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THE PROFESSIONAL JOURNAL
OF THE UNITED STATES AIR FORCE
AU PRESS

AEROSPACE POWER JOURNAL

Summer 2000

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AEROSPACE POWER JOURNAL

Summer 2000 Volume XIV, No. 2 AFRP 10-1

FEATURES

DEPARTMENTS

Casualty-Aversion Doctrine?

WE DO NOT have such a doctrine, but no doubt casualty aversion involves the raison d'être of the Air Force. Our argument from the beginning has always been that airpower, and now aerospace power, can help win war with less cost to human life. Ultimately, casualty aversion drives the desired end state of war—a secure peace. It is also why we try to avoid war in the first place. Without our aversion to casualties, there would be no such concept as classical deterrence theory. Respect for human life and consequent casualty consciousness are fundamental to what makes a nation civilized; and in America's position as a world superpower, the sanctity of human life in time of war or peace certainly ought to be our foremost example to the world of how to act.

Military leadership today is taking more than its fair share of criticism for perceived excessive casualty aversion. Critics should remember that our current technologies provide phenomenal war-fighting capabilities to limit collateral damage and unnecessary casualties on both sides (with particular emphasis on *unnecessary*, lest we forget that the business of war is still killing). It is therefore a moral issue that leadership must be casualty conscious in prosecuting war, for technology has turned acceptable wastage rates of the past into today's indictments of horrifying military incompetence.

A good thing taken to excess, however, can become a problem. In postwar analysis of various conflicts (Kosovo included), it is customary to look for problems and take verbal potshots at various actors and processes responsible for less-than-perfect military efforts: "the doctrine was faulty," "the leadership was out of touch," "the equipment was incompatible," or "the process was mired in bureaucratic politics." Indeed, such is war—with its quagmire of fog and friction. Now it seems casualty aversion is contributing to the friction.

Dr. Jeff Record opens up the subject with harsh criticism and hard-hitting arguments against what he calls "elitist" casualty aversion as a legacy of Vietnam and subsequent national security policy. Closely related pieces by Dr. Karl Mueller and Maj Charles Hyde contribute other perspectives of this issue, and Dr. Dan Mortensen takes Record to task in his Vortices counterpiece. Many of the other pieces in this issue of *APJ* also relate in some way or another to the topics of casualty avoidance and aversion.

Part of the casualty issue is that casualties are—gruesome as it sounds—a vested financial interest (read ratings) for the media. With respect to Record's argument, the media might be considered elite were it not for some of the media's de facto casualty agenda to sell a story. Certainly there is an elite element to the media—respected, responsible journalists who provide invaluable service to our nation—whose outspoken casualty aversion can most likely be attributed to their role and legitimate point of view as critics from the fourth estate. Yet, pushing to excess casualty stories and other travails of military conflict are many plebeian sensationalists who fail to place such issues in proper perspective. It is all the more ironic, then, that media casualty attention can also come too close to home for journalists risking their lives to cover a story. (Last year 34 reporters were killed and another 87 imprisoned while on the job.)

Excessive casualty aversion no longer involves just body counts. High-cost technologies make "machine counts" just as much an issue. Whether the cost is in flesh and blood or steel, casualty aversion twists the famous saying that the worst thing in war is to be the last casualty—for perhaps now the first is the last. The situation reminds us of fifteenth-century Italy, where casualty-averse mercenary condottieri conducted protracted and nearly bloodless warfare. They came to expect few losses and were unwilling to accept them against a difficult enemy. In Machiavelli's apocryphal account of the battle of Zagonara, for example, there was apparently one casualty, a Lodovico degli Obizzi, who was thrown from his horse and suffocated in the mud. Have we arrived here again today where we count friendly losses of people and machines in single digits for an entire campaign? "So what is wrong with that?" some might ask.

The heart of the problem is that excessive casualty aversion breeds casualties. It gets in the way of victory. A downhill ski racer who enters the gates fearing a broken leg will not win the race and will probably fall. Likewise, a platoon leader in a firefight can face two options: (1) lose a few people while maneuvering to win the fight, or (2) fail to maneuver out of fear and lose everyone. In other words, not just tactically but strategically we must effectively apply the principles of mass, maneuver, and all the other time-honored principles of war that, incidentally, do not include casualty aversion. Obviously, we should not have a casualty-aversion doctrine, but so too should we not allow casualty aversion to drive our doctrine. We become the casualty if casualty aversion becomes our Achilles' heel. □

Ricochets and Replies

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

DEFINING A COG

After reading "Air Strategy: Targeting for Effect" (Winter 1999), I believe clarification of a center of gravity (COG) is needed. A COG must, by definition, be a "strength" in order to be, as Clausewitz said, "the hub of all power and movement, on which everything depends." It follows, then, that a "weakness" cannot be a COG, but the protection afforded a COG or its elements may be "weak" or nonexistent. For instance, armored formations without air defense are "unprotected" from air-to-ground attack but can hold their own against other tanks.

One of the best discussions of COGs can be found in Dr. Joe Strange's book *Center of Gravity and Critical Vulnerability: Building on the Clausewitzian Foundation so that We Can All Speak the Same Language,* which was published by the Marine Corps University in 1997. In brief, Dr. Strange breaks down a COG into critical capabilities; these are broken down into critical requirements; and they are broken down into critical vulnerabilities (CV). These CVs are "requirements or [their] components . . . which are deficient, or vulnerable to neutralization, interdiction, or attack (moral/physical harm) in a manner achieving decisive results—the smaller the resources and effort applied and the smaller the risk and cost, the better. CVs are where airmen

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Force-Protection Fetishism
Sources, Consequences, and (?) Solutions

DR. JEFFREY RECORD

Fetish: an object of unreasonably obsessive attention or regard

Editorial Abstract: In this article, expanded from a commentary published in the March 2000 issue of US Naval Institute Proceedings, *Dr. Record brings up the issue of casualty aversion as a negative symptom of the Vietnam conflict and the Weinberger-Powell Doctrine. He argues, with strong accusations, that the current casualty "phobia" among the military and political leadership is unwarranted—because it is not shared by the populace at large—and detrimental to America's military effectiveness, thus giving us a reason to consider greater reliance on local surrogates and perhaps a change in force structure.*

THE VIETNAM SYNDROME is alive and better than well. It was not "kicked" in the Gulf War, as a triumphant President George Bush claimed. On the contrary, it has metamorphosed into a force-protection fetishism that threatens to corrupt American statecraft in the post-cold-war era.

Force-protection fetishism was on full display during the Kosovo crisis of 1999. American behavior during that crisis reflected a desperate unwillingness to place satisfaction of US armed intervention's political objective ahead of the safety of its military instrument. Ground-combat options were self-denied.

Airpower was kept at safe altitudes. Clausewitz was stood on his head.

The immediate effect was aerial activity that permitted the enemy to pursue and accelerate the very ethnic cleansing of Kosovo that Operation Allied Force had intended to halt. The long-term effect was to broadcast to friend and foe alike America's Achilles' heel as we enter the twenty-first century. For the peoples of the former Yugoslavia, the result was the political survival of Slobodan Milosevic, a two-bit Balkan Hitler, and the operational survival, virtually intact, of the Serbian army. Allied Force thus left the door open for Milosevic to start his fifth war (against Montenegro) in the Balkans. Was preserving the life of a single American pilot—a volunteer professional—worth jeopardizing the lives of 1,600,000 Kosovar Albanians and God-knows-how-many future victims of Serbian aggression?

Nor is force-protection fetishism a passing phenomenon. It derives from America's disastrous experience in Vietnam and prevails among the present national political and military elites, who may have wrongly convinced themselves that the American people have no stomach for casualties, regardless of the circumstances in which they are incurred. Indeed, for these elites, Vietnam is the great foreign-policy referent experience—one seemingly validated by failed US intervention in Lebanon and Somalia.

Clausewitz Corrupted

Force-protection fetishism corrupts the use of force because it ignores war as "a true political instrument, a continuation of political activity by other means."[1] Effective use of force rests on recognition of the intimate relationship between military means and political ends. Obsession with keeping the former out of harm's way, even at the expense of aborting attainment of the latter, violates war's very essence as an act of policy. Indeed, one should not make a decision to use force when force protection assumes greater importance than the political object on behalf of which one contemplates its employment. Yet, the United States proceeded to attack Serbia with the primary purpose of avoiding American casualties. Lack of loss—not mission accomplishment—became the standard for judging the success of Allied Force.

