 is captured for posterity. A statue of MacArthur with his A-2 draped across his arm overlooks the Plain at West Point. At other times, Perret is more direct.

Once, after reading a biography of Robert E. Lee, MacArthur told Kenney, "Lee's . . . last words were 'Bring up A. P. Hill's light infantry.' If I should die today, tomorrow, next year, anytime, my last words will be, 'George, bring up the Fifth Air Force.' "

Besides explaining how MacArthur wove airpower into his campaigns, Perret explains that in late 1942 and early 1943, MacArthur, thrown out of the Philippines and fighting two wars (one against Washington for resources and one against Tokyo), relied on airpower to carry the war to the enemy. While Australia and the United States were busily raising and preparing troops for battle, Kenney's air forces performed all sorts of missions, from airlift to close air support. More importantly, however, this is a biography of a good joint commander. Although intimately involved with strategy, MacArthur left the execution of the war to his ground, naval, and air commanders.

Old Soldiers Never Die is the best one-volume biography of one of this nation's greatest generals and would be a welcome addition to anyone's bookshelf. From a "jointness" perspective, Perret provides many lessons on how to fight wars correctly. Airmen will appreciate the emphasis MacArthur placed on airpower.

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World Military Leaders: A Collective and Comparative Analysis by Mostafa Rejai and Kay Phillips. Praeger Publishers, 88 Post Road West, Westport, Connecticut 06881, 1996, 185 pages, \$55.00.

This book is a study of military leaders—not of leadership. The authors attempt to answer two interrelated questions about military leaders: Who are they? and What impels them into leadership positions? Rejai and Phillips theorize that psychological predisposition, although important, is insufficient. An appropriate situation—including such factors as war, unrest, and family military or leadership tradition—is necessary to propel leaders to the fore.

To test their theory, the authors use collective biography, a methodology used in but a few previous studies and those limited by region or time. *World Military Leaders* examines leaders from four continents and four centuries.

The sample is admittedly selective, and lack of data forces the omission of such leaders as Charles

Cornwallis, Alfred Graf von Schlieffen, and Lavr Georgievich Kornilov. Adequate biographical information exists for the selected 45 leaders from the seventeenth through the twentieth centuries. The men come from developed, semideveloped, and undeveloped countries. Approximately two-thirds of the sample is from the United States or Great Britain.

Having selected the 45 subjects, the authors examine more than two hundred biographical sources for 58 socioeconomic, situational, and psychological variables. Presumably, men of similar psychological and socioeconomic circumstances will, in environments with similar opportunities, rise to similar positions. The authors expect their analysis to reveal leaders who are middle-aged (forties and fifties) on attaining highest rank, urban reared or exposed, of mainstream ethnicity and religion, and members of the middle or upper class. They should come from stable and tranquil backgrounds with many siblings (and should be either the eldest or youngest). Also, they are highly educated, apolitical, and cosmopolitan, and their fathers have prestigious occupations. Other elements are strong egos, relatively strong deprivation of love or emotional support, economic need, and a tradition of military service. Most critical is an element of opportunity, such as rising nationalism or military crisis.

Biographical sketches comprise the bulk of the study. Ranging from less than a page to nearly four, short biographies provide opportunity for authorial bias in the selection of facts. Here, one must assume the innate integrity of Rejai and Phillips.

Having set theory against evidence, the authors conclude that a military leader should be a native-born male, of a military family, born in a military town or garrison, deprived of relatives or love, vain and egotistical, and nationalist or imperialist. As expected, most leaders lack one or more of the qualifications. Happy childhoods, wealthy parents, no military tradition, and overwhelming modesty are present among the leaders. What the study reveals is that the probability of becoming a leader is greater with the right combination—not that it is inevitable or exclusive.

World Military Leaders is the authors' fifth collective biography. By now the methodology is pat—as it should be. The book is clear and compelling, definitely worth examination, but not sufficiently startling to justify a prominent place on a nonspecialist's bookshelf.

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Cessna Warbirds: A Detailed and Personal History of Cessna's Involvement in the Armed Forces by Walt Shiel. Jones Publishing, Inc., Iola, Wisconsin 54945, 1995, 328 pages, \$29.95.

Cessna Warbirds is a true military aviation enthusiast's delight—an in-depth look at a heretofore neglected topic. In this one volume, the reader not only gets thorough coverage of Cessna aircraft used by militaries throughout the world, but also an examination of the Cessna Corporation. The author, former Air Force pilot Walt Shiel, has been in the military or associated with the military aviation industry for over 25 years. Eighteen hundred of his four thousand flying hours have been in military Cessnas. During his spare time, he has done freelance aviation writing for various magazines, which helped provide the genesis for *Cessna Warbirds*—likely to be the reference on military Cessnas for years to come.

The book opens with a short but comprehensive chapter about the origins of the Cessna Aircraft Corporation and the company's bid to stay solvent in the 1930s by competing for both civil and military contracts. It is interesting to discover that Cessna—now a predominantly light-aircraft manufacturer—did make forays into the commercial airliner market, did (and still does) subcontractor work for many commercial aircraft manufacturers, and has commercial-to-military sales ratios similar to those of aviation giant Boeing. After this interesting opening chapter and another short chapter on aircraft nomenclature and numbering, Shiel provides 15 more chapters that examine Cessna aircraft used by the world's military services. These chapters include full coverage of the T-50 Bobcat, Bird Dog, T-37 Tweet, LC-126, U-3, U-17, DC-6 Series, O-2 Skymaster, A-37 Dragonfly, T-41, YH-41 Seneca, T-47A, and the Joint Primary Aircraft Training System (JPATS)/CitationJet.

Two other chapters describe early (pre-World War II) Cessna designs and forward air controller tactics. Each chapter is highly readable and can stand alone, enabling the casual reader to proceed at a leisurely pace without detailed review. Shiel provides aircraft specifications for each type of Cessna, as well as personal anecdotes from pilots who flew them. He also documents use of the various aircraft by the US Army, Air Force, Navy, and other world air forces, along with developmental issues. In short, the author provides a fairly comprehensive account of each Cessna military design.

While *Cessna Warbirds* is well written and will quite likely become the standard reference on mili-

tary Cessna designs, the book's softcover binding does not appear to be very robust. Perhaps a future edition will come out in hardcover. These concerns aside, I recommend *Cessna Warbirds* without reservation to anyone interested in Cessna aircraft in military service. It should appeal to military pilots, historians, and model builders.

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Wild Bill and Intrepid: Donovan, Stephenson, and the Origin of CIA by Thomas F. Troy. Yale University Press, P.O. Box 209040, New Haven, Connecticut 06520-9040, 1996, 259 pages, \$30.00.

The Central Intelligence Agency (CIA) officially began with the National Security Act of 1947. The story behind the development of a national intelligence organization began a decade before, as related in Thomas F. Troy's *Wild Bill and Intrepid*. In this outstanding, thoroughly researched account of the origins of an intelligence organization, Troy analyzes the beginnings of the Office of Coordinator of Information (COI) and the Office of Strategic Services (OSS).

Troy interviewed such key players as William J. "Wild Bill" Donovan and William S. Stephenson—the legendary "Intrepid." Stephenson's role in establishing an American intelligence organization comes under much scrutiny, especially his ties with Britain's Secret Intelligence Service (SIS), starting in 1939. At that time, Britain was fighting the Germans in World War II while simultaneously entertaining the idea of gradually bringing in the United States, a neutral party. How did the United States come up with the idea of starting a central intelligence organization with proposed British involvement?

Before answering that question, let's examine the Interdepartmental Intelligence Conference (IIC), created to provide a semi-informative gathering of the agencies and organizations responsible in some way for America's intelligence information. Chaired by J. Edgar Hoover, the conference included the Federal Bureau of Investigation (FBI), the Army's Military Intelligence Division (G-2), the Office of Naval Investigation (ONI), and the State Department. The IIC got word that the British Purchasing Commission wanted to set up an intelligence service in the United States. Stephenson enters the picture in 1940 with his selection to the

position of British passport control officer in New York City. Troy implies that this position carried the underlying job title of British intelligence and security systems chief in the Western Hemisphere. Another of Stephenson's jobs was nurturing the relationship between the FBI and SIS, the particulars of which came to light much later and are still questionable.