Effective use of force rests on recognition of the intimate relationship between military means and political ends.

Consider the joint statement by Secretary of Defense William Cohen and Gen Henry Shelton, chairman of the Joint Chiefs of Staff (CJCS), that "the paramount lesson learned from Operation Allied Force is that the well-being of our people must remain our first priority."[2] Consider also the postwar caution of Gen Wesley Clark, supreme allied commander of the North Atlantic Treaty Organization (NATO): "In an air campaign you don't want to lose aircraft" because when "you start to lose these expensive machines the countdown starts against you. The headlines begin to shout, 'NATO loses a second aircraft,' and the people ask, 'How long can this go on?' "[3]

One cannot imagine Henry Stimson, George S. Patton, or Curtis LeMay ever uttering such statements. Surely we must make a distinction between, on the one hand, the moral and political imperative of shielding military forces from risks that are superfluous to the accomplishment of operational and strategic objectives and, on the other hand, the subordination of those objectives to pursuit of the ideal of bringing every soldier home alive. Casualty-phobic timidity on the battlefield can be just as self-defeating as bloodthirsty recklessness. One Grant is worth a dozen McClellans and Custers. Should it have taken 78 days of bombing by the most powerful military alliance in history to convince Milosevic to accept NATO's watered-down terms for peace?

If protecting one's own troops is the greatest concern, then why expose them to combat at

all? Keep them home. At the least, select only enemies incapable of fighting us in the air, as was the situation over Kosovo, and offer them nothing to shoot at on the ground as well. Indeed, why not do away with casualty-prone ground forces altogether and rely instead exclusively on airpower? Not to cast aspersions on our very capable surface forces, but think of the budgetary and force-structural implications of a US Army reduced to performing homeland defense tasks and burials at Arlington Cemetery!

During the cold war, the term *half war* referred to a war with enemies other than Russia and China. Perhaps it should now be redefined to mean wars waged without the employment of US ground forces.

The Corrupting Agent: The Weinberger-Powell Doctrine

Force-protection fetishism is rooted in Vietnam—specifically in the resultant Weinberger-Powell Doctrine, which is the intellectual construct of the strategic lessons that many military professionals drew from the war. Caspar Weinberger, President Ronald Reagan's secretary of defense, proposed six "tests" for using force, later amended by Gen Colin Powell's emphasis on overwhelming force. These tests effectively deny the legitimacy of force as a tool of coercive diplomacy by restricting its use to circumstances involving clear and present threats to manifestly vital national interests.[4] Such circumstances implicitly generate public and congressional support and place an explicit premium on overwhelming force to complete the job as quickly and cheaply as possible. Force is to be employed as a substitute for politics rather than its extension, which in turn strips diplomacy of any ability to coerce and thereby deter or alter adversarial behavior that could lead to war.

But is not force without war almost always preferable to war itself? Weinberger's tests included the presence of vital interests, a determination to win, the establishment of clear political and military objectives, the use of properly sized forces, an assurance of public and congressional support prior to involvement, and the exhaustion of all diplomatic alternatives prior to using force as a last resort. But the tests always raised more questions than they answered. What are vital interests, and who defines them? What does "winning" mean? Does not war impose its own dynamic influence on political and military objectives? How is assured public and congressional support to be gained in advance, to say nothing of maintained throughout hostilities? And are there not circumstances that encourage an early use of force rather than its employment as a last resort? Is this not the supreme lesson of Munich?

Ironically, adherence to the Weinberger-Powell Doctrine would likely have reinforced the democracies' appeasement of Hitler at Munich because an Anglo-French resort to war against Germany in October 1938 over Czechoslovakia's Sudetenland would have satisfied none of the doctrine's tests for using force. Even more ironically, this doctrine would have encouraged the United States to plunge into the Vietnam War. In 1965 the United States considered its vital interests at risk in Indochina and intervened as a last resort, an action that commanded widespread public, congressional, and editorial support. As for overwhelming force, neither the British nor the French in 1938 were in a position to conduct effective offensive military operations against Germany. In Vietnam, however, the United States ultimately brought to bear much greater firepower proportional to that of the Vietnamese communists than it did against Iraq in the Gulf.

The Weinberger-Powell Doctrine implicitly assumes that public tolerance of casualties is minimal in circumstances that do not satisfy the doctrine's use-of-force criteria, and this assumption elevates casualty minimization above mission accomplishment. Yet, this assumption not only runs afoul of substantial evidence to the contrary but also ignores the role of presidential leadership in shaping public opinion on behalf of using force. The assumption furthermore subverts the integrity of military in-

tervention by compromising its potential operational and strategic effectiveness.

Public Opinion and Casualties

Casualty phobia reflects a misperceived lesson of the Vietnam War that, unfortunately, is shared among some senior political and military leaders. The lesson of Vietnam (and of Lebanon and Somalia) is not the public's absolute intolerance of casualties but an attitude toward casualties *contingent* on such reasonable criteria as perceived strength of interests at stake and progress toward a satisfactory resolution of hostilities. Casualties incurred in protracted, inconclusive wars waged for unconvincing goals are not the same as losses taken on behalf of decisive military operations launched for a compelling cause.[5] Americans will not accept the same blood risk to prevail in strategically inconsequential civil wars in Lebanon and Somalia that they willingly accepted in defeating Nazi Germany and containing the Soviet Union.

The public's casualty tolerance depends on circumstances that include not only presidential success or failure in mobilizing public opinion but also enemy behavior itself. The Japanese attack on Pearl Harbor instantly dissolved the America First movement as a domestic political obstacle to President Franklin Roosevelt's foreign policy, and the manifest personal and political evil of Saddam Hussein greatly facilitated George Bush's successful demonization of the Iraqi dictator. In contrast, not even the Great Communicator, Ronald Reagan, could explain to the American people exactly what US military intervention in Lebanon was all about; nor could Bill Clinton convey to the public and Congress a persuasive reason for invading Haiti. Unfortunately, although study after study supports the contingent nature of the public's tolerance of casualties,[6] such studies seem to make no impression upon the White House and Pentagon.

Public attitudes toward casualties are malleable, not rigid. Saddam Hussein's repeated miscalculations during the Gulf crisis stemmed in large measure from his twin convictions that Americans could not stand the sight of their own blood and that he was in a position to spill enough of it to collapse US domestic political support for war against Iraq.

Twentieth-century America has been prepared to expend the lives of over half a million of its sons to defeat totalitarian aggression in Europe and East Asia. Only during the Vietnam War did public support crack—and even then only after the shock of the Tet offensive, four years of apparent stalemate on the battlefield, and manifest official duplicity in Washington. Indeed, in retrospect it is amazing that public support remained as strong as long as it did, given the war's geographic remoteness and the predominantly abstract quality of declared US war aims. Even after the cold war ended, President Bush mobilized substantial public and congressional support for going to war on behalf of a country little known to Americans. Although American casualties were miraculously low (146 killed in action), both the public and Capitol Hill were prepared to accept a much higher butcher's bill.[7] The Pentagon planned Operation Desert Storm, and the president authorized it on the assumption that American war dead possibly would number in the thousands.[8]

Recent polling data marshaled by the Project on the Gap between Military and Civilian Society, conducted by the Triangle Institute for Security Studies, confirms not only that "the strong belief of civilian and military elites that the American public will not support casualties is not supported by the survey data," but also that the "mass public says that it will accept casualties" in a variety of such scenarios.[9] The data further reveals that civilian policy makers—even more so, senior military officers—are much more casualty intolerant than the average American citizen.[10] The data was based on a survey of forty-nine hundred Americans drawn from three groups: senior or rising military officers, influential civilians, and the general public. Among the questions asked were, How many American military deaths would be acceptable to (1)

stabilize a democratic government in the Congo, (2) prevent Iraq from obtaining weapons of mass destruction, and (3) defend Taiwan against an invasion by China? For the military elite, civilian elite, and the general public, the number of acceptable US military dead were, respectively, as follows: 284, 484, and 6,861 (Congo); 6,016, 19,045, and 29,853 (Iraq); and 17,425, 17,554, and 20,172 (Taiwan).[11]

Why do these elites appear to be more casualty sensitive than the people they serve? Is it because the assumption of the public's intolerance of casualties excuses presidents and generals from taking the kind of battlefield risks that might invite casualties? Because casualty avoidance offers an alibi for mission frustration and even failure? Because casualty phobia reinforces the argument against using force as a tool of coercive diplomacy? The authors of the Triangle Institute's poll speculate that senior military officers may lack confidence in the reliability of civilian leaders to stay the course of intervention if casualties mount. They also suspect that "casualty aversion may be an aspect of a growing zero-defect mentality among senior officers, in which casualties are not only deaths—they are an immediate indication that an operation is a failure." Obviously, "civilian leaders must share culpability" for any rise in a zero-defect mentality.[12]

Strategic Consequences of the Elite's Casualty Phobia

Because force-protection fetishism unnecessarily degrades military effectiveness, it emboldens enemies and poorly serves a great power that dozens of other states and hundreds of millions of people around the world look to for leadership and security. The Albanian Kosovars, to be sure, were victimized by Serbian thugs, but they were no less victimized, albeit indirectly, by the casualty phobia of US elites.