Citing the need for an office to coordinate the American intelligence effort, President Franklin D. Roosevelt created the COI on 11 July 1941. At the helm was Major General Donovan, America's intelligence idealist and possibly a "good friend" of Stephenson. In 1942 the COI was restructured into the OSS. On 1 October 1945, the OSS was abolished, leaving only a few organizations of the American intelligence establishment to become the foundation for the CIA in 1947.

Troy, a retired CIA analyst and staff officer, examines the relationship between Donovan and Stephenson during the creation of the American intelligence effort, as well as many other controversies surrounding that main issue. In later chapters, Troy touches on reports of a British offer to run the FBI and accusations that Donovan was a British spy.

Wild Bill and Intrepid is truly an intelligence treasure. Rich in information about World War II, declassified documents, and charismatic personalities, this book is recommended reading for World War II buffs and intelligence aficionados alike. It should be studied as a classic in the history of the beginnings of American national security.

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Killing Ground on Okinawa: The Battle for Sugar Loaf Hill by James H. Hallas. Praeger Publishers, 88 Post Road West, Westport, Connecticut 06881, 272 pages, \$24.95.

In spite of being the bloodiest land battle of the Pacific war, Okinawa has often been overlooked in history. Other momentous events in 1945 such as the death of Franklin Delano Roosevelt, the surrender of Germany, the employment of the A-bomb, and the end of World War II have overshadowed this campaign.

James Hallas sheds some light on a portion of the Okinawa campaign by recounting the actions of the 6th Marine Division as it fought to capture Sugar Loaf Hill. As hills go, Sugar Loaf is somewhat nondescript, being only 50 feet high and approximately three hundred yards long. As the title suggests, Sugar Loaf did indeed become a killing

ground, as the 6th Marine Division suffered over two thousand casualties in seven days of fighting. The story is told for the most part from the perspective of the survivors, pieced together from interviews and written memoirs of marines who fought there.

Hallas—the author of *Squandered Victory: The American First Army at St. Mihiel* (Praeger, 1995) and *The Devil's Anvil: The Assault on Peleliu* (Praeger, 1994)—begins by setting the stage for the battle of Okinawa. He reviews command structure and strategies for both Japanese and Allied forces. As the Allies drew closer to Japan, Okinawa became increasingly important. Its location made it the ideal staging base for attacks on the Japanese homeland. After the amphibious landing on Okinawa, US forces rapidly captured the northern and central portions of the island. The toughest fighting was yet to come as US forces approached the southern end of the island, where the Japanese chose to mount their defense.

Sugar Loaf's significance lay in its strategic position at the western end of the Japanese defensive line on Okinawa. Any breakthrough would expose the Japanese flank to attack. Sugar Loaf was only one, but perhaps the most critical, of a series of hills that made up the southwestern flank of the Japanese defensive line. The Japanese designed the defensive fires so that capturing only one hill would prove meaningless, since it would draw effective fire from surrounding hills. Consequently, all hills had to be captured almost simultaneously. Japanese artillery fire was deadly accurate and accounted for most of the casualties. The Japanese had used this area as an artillery training ground and knew the terrain extremely well. Further, they were well aware of the strategic importance of Sugar Loaf and defended it tenaciously.

Most of the book details the 11 attempts from 12 to 18 May 1945 to capture Sugar Loaf. Written from the individual marine's perspective, *Killing Ground on Okinawa* is a no-holds-barred, face-in-the-mud description of desperate foxhole-to-foxhole fighting. Heroic actions were commonplace, and casualties were extremely high. Hallas has done an excellent job of piecing the action together from individual accounts, a feat that was probably even more difficult because many of the officers and NCOs did not survive to contribute to after-action accounts.

My only criticism concerns two areas that were not well covered—specifically, the enemy leadership's perspective of the battle and the impact of Marine and Navy airpower. My guess is that the enemy information is simply not available since so

few Japanese survived the battle, but information about airpower's impact would make for a more well-rounded analysis.