Force-protection fetishism encourages military half-measures directed against symptoms rather than sources of international political instability. This was as true of the Gulf War as it was of Allied Force. In both cases, the national leadership was not prepared to run the political and military risks necessary to achieve a strategically conclusive victory. Caution may well have been justified, but the chief consequence in the Gulf and the Balkans was the survival of two rogue regimes, one of them bent on massive revenge.

Anxiety over getting involved in a long and costly Arab conflict caused the Bush administration to end the war prematurely and with little thought of the politics of war termination. While the Iraqi army was in full retreat, the administration declared a unilateral cease-fire in the absence of any Baghdad request for terms and then sent Gen Norman Schwarzkopf—without political instructions—to Safwan, in enemy territory, to negotiate cease-fire terms with a bunch of Saddam Hussein's military flunkies. (Did it occur to no one that the Iraqis should have been summoned to appear at Schwarzkopf's headquarters and told that a cease-fire required, among other things, an acknowledgement of defeat by Saddam himself?) The administration failed to take advantage of potentially decisive leverage in forcing Saddam's ouster, and it permitted the Iraqis to continue flying their attack helicopters, which they promptly used to crush the subsequent Shia rebellion in southern Iraq.[13]

The Gulf War has been touted as a model display of the Weinberger-Powell Doctrine in action. And so it was in many respects. After all, at the time Powell himself was CJCS, and he was given great latitude in designing and implementing Desert Storm. For the Gulf War, the doctrine made sense. Any president contemplating a major war against an apparently formidable enemy would be foolish indeed to launch such a war over trivial interests without public and congressional support and without a convincing diplomatic exhaustion of nonwar alternatives. At the same time, however, the rush to declare military victory and vacate the premises underscored the Vietnam Syndrome's continued affliction of the White House and Pentagon—an affliction

that precluded a strategically conclusive success. Thus, the war against Iraq never quite ended: it has continued for nine years (and counting) in the form of repeated US packages of punitive air and missile strikes and the ongoing, costly occupation of Iraqi airspace to keep Saddam Hussein "in his box."

Indeed, there might not have been any US involvement or war at all had the decision been Powell's to make. He would have permitted Iraqi aggression to stand. Powell feared a possible US military embarrassment in the Gulf and lacked confidence that the American people and their elected representatives could be trusted to support whatever military action it took to expel Iraqi forces from Kuwait. Accordingly, he waged a subtle bureaucratic campaign against going to war. During the deployment phase of the crisis, he pushed for sanctions as an alternative to war and encouraged the submission of war plans that he believed, or at least hoped, would deter his civilian superiors from deciding for war.[14] Two months after Iraq invaded Kuwait, Powell told Sir Patrick Hine, Britain's air chief marshal, that the risks of war, including a high death toll, possible degeneration into attrition, and losing the peace, were simply too great.[15] Powell, of course, went on to oppose any US military intervention in the former Yugoslavia.

The consequences of elite groups' fear of casualties in the former Yugoslavia (read fear of a Balkan Vietnam) were evident years before the launching of Allied Force. James Gow, who has written the best diplomatic history of the "Yugoslav War of Dissolution," concludes that "if there was an overall policy failure, its central feature was the absence of armed force as a bottom line. The reason for that absence was a lack of 'political will' to act forcefully in a transitional situation that appeared to be . . . laced with risk." And to what was that lack of will attributable? To the fear of Western politicians that what lay waiting for them in the Balkans was "another Northern Ireland, Dien Bien Phu, or broader Vietnam," and "particularly critical in this respect was the shadow of Vietnam hanging over US political and military leaders."[16]

To put it another way, the United States and its principal European allies failed repeatedly to make credible threats of force against Serbian aggressors because in fact they were clearly unwilling to actually use force in a convincing manner. Accordingly, Milosevic called the West's bluff repeatedly and successfully during the war in Bosnia and later rejected NATO's ultimatum on Kosovo. NATO's record of political division and military faintheartedness over events in the former Yugoslavia persisted into Allied Force in both the White House's public renunciation of a ground-force option and the initially tepid air "campaign" against Serbia. Is it any wonder that Milosevic refused to fold early (as Secretary of State Madeleine Albright and some of the administration officials expected)[17] and successfully held out for terms significantly more favorable to Belgrade than those NATO insisted upon at Rambouillet?[18]

If force-protection fetishism saved Milosevic and spared the Serbian army (which departed Kosovo virtually intact and saluting victory), it has also distinguished the US component on the United Nations peacekeeping force established in Kosovo after the war. In Bosnia, unlike other national contingents, most of the US troops were based at a 775-acre, heavily fortified but exceptionally comfortable site from which they were permitted to venture outside only with body armor and Kevlar helmets—and even then only in helicopters or convoys of armored vehicles. These force-protection measures hindered the troops' ability to perform peacekeeping tasks. In contrast, the British, long experienced in imperial policing operations and unconstrained by a political or military leadership petrified at the prospect of taking casualties, were widely dispersed in their sector, with small groups billeted in apartments and houses in tense local neighborhoods. They patrolled on foot in small numbers without armored vests or helmets, which put them in much closer touch with local residents and events. The US obsession with zero casualties

became the butt of jokes by officers from European peacekeeping contingents.[19]

Clausewitz reminded his readers that war is "a serious means to a serious end."[20] Does elevation of force protection to first place among all other operational objectives convey a seriousness of means? Does it not instead signal to adversary and ally alike the presence of a frail will? Does it not encourage enemies to adopt the simple strategy of filling as many American body bags as possible? And what does it matter that the average American is more casualty tolerant than the senior US political and military leadership? If that leadership is more concerned about the safety of its military means than a decisive attainment of its political ends, has not the United States become, in the words of Richard Nixon, "a pitiful, helpless giant?"

Remedies for Force-Protection Fetishism?

No obvious cure exists for the affliction of casualty phobia. Hopefully, the elites themselves will come to recognize that the public's tolerance for casualties is much more contingent than pessimists believe or want to believe, and that the political leadership can greatly influence public attitudes on casualties in a given situation. Given the strength of the elite's conviction that the people they serve have little stomach for war under almost any circumstances, however, it would probably take an actual demonstration of casualty tolerance to change minds. But this hardly means seeking another war just to prove a point. Moreover, the United States is fast running out of enemies capable of inflicting significant casualties on deployed US military forces.

A more promising approach to the strategic problem posed by force-protection fetishism would be greater US cultivation of and reliance on local surrogates to assume the risks of ground combat. The Nixon Doctrine makes as much sense now as it ever did, and we should not forget the Reagan Doctrine's success in Afghanistan. Of course, surrogate forces are only occasionally available and have their own political agendas. But when they are willing and (with training and assistance) able to fight a common enemy, they limit America's potential military liabilities in circumstances in which domestic political tolerance of US casualties is—or is believed to be—severely limited. Perhaps the Clinton administration's greatest squandered opportunity in the Balkans was its refusal to arm and train the victims of Serbian aggression. Arming the Bosnian Muslims and later the Kosovo Liberation Army, as well as supporting both with US airpower when necessary, would have been power balancing, pure and simple. But it would have provided an earlier and more effective check on Serbian behavior in Bosnia and Kosovo than the actual policy of hiding behind an ineffective international arms embargo of all of the former Yugoslavia and showering Belgrade with incredible threats of force.

To be sure, backing surrogates entails taking sides. But the history of international politics shows that the most effective means of thwarting bids for hegemony is to create situations of countervailing strength. When the United States can do so by developing local surrogates instead of committing its own forces, it should do so unless there is some compelling strategic or political reason not to. And yes, there is always the risk of surrogate failure, confronting the United States with the choice of either walking away altogether or committing its own forces. This is precisely what happened in Vietnam, where the United States picked a politically and militarily incompetent client threatened by a skilled and determined adversary. Indeed, once the United States took over the war, the South Vietnamese army had little incentive to fight. Circumstances in the former Yugoslavia, however, were quite the opposite—yet the Vietnam War blinded policy makers.

A final observation on force-protection fetishism: to the extent that casualty phobia persists and to the extent that it continues to promote—as it did in the war against Serbia—reliance on airpower to the exclusion of

ground-combat forces, then we need to take a new look at the present proportional allocation of resources to US ground and air forces. If in combat the United States is going to be a one-armed superpower, then that arm should be as strong as possible. □

Notes

1. Carl von Clausewitz, *On War,* ed. and trans. Michael Howard and Peter Paret (Princeton, N.J.: Princeton University Press, 1976), 87.

2. Secretary of Defense William S. Cohen and Gen Henry Shelton, chairman of the Joint Chiefs of Staff, "Joint Statement on Kosovo After-Action Review," before the Senate Armed Services Committee, 14 October 1999, 27.

3. Wesley K. Clark, "The United States and NATO: The Way Ahead," *Parameters,* Winter 1999–2000, 8–9.

4. Powell served as Weinberger's military aide and helped draft Weinberger's famous National Press Club speech entitled "The Uses of Military Power," delivered on 28 November 1984. Reprinted in Caspar Weinberger, *Fighting for Peace: Seven Critical Years in the Pentagon* (New York: Warner Books, 1990), 429–45.

5. See Richard K. Betts, "What Will It Take to Deter the United States?" *Parameters,* Winter 1995–1996, 70–79. See also Andrew P. N. Erdmann, "The U.S. Presumption of Quick, Costless Wars," *Orbis,* Summer 1999, 363–81.

6. See, for example, the following studies performed by RAND of Santa Monica, California: Mark Lorrell and Charles Kelley Jr., *Casualties, Public Opinion, and Presidential Policy during the Vietnam War,* March 1985; Benjamin C. Schwarz, *Casualties, Public Opinion, and U.S. Military Intervention: Implications for U.S. Regional Deterrence Strategies,* 1994; and Eric V. Larson, *Casualties and Consensus: The Historical Role of Casualties in Domestic Support for U.S. Military Operations,* 1996.

7. See John E. Mueller, *Policy and Opinion in the Gulf War* (Chicago: University of Chicago Press, 1994), 45, 124, 306–7.

8. Erdmann, 375–76.

9. *Digest of Findings and Studies Presented to the Conference on the Military and Civilian Society, Cantigny Conference Center, 1st Division Museum, 28–29 October 1999,* 5; on-line, Internet, 12 November 1999, available from http://www.unc.edu/depts/tiss/CIVMIL.htm.

10. Peter D. Feaver and Christopher Gelpi, "How Many Deaths Are Acceptable? A Surprising Answer," *Washington Post,* 7 November 1999.

11. Ibid.

12. Ibid.

13. Administration officials hoped that the coalition's military victory, which at the end of the war appeared more decisive than it actually was, would prompt a coup against Saddam. At the same time, the Shia and Kurdish rebellions portended Iraq's possible disintegration—something the White House most assuredly did not want. What the administration wanted was an intact Iraq without Saddam.

14. The plans included Schwarzkopf's initial unimaginative, Army-developed ground-war plan and, later, a second plan calling for doubling the size of the US deployment from a defensive to an offensive force. Brent Scowcroft, national security advisor, suspected the plans were deliberately crafted to discourage war: "The initial plan for retaking Kuwait, briefed to President Bush in October, had not seemed designed by anyone eager to undertake the task. Similarly, the force requirements for a successful offense given to him at the end of October were so large that one could speculate that they were set forth by a command [US Central Command] hoping their size would change his [Bush's] mind about pursuing a military option." George Bush and Brent Scowcroft, *A World Transformed* (New York: Alfred A. Knopf, 1998), 431.

15. For the best informed account of Powell's behind-the-scenes campaign to derail the Bush administration's drive toward war in the Gulf, see 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), 123–58.

16. James Gow, *Triumph of the Lack of Will: International Diplomacy and the Yugoslav War* (New York: Columbia University Press, 1997), 306.

17. See John F. Harris, "Reassuring Rhetoric, Reality in Conflict," *Washington Post,* 8 April 1999.

18. Among the demands contained in the NATO ultimatum issued to Serbia at Rambouillet before the war was restoration of Kosovo's autonomy. Following this, three years later, was a referendum in Kosovo to determine its future and a provision granting NATO forces unrestricted passage and unimpeded access throughout all of Serbia—not just Kosovo. These provisions were subsequently dropped as conditions of war termination.

19. See R. Jeffrey Smith, "A GI's Home Is His Fortress," *Washington Post,* 5 October 1999.

20. Clausewitz, 86.

The duty of the men at Stalingrad is to be dead.

—Adolf Hitler

Politics, Death, and Morality in US Foreign Policy

Dr. Karl P. Mueller

Editorial Abstract: In this companion piece to Dr. Record's article on "Force-Protection Fetishism," Dr. Mueller provides a balanced perspective on casualty aversion and its potential implications in military operations and on national security policy. He argues that aversion has become "cultish" due largely to technological changes in warfare that make it more feasible and, therefore, a moral imperative to conduct less brutish combat. Yet, he points out that moral obligation may just as well dictate dying for the right cause and that such morality, rather than politically expedient doctrines, should drive our policy.

AMERICAN NATIONAL LEADERS, both military and civilian, appear to be held in thrall by a cult of casualty avoidance, as Jeffrey Record compellingly argues in slightly different words in his article "Force-Protection Fetishism" (this issue). To call it a cult is not mere hyperbole. Many statesmen and generals believe, with absolute and unquestioning conviction, that the United States can no longer use force successfully unless American military casualties are virtually nil, even though there is little evidence to support this belief and in spite of its pernicious effects on US foreign and defense policy.[1]

The belief that the United States will avoid risking the lives of its troops, and will capitulate if they are killed in quantity, encourages America's enemies by offering an apparent means to defeat the numerically and technologically superior superpower. It also divides the United States from allies who do not share this belief about themselves. So buying into the myth is an act of pessimism—even of defeatism—although, of course, statesmen have often held erroneously pessimistic beliefs before. What is more surprising is that the casualty-avoidance cult is so powerful among military leaders when, as Record notes, it threatens the very existence of the US Army (and arguably the Marine Corps as well) as we know it. It also holds the potential

to transform the combat arms of the US Air Force into mere deliverers of standoff munitions and operators of uninhabited aircraft. Such a transition might conceivably make military sense, but one certainly would not expect it to appeal to traditional fighter or bomber generals.

Of course, like most myths, the belief in American casualty intolerance is constructed around a kernel of truth. US public support for wars that seem inordinately costly relative to their objectives—or that appear to offer little prospect of success—has indeed disintegrated as body counts have risen, most visibly in Korea, Vietnam, Lebanon, and Somalia—although this pattern is neither unique to the United States nor a product of the television age, as is often suggested.[2] However, historical experience offers no reason to believe that the American public will fail to support costly wars in which the lives of US troops are not apparently being wasted. Moreover, public-opinion evidence indicates that Americans have been largely indifferent to loss of life among allied forces, enemy troops, and civilian populations although, again, US leaders often believe the opposite to be true.

Behind the Cult

Why, then, do the myths of casualty and collateral-damage intolerance hold such sway? In fact, there are many reasons for the cult. In part, it grows out of paying too much attention to a small number of high-profile cases without placing them in proper context. And, in part, it has to do with many politicians, military leaders, and journalists being undereducated in history and social science. But it also reflects larger historical and technological trends: the increasing potential cleanliness of warfare and the West's slow, ongoing shift away from barbarism.