Despite the neglect of airpower's role, the book appears to be well researched. Hallas lists 96 individuals who provided interviews, written memoirs, or other material. The book includes numerous unpublished works and official special-action reports, as well as published books and periodicals. The author makes good use of maps and charts to clarify the fighting and provides 17 pages of black-and-white photographs.

I recommend *Killing Ground on Okinawa* to people interested in the war in the Pacific. I believe that Hallas has done a great service by shedding some light on this battle and the brave marines who fought it.

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Monty: The Battles of Field Marshal Bernard Montgomery, first condensed edition, by Nigel Hamilton. Random House, 201 East 50th Street, New York 10022, 1994, 653 pages, \$30.00.

Monty: The Lonely Leader, 1944-1945 by Alistair Horne with David Montgomery. HarperCollins Publishers, 10 East 53d Street, New York 10022, 1994, 381 pages, \$25.00.

Nigel Hamilton and Alistair Horne have placed two more entries in the burgeoning library of World War II historiography as we celebrate the Air Force's 50th anniversary. Both authors took as their subject a man who perhaps was the Allies' most controversial general officer. Hamilton's entry is the condensed version of his official three-volume biography of Bernard Montgomery. The other, written by historian Alistair Horne with the assistance of Monty's son David, is an entirely new work.

The condensed version of the official biography is based on personal diaries, notes, letters, interviews, and official messages. In addition, Hamilton had access to all of Montgomery's personal papers, which the field marshal sold to Hamilton's father after the war. This account reveals a vengeful, brilliant, but boastful man who, it seems, could rarely—if ever—get along with his superiors. Nevertheless, his troops adored him. In his preface to this edition, Hamilton captures the essence of Montgomery:

His legacy to the Allied armies endures today: training, rehearsal, and professionalism in the handling of men and women in a democratic cause—guided by the

demand for simplicity, clear aims, frontline leadership and care among commanders to preserve human life as far as possible. Often on the border of madness in his determination to see the right military decision prevail, he was venerated by his troops but often maligned by his allies. . . . Arrogant, vain, boastful, boorish, and bigoted, he wanted to win, in his subsequent celebrity, all the battles he had lost as a child. Lacking magnanimity, he went to his grave embattled, lonely and haunted.

Montgomery was all of these things and more.

Hamilton presents a brief overview of Monty's early and later years in this version but quite properly spends nearly the entire book examining the field marshal's conduct during World War II. Perhaps the book's only failing—as is the case with many condensed books—is that at times the story seems somewhat jerky and disconnected due to the brevity of some of the episodes. However, the author did not intend to write a second edition of his masterful three-volume biography; instead, he sought to bring the full story of this interesting character once again into the public eye.

Horne's chronicle of Montgomery concentrates upon perhaps the most important year in the field marshal's life—1944-45—the last year of the war, from the invasion of Normandy to the surrender of the Third Reich in May. Written as a supplement to earlier works, the book carefully analyzes Monty's strategy and tactics. Perhaps this portrait puts the field marshal's unflattering reputation among Americans into a better perspective. It concentrates upon what is perhaps the climactic battle of the western front—the campaign in Normandy. Even the failure to capture Antwerp and the blunder of "A Bridge Too Far" almost become postscripts. Montgomery dominated the Normandy Campaign; as Bedell Smith (Eisenhower's chief of staff and one of Monty's fiercest critics) said, "I don't know if we could have done it without Monty."

Although I was skeptical about the quality of a condensed version of a three-volume study, Hamilton confined the vast majority of this edition to the World War II years of Montgomery's life, producing a credible, readable version of his monumental biography. In contrast, I expected a good historical study from Horne, the master British historian, and he didn't disappoint me. His *Monty*, like Hamilton's, is an excellent study of the field marshal. Although I recommend them both, if you want a close, critical analysis of the "crusade in Europe," turn first to Horne.