Although the idea that warfare is becoming less gruesome may seem counterintuitive at first glance, it is generally true. During the last two hundred years, both conventional land and naval combat have grown progressively (though not always steadily) less horrible for their participants in the developed world, thanks to factors such as improved medical care and casualty evacuation, mechanization, and refinements in some classes of weapons. Air warfare, too, has become a far less bloody activity over its 90 years of development. In short, the lives of soldiers have, on the whole, become less nasty, brutish, and short since the beginning of the industrial revolution, as have the peacetime lives of civilians. Warfare has also tended to become less brutal for noncombatants, except of course when they are deliberately targeted; particularly in recent years, the ability of armed forces to minimize harm to civilians when attacking their enemies has improved dramatically as a result of the revolution in precision-guided weapons. Of course, none of this means that a particular war *will* be less horrible than those that preceded it—only that it *can* be.

Along with this increasing potential for the human costs of warfare to decline has come a normative belief that they *should* do so and that war, widely considered a morally uplifting entertainment as recently as a century ago, is something that ought in general to be avoided—or at least controlled.[3] The more casualties can and should be avoided, the more justification they require and the more unacceptable the profligate waste of soldiers' lives becomes.

Thus, in some ways, a faulty or exaggerated belief in total casualty intolerance can be seen as something hopeful—as giving Americans credit for even greater aversion to death and killing than they actually deserve. However, it has a far less laudable side as well, representing the dominance of political expediency over morality, assuming moral cowardice on the part of the American people, and shifting blame onto the public for the military and political failures of statesmen and generals.

Making a Virtue of Timidity

Jeffrey Record attributes many of the failures of Operation Allied Force—most notably the failure to halt the expulsion of the Alban-

ian Kosovars—to the unwillingness of the United States and the North Atlantic Treaty Organization (NATO) to place the lives of ground troops at risk, and to the air campaign's priority on minimizing alliance losses by operating at medium and high altitudes. These are reasonable charges although it is not certain that a less cautious air campaign would have achieved better political results, even if it had been more effective at destroying Serbian ground forces. Nor can we yet be sure that the "no ground forces" pledge actually lengthened the war, although it may well have—Slobodan Milosevic probably would have doubted NATO's will to invade Serbia until Anglo-American intentions to do so were made clear late in the war, regardless of the ill-advised rhetoric coming from the White House and Brussels in the early weeks of the conflict. And an early combined-arms attack into Kosovo might have produced a far greater bloodbath for the Kosovars than actually occurred. Nevertheless, a pervasive fear of casualties, along with efforts to avoid causing civilian deaths, certainly dominated both the air campaign and Milosevic's strategy to make NATO call off the war.

Next door to Serbia, in Bosnia, the effects of the force-protection mania are also visible in a way that is less dramatic but at least as disturbing. As Record describes, if American troops often appear afraid to emerge from their compound except in heavily armed, multivehicle convoys in spite of Bosnia's low-threat environment, they can contribute little to real peacekeeping. The US military stands poised to cross the line from being the world's slightly uneasy sheriff to its downright nervous Barney Fife.

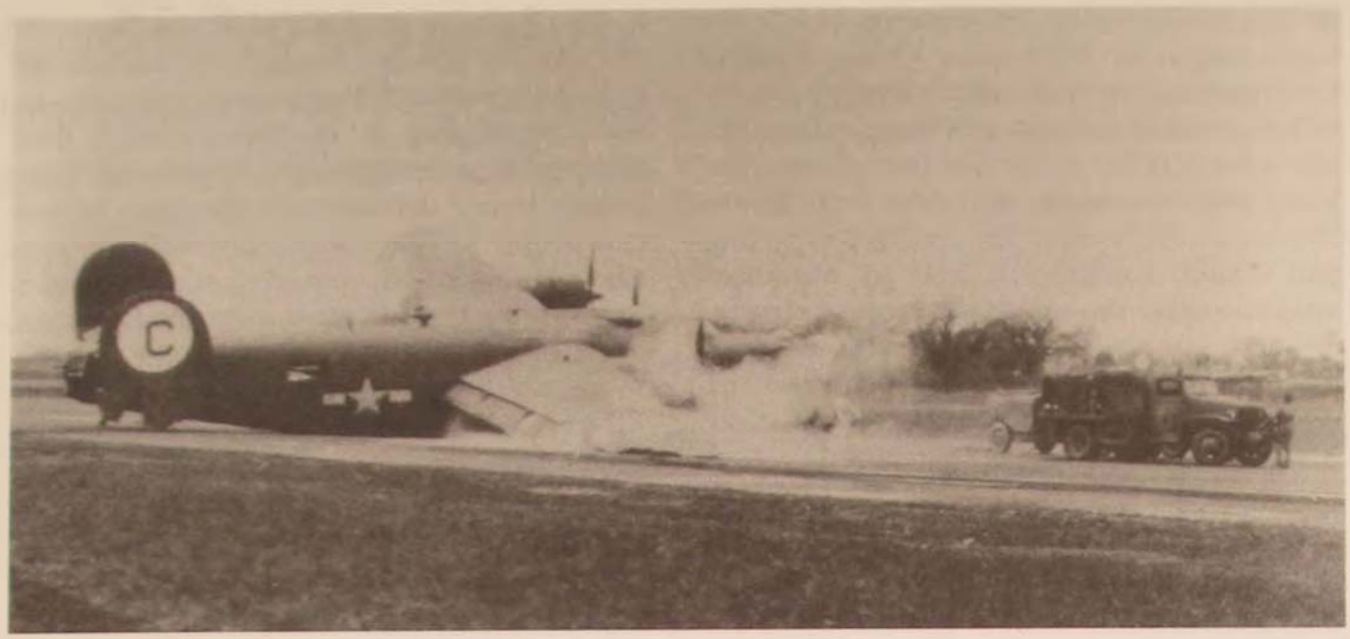
However, in both the Serbian and Bosnian cases, among others, it may not be the effects of casualty-averse US policies that are the most troubling, but their motivations. In one briefing and press conference after another, both military and civilian leaders explain their efforts to protect the lives of American troops in terms of the political unpopularity of suffering casualties, painting a picture of an American public that is too craven to make noble sacrifices on its own and too ignorant to grasp leaders' explanations of why it should. Similarly, NATO's Herculean efforts to avoid causing collateral damage during Operations Deliberate Force and Allied Force were usually justified on the grounds that they were required in order to keep the international media and the allied powers happy. Among other effects, emphasizing the political rather than the moral imperatives to avoid killing noncombatants threatens to create a litigious mind-set among air campaign planners that assumes that if a target is legal to attack, it must be worth attacking.

Does the American public really demand that the lives of US troops and those of civilians not be wasted? Will the press have a field day if civilians are killed by US bombing? At the most fundamental level, *it should not matter.* We certainly ought to protect our forces and protect noncombatants, insofar as we can, regardless of popular opinion—not because doing so is politically prudent but because *it is morally right.*

Conversely, however, there are objectives that are worth dying—and killing—in order to achieve; in such cases, it is morally wrong *not* to risk or take lives when necessary. To shy away from casualties under these circumstances strikes at the very heart of American soldiers' solemn oath to defend their country from all enemies. Moreover, to blame such a lack of national courage on the imaginary squeamishness of the electorate calls into question the philosophical foundation of the Republic itself.

Reassessing the Morality of War

Record rightly savages the Weinberger-Powell Doctrine over its prescriptions to use military force only when the most vital national interests are at stake and only when public and legislative opinion favor the use of force. As he argues, these criteria would have supported the disastrous Anglo-French appeasement of Hitler at Munich in 1938, and they probably would have suggested that US intervention in Vietnam was a good idea.[4]



The author contends that the continual development of both precision and nonlethal weapons will force us to abandon the notion that we should commit US forces to combat only as a last resort.

(Moreover, although Weinberger himself disagrees, a good case can be made that all of his doctrine's criteria were eventually fulfilled during Operation Allied Force.)[5] One could add that if the Weinberger Doctrine had held sway in the 1770s, the American Revolution—initially supported by only a third or so of the colonists—would never have been undertaken. Endorsing the use of overwhelming force to protect vital interests while prohibiting the use of limited force for more modest ends does indeed tie the hands of statesmen both unnecessarily and inappropriately, subordinating pursuit of the national interest to protection of the government's popularity.

The last of Weinberger's six criteria also merits reexamination: the widely accepted rule that commitment of US forces to combat should be a policy of last resort. Although the "last resort" mantra has a certain absolutist appeal, it is in fact a fatally flawed principle. If the reason for making force a last resort is simply to avoid suffering casualties unless there is no alternative, then American statesmen should consider using military force in many situations in which it can be effectively employed without risk of harm to US forces, a potentially common circumstance in the post-cold-war world of weak enemies and powerful standoff weapons. Moreover, putting US forces in harm's way is almost never truly a last resort—there are *always* alternatives for the world's only superpower. The fact that for 50 years the United States has opted to suffer casualties in a number of conventional conflicts that could easily have been settled by using nuclear weapons is but one clear indication that we do not actually believe that spilling American blood must be avoided at all costs short of surrender.

On the other hand, if the last-resort rule is based on the moral premise that military force is too destructive to employ unless all else has failed, it provides poor guidance in cases in which military force has the potential to inflict less harm than alternative policies. For example, in some circumstances, as was true in the 1990–91 confrontation with Iraq over Kuwait, using force sooner rather than later can be less costly than trying everything else first. Moreover, it is important to recognize that in this era of discriminate weapons, the use of force can be far less destructive than employing some other, supposedly milder, instruments of power—most notably wide-spectrum economic sanctions. This is

strikingly illustrated by Western policy towards Iraq in the 1990s, when United Nations trade restrictions indirectly led to the deaths of hundreds of thousands of Iraqi civilians, in the wake of a far more effective air war that killed only thousands of them.[6] As airpower continues to develop its precision-targeting and -attack capabilities, and as nonlethal weapons enter the military inventory, the traditional association of military force with maximum destruction will become increasingly outdated, and the last-resort principle will eventually have to be abandoned.

Making Moral Strategy

If the American public is conditionally tolerant of casualties and consistently indifferent to collateral damage, and if the central principles of the Weinberger Doctrine are little more than a list of excuses for avoiding political risk, what should guide US decisions about when and how to use military force? Inconveniently for national decision makers, the answer is that these choices call not for simple rules of thumb but for actual wisdom. Deciding which causes are worth risking American lives to pursue and what amount of risk is appropriate ultimately requires a moral, not simply a political, compass.

This is not to say that public opinion is irrelevant—in a sound democracy it cannot be. However, national leaders are obligated to lead. When they do so, they generally find that the populace is quite tolerant of their foreign-policy decisions. In fact, the American people will even support military actions that are ill advised, requiring statesmen and generals to provide their own restraints on adventurism, although these ought to be more sophisticated and well founded than those embodied in the cult of the defensive or the Weinberger-Powell Doctrine.

The best defense against losing public support for military actions once casualties begin to occur is popular conviction of their compelling moral value. To a considerable extent, this can be shaped by effective leaders, although history also teaches that the American people are not amoral dupes who will credulously accept anything they are told. Expensive wars are often acceptable, while apparently pointless or disproportionately expensive wars are not. In the end, however, the assumption that the public will not support doing that which is right is simply unacceptable as a basis for national policy. If it were consistently true, the United States would not deserve the protection of those who have pledged their lives to defend it. □

Notes

1. On the reality of US casualty intolerance, see, in addition to the sources cited by Record, Troy E. DeVine, "The Influence of America's Casualty Sensitivity on Military Strategy and Doctrine" (master's thesis, School of Advanced Airpower Studies, June 1997); and John Mueller, "Public Opinion as a Constraint on U.S. Foreign Policy: Assessing the Perceived Value of U.S. and Foreign Lives" (paper presented at the International Studies Association National Convention, Los Angeles, Calif., 14 March 2000). On the historically more common military tendency towards cultish beliefs in the omnipotence of the offense, see Maj John R. Carter, *Airpower and the Cult of the Offensive* (Maxwell AFB, Ala.: Air University Press, 1998).

2. The relationship between the decline in US public support for the televised Vietnam War and the accumulation of casualties in the conflict was roughly the same as occurred in Korea, during the age of radio and newsreels. See John E. Mueller, *War, Presidents, and Public Opinion* (New York: Wiley, 1973).

3. See John E. Mueller, *Retreat from Doomsday: The Obsolescence of Major War* (New York: Basic Books, 1989).

4. At least early in the conflict. After the fall of Sukarno and the Indonesian communists in 1964, the argument that keeping South Vietnam noncommunist was vital to US national interests became less tenable.

5. See Caspar W. Weinberger, "The Use of Force—The Six Criteria Revisited," speech at the Air Force Association National Convention, Washington, D.C., 14 September 1999; on-line, Internet, 14 March 2000, available from http://www.aef.org/wein999.html.

6. See John Mueller and Karl Mueller, "Sanctions of Mass Destruction," *Foreign Affairs*, May/June 1999, 43–53.

Casualty Aversion
Implications for Policy Makers and Senior Military Officers

MAJ CHARLES K. HYDE, USAF

Editorial Abstract: In this article, both a survey of casualty-aversion studies and an analysis of the American casualty-awareness syndrome, Major Hyde argues for a clear recognition of what drives casualty consciousness on the part of political and military decision makers and the civilian populace at large. Involving more than reaction to alarming numbers or pictures, this consciousness is part of a calculation of perceived benefits as portrayed in our democratic process. More importantly, the author addresses the negative implication that unwarranted casualty aversion potentially has on operational planning and execution. In essence, casualty aversion leads to casualty displacement because those who should take on the casualty burden fundamental to their mission and professional ethos shift that obligation to others who have inherited a more vulnerable situation.

THE EVENTS OF the last one hundred years have witnessed dramatic changes in American foreign policy and, in particular, the use of force in support of national objectives. From a sleeping giant with overt isolationist tendencies prior to World War II, the United States has evolved at the beginning of the twenty-first century into the world's only superpower. The transition from a body politic wedded to the charge of George Washington's farewell address that we should avoid "entangling alliances" to a recognized superpower with global interests and responsibilities has been marked by the commitment of the United States to stand up for its values and principles with military might. This might, in combination with other elements of national power, defeated Nazism and Japanese hegemony in World War II and hastened the end of the cold war, which saw the collapse of Soviet-dominated communism and global bipolar confrontation.

The end of the cold war, however, unleashed an uncertain world that has not developed into a new world order or seen the end of conflicts. Challenges to the interests of

the United States and free people around the world remain, and the United States is currently positioned as the only nation with the global capabilities and power to provide leadership for an uncertain future. As stated in *A National Security Strategy for a New Century,* "Our nation's challenge—and our responsibility—is to sustain that role by harnessing the forces of global integration for the benefit of our own people and people around the world."[1] In order to meet these challenges and remain the "world's most powerful force for peace, prosperity and the universal values of democracy and freedom" that the president's strategy champions,[2] the United States has to show leadership in an anarchical world by acting like a great power.

Since the fall of the Berlin Wall and the demise of global communism, many countries have challenged the ability of the United States to maintain its position as world leader. Conventional wisdom has it that the United States is unwilling to commit the military power required to influence events, settle disputes, and act as the force for democracy, peace, and economic freedom that our national strategy promulgates. The perception among our enemies and allies alike is that the American public is unwilling to commit to any military operation in which one can expect even a minimal number of casualties. Furthermore, they believe that once an enemy engages the United States, it can force the latter to withdraw from its commitments when American casualties mount. Because of our casualty aversion, in the eyes of the world, we are becoming "a sawdust superpower."[3]

In light of the changing environment in which military and security policy is conducted, the Triangle Institute for Strategic Studies (TISS) recently conducted a study on civil-military relations. As part of that study, several scholars studied casualty aversion and concluded that the American public is far more tolerant of potential casualties than are policy makers or senior military officers. In a *Washington Post* article, two of the principal TISS researchers stated that the common belief that the American public demands "a casualty-free victory as the price of supporting any military intervention abroad" is a myth.[4]

If true, the TISS findings have significant implications. Does a casualty-aversion syndrome exist? If so, what are the implications for policy makers and senior military commanders? In the broadest sense, these are the issues examined in this article. TISS data is consistent with research that sheds light on the casualty-aversion issue. By examining the existing body of research, this article argues that policy makers and senior military leaders have misinterpreted the public's casualty tolerance and that their incorrect view of casualty aversion adversely affects national security and military operations.