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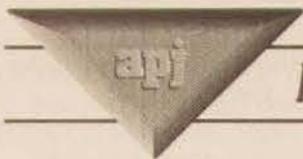
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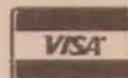
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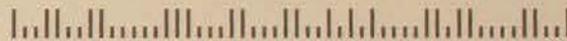
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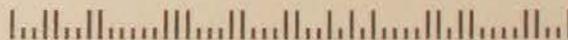
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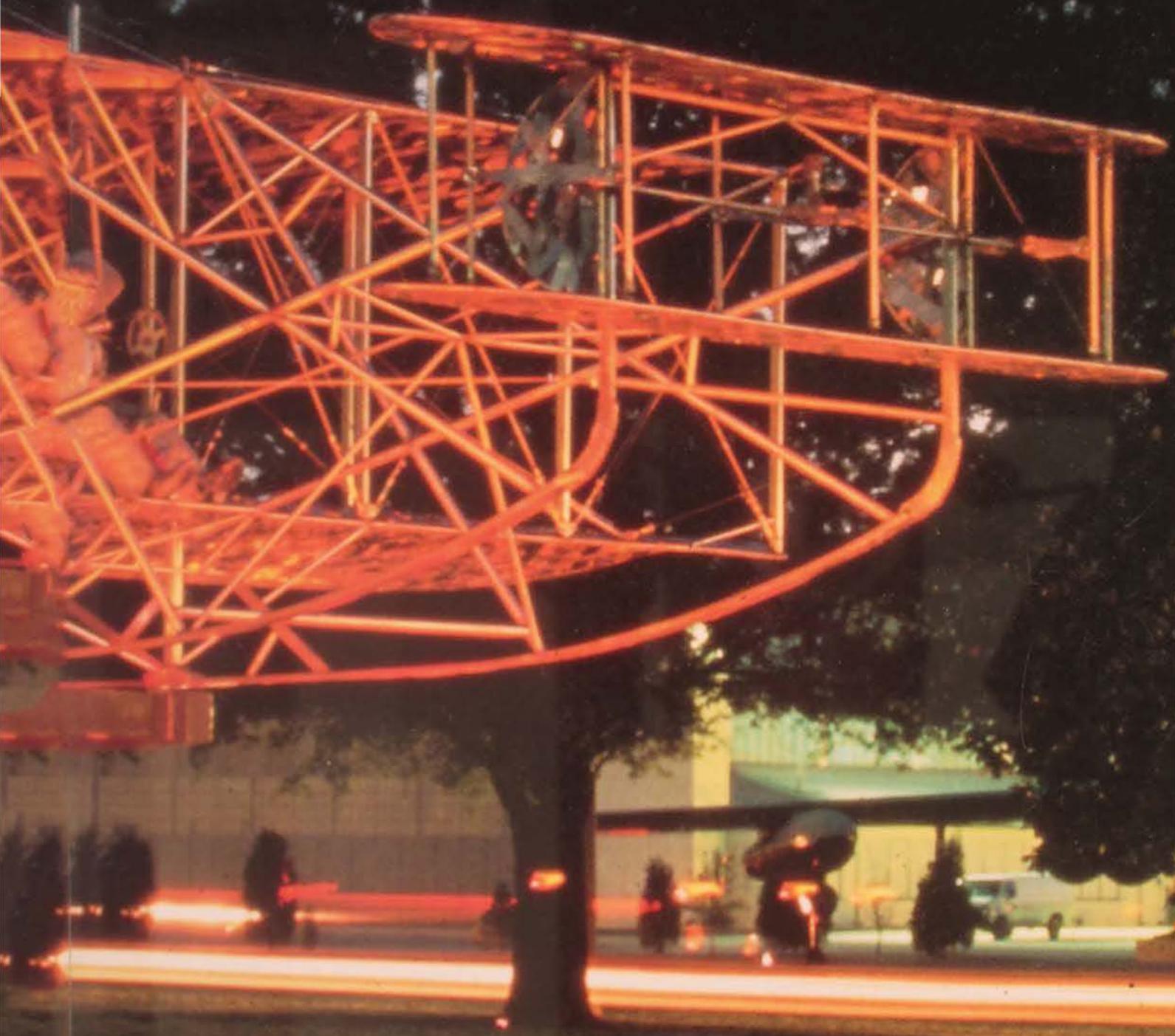


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