Casualties and Public Opinion

Do our civilian and military leaders have a sound case for believing that public opinion is linked to the number of casualties suffered in a military operation? Several RAND studies have examined this issue by consolidating available research and drawing conclusions based on the data. The first significant report, published in 1985, used Korea and Vietnam as case studies.[5] The overall decline of public support over time in Korea and Vietnam shows that public support in both wars "behaved in a remarkably similar manner: Every time U.S. casualties went up by a factor of ten, support in both wars decreased by approximately 15 percent."[6] Likewise, comparing public support for Vietnam with the cumulative costs of the war leads to the conclusion one would hope for in a civilized society: "The most significant costs to the American people were the number of American boys killed and wounded in Vietnam."[7] Finally, analyzing monthly casualty rates indicates "a strong negative correlation (–.68) was shown to exist between monthly casualty rates and president Truman's popularity in the Korean War."[8] In a companion finding, President Lyndon Johnson's popularity was negatively correlated to the monthly number of Americans killed in action and the number of bombing sorties over Vietnam.[9]

The research documented in the 1985 RAND study concluded that the public was sensitive to casualties and gradually withdrew its support of military operations in Korea and Vietnam, based on the cumulative number of casualities. The study made a significant contextual point of the limited-war environment in which these conflicts took place. Analysis of the data by RAND researchers led to the conclusion that "the public tends to be unwilling to tolerate anything more than minimal costs in limited war situations."[10] From this perspective, it is easy to discern the roots of a casualty-aversion syndrome. Were this the only research, it would be difficult to refute the common belief among our policy makers, senior military leaders, allies, and enemies that casualty aversion is the Achilles' heel of the United States. The study, however, did not address several key variables: the reasons underlying the support for relatively high casualties for a significant length of time, the impact of public disapproval on alternative courses of action, and the impact of other variables that could have influenced public opinion.

Another RAND study by Benjamin Schwarz in 1994 dealt with the question of alternative courses of action that the public may have supported in the Korean, Vietnam, and Gulf Wars.[11] This report analyzed the earlier study's conclusion that the American public is casualty-averse and postulated that the perceived casualty aversion affected regional deterrence strategies. If adversaries believe they can defeat America or force it to withdraw from a military intervention by imposing casualties on US forces, "then they are unlikely to be deterred by U.S. threats to intervene."[12] This fear emerged prior to the Gulf War, when Saddam Hussein remained undeterred and boasted to the US ambassador to Iraq on 25 July 1990 "about Iraq's readiness to fight any foe over honor, 'regardless of the cost,' while America, unable to stomach '10,000 dead in one battle' was incapable of pursuing a major war to a successful conclusion."[13] Saddam was wrong, but his perception of American casualty aversion hurt our ability to deter Iraqi aggression.

Schwarz contends that the public became "disillusioned" with America's participation in Korea and Vietnam and regretted the decision to intervene but actually rejected withdrawal in favor of escalation of the conflicts. He states that "there was, however, very little movement in the percentage of Americans polled who wished the United States to withdraw from the conflict. In fact, a growing number of Americans favored escalation of the conflicts to bring them to a quick—and victorious—end."[14] Backing up this assertion was selective polling data showing that a majority of Americans supported escalation over withdrawal in Korea and Vietnam and preferred escalation of US war aims in the Gulf, including the removal of Saddam from power. Rather than fitting the American casualty-aversion perception, this data implies the opposite.

In 1996 Eric Larson completed a comprehensive RAND study that attempted to explain the disparity among research studies conducted up to that year.[15] He examined the results of public-opinion polls taken from World War II through the military intervention in Somalia, seeking to determine if other variables accounted for the differences in support documented in US military interventions. The conventional wisdom, alluded to earlier, is that the American public has changed since World War II and will no longer accept interventions that produce casualties. A perceived corollary is that Americans will demand immediate withdrawal when casualties mount during operations. Larson investigated these issues by developing a model explaining public support for military interventions in terms of a broader context.

Larson's model weighs the dynamics of public support within a simple calculation of ends and means. In this model, the public bases support for an intervention on a rational consideration of five factors:

- Perceived benefits of the intervention.
- Prospects for success.
- Prospective and actual costs.
- Changing expectations.

- Leadership and cueing from political leaders.[16]

This simple calculus captures the many variables that interact to produce public support. Using this approach means that "support can be thought of as a constant rebalancing of the benefits and prospects for success against the likely and actual costs—and a determination of whether the outcome is judged worth the costs."[17]

This model of ends and means is embedded within the concept of a "democratic conversation." The argument, supported by research, states that "political leaders lead the democratic conversation, the political discourse . . . is observed and reported by the media, [and] as members of the public are exposed to these messages, attitudes change in a predictable fashion."[18] This does not imply that society is a pawn in the hands of wily politicians but that the public takes cues from credible political leaders who have a similar worldview or political ideology. "In short, individuals ultimately choose which arguments are most credible but use a shortcut that reduces their information-gathering costs."[19] The implication is that public casualty aversion does not drive support for military interventions. The public is able to rationally discern the merits of each individual case and make an informed determination of support, based on expectations, benefits, prospects, and costs.

Using this conceptual framework, Larson determined that the American public has not become more casualty-averse since World War II. Indeed, Americans have always had a high regard for human life, but they balance that regard within a continuous cost-benefit analysis which ultimately determines support. It is only logical that increasing costs in terms of casualties will result in a decline in public support unless an increase in the benefits or prospects for success offsets that cost. This explains the differences in support for various interventions since World War II and also explains the general decrease in support over time as casualties mount in a particular operation. As the RAND study states,

> Less well understood, however, is the fact that the importance of casualties to support has varied greatly across operations; when important interests and principles have been at stake, the public has been willing to tolerate rather high casualties. In short, when we take into account the importance of the perceived benefits, the evidence of a recent decline in the willingness of the public to tolerate casualties appears rather thin.[20]

One sees World War II as a departure point with regard to casualty aversion because of the extremely high levels of support despite enormous losses (table 1).

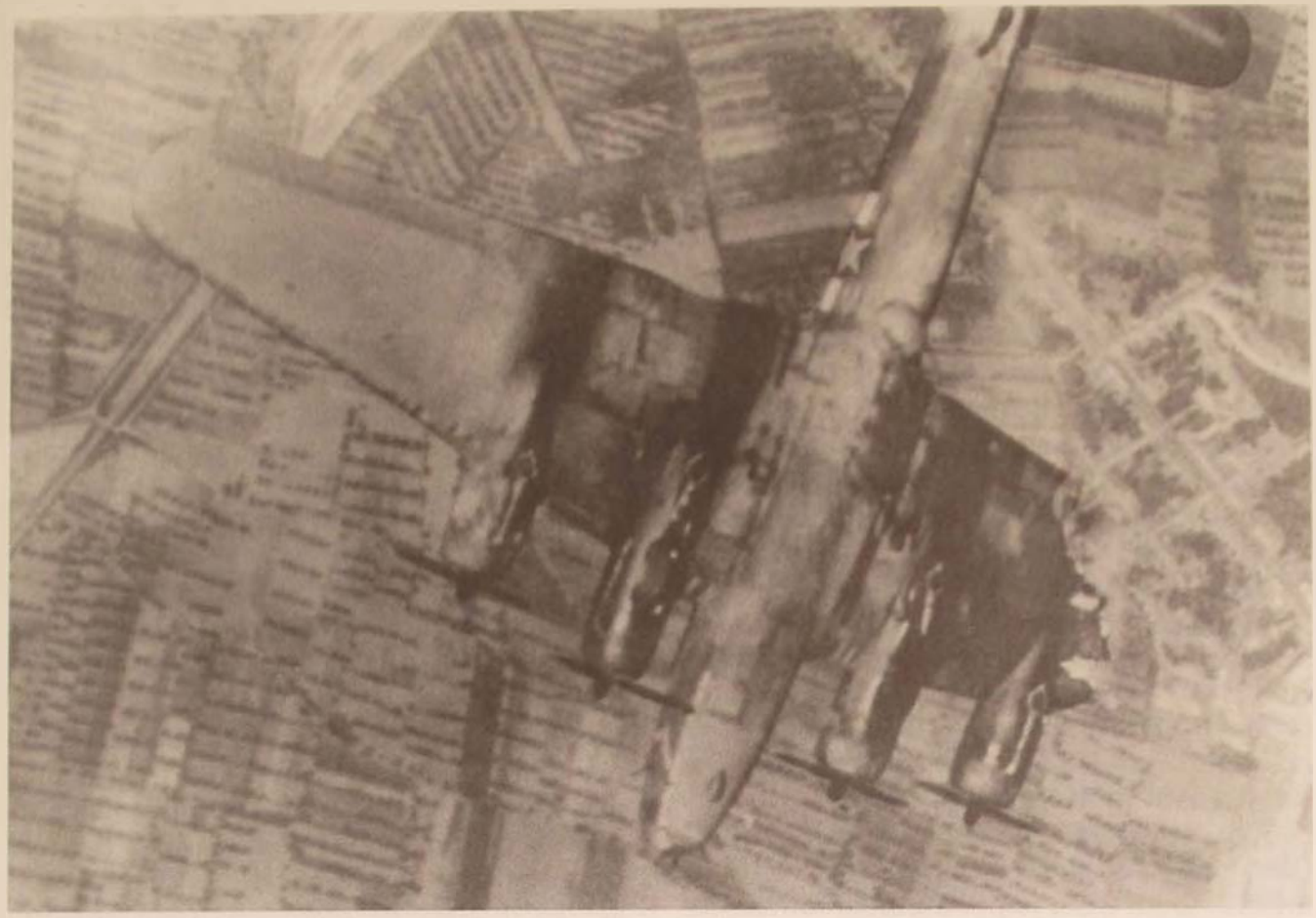
Table 1
US Personnel Killed in Action (KIA)

Conflict	*Total KIA*
World War II	291,557
Korea	33,651
Vietnam	47,364
Grenada	16
Panama	24
Persian Gulf	293

Source: Figures taken from Karl W. Eikenberry, "Take No Casualties," *Parameters* 26, no. 2 (Summer 1996): 113.

In light of the casualty figures, World War II appears to be an exception—in some way different from the limited conflicts of the cold war and recent interventions characterized by a decline in support as costs increased. In fact, one can attribute the nearly consistent public support despite dramatically rising casualties in 1944 and 1945 to the increasing prospects for victory, based on battlefield accomplishments in Europe and the Pacific, anticipated benefits of unconditional surrender, and near-unanimous political support from both parties. "In short, as the costs increased, these costs were compensated by increasing war aims and prospects for success."[21]

Likewise, polling data from Korea and Vietnam supports the assertion that the public weighed the merits of each intervention, using a cost-benefit analysis. Both wars started



Heroic efforts undertaken during World War II reflect a cost-benefit analysis by the American public.

with a significant level of support, based on the important US interest of "containing communist expansion," and both "contained the risk of a dramatic increase in costs if there were to be an expansion of the war to involve China or Russia."[22] In Korea, support increased as the prospects for success rose after Inchon, the potential benefit including a unified peninsula. Conversely, after the Chinese intervention, support declined, based on dimming prospects for gains beyond the status quo. As a stalemate developed, political opposition increased, and public support declined. The RAND study of 1996 noted that although casualty costs were important in declining support, "their influence cannot be untangled from these other factors."[23]

Support for the Vietnam conflict also mirrors the ends-and-means calculus reflected in the Korean War. Dwindling prospects for success as the war continued, a decrease in the perceived benefit of containing communism and improving relations with China, and the dramatic division among political leaders all led to decreasing support for the war. Casualties, although important, were not the sole determinant of public support, suggesting a potential problem with conventional wisdom which asserts that the American public will demand immediate withdrawal when casualties rise.

In both Korea and Vietnam, America continued the struggle long after support for the interventions had declined below 50 percent. There was no consensus or immediate withdrawal or escalation to victory. What happened? In essence, the American public weighed the ends and means and supported a policy of negotiated settlement and orderly withdrawal. Larson points out that only a minority of the populace supported the extreme positions of immediate withdrawal or

escalation, "while pluralities or majorities ('the Silent Majority') occupied a centrist position."[24]

If Korea and Vietnam fit within the framework of ends and means, as well as democratic conversation about support for military interventions, then Somalia becomes the chief evidence of those who proclaim that the public, swayed by Cable News Network (CNN), will cut and run at the first sign of blood. Analyzing the "CNN effect" is beyond the scope of this article, but detailed research indicates that rather than setting the agenda, CNN reports responded to the actions of the White House, Congress, and the State Department[25] in a manner consistent with democratic conversation.

Common perception has it that the death of 18 US soldiers in Somalia in October 1993 caused the public to demand immediate withdrawal from that country. This view misses the fact that support had already collapsed *before* the firefight in Mogadishu, with only 40 percent of the public supporting the operation.[26] Changing expectations caused by the shift in mission focus from popular humanitarian objectives to nation building and warlord hunting, combined with congressional "cues" against the operation (both houses of Congress passed nonbinding resolutions calling on the president to articulate his objectives and exit strategy in September 1993)[27] had already doomed the intervention. Larson states that

> Somalia represents another case in which the historical record suggests a more sensible and subtle response to increasing casualties and declining support: A plurality or majority has typically rejected both extreme options of escalation and immediate withdrawal and has remained unwilling to withdraw until a negotiated settlement and orderly withdrawal—including the return of U.S. servicemen—could be concluded.[28]

Thus, recent research supports the contention that the public does not demand bloodless interventions as the starting point for securing national interests and exercising world leadership, as articulated in our *National Security Strategy*. The public has consistently operated within the realm of an ends-and-means evaluation with significant cues from political leaders who frame the public debate.

The Casualty Myth

If the public is not casualty-averse, as the evidence suggests, the focus turns to the misinterpretation of this fact by our national security leadership. The TISS study provides strong evidence that policy makers and senior military leaders believe that the American public is casualty-averse and will not tolerate deaths except when vital interests are at stake. The study reached this conclusion by posing three plausible intervention scenarios (defending Taiwan against a Chinese invasion, preventing Iraq from acquiring weapons of mass destruction, and stabilizing a democratic government in the Congo) to senior military officers, influential civilian leaders, and the general public and by asking them to consider how many American deaths would be acceptable to complete each mission (table 2).

Table 2
Number of Deaths Acceptable

Mission	*Military Elite*	*Civilian Elite*	*Mass Public*
Congo	284	484	6,861
Iraq	6,016	19,045	29,853
Taiwan	17,425	17,554	20,172

Source: Peter D. Feaver and Christopher Gelpi, "A Look at Casualty Aversion: How Many Deaths Are Acceptable? A Surprising Answer," *Washington Post*, 7 November 1999, B3.

As the authors point out, one must interpret these averages in general terms and must realize that they do not necessarily reflect the actual casualties the public will accept once real soldiers start dying. But the "sheer numbers" and "dramatic differences" between the groups are significant.[29] More importantly, they are consistent with the previous research that explained public support in terms of ends and means and the democratic conver-

sation. The Taiwan case is a holdover from the cold war and represents deep-rooted American sentiment for the Nationalist Chinese and the "long-standing commitment to defend Taiwan."[30] Many Americans associate defending Taiwan with resisting communism and defending democracy—links that go back to the cold war and World War II, which the public considers very important, if not vital, national interests. It is not surprising, therefore, to find consensus on the costs that all three groups are willing to accept to accomplish the mission.

The Iraq and Congo cases are examples of post-cold-war interventions which have sparked the contention that the American public is casualty-averse. The Iraq case is significant because it demonstrates the effectiveness of leadership and cueing from public leaders. According to the poll, civilian elites claim willingness to accept over three times as many deaths as do military elites. The democratic-conversation model predicts that broad-based support from civilian leaders will influence public opinion. The extremely large number of deaths that the public indicated it would be willing to accept is consistent with the democratic-conversation concept—despite the fact that the reported results from TISS did not imply a direct link between civilian leaders and the public. Feaver and Gelpi postulate that the public's willingness to accept more casualties in Iraq than Taiwan "may reflect lingering traces of successful Bush-Clinton efforts to demonize Saddam Hussein combined with Clinton's attempts to pursue a conciliatory policy toward China."[31] This rationale is also consistent with the premise that cues from public leaders influence and aid the public. The fact that right-center and left-center ideologues from the general public received similar anti-Saddam cues from Bush and Clinton supports the role of leadership in the ends-and-means model.

The Congo scenario arguably encompasses the least vital interests of the three prospective interventions. Likewise, it remains consistent with RAND research predicting that the public will tolerate fewer casualties if the benefits and prospects are not as great. The data shows that the public would tolerate roughly only one-third to one-fourth as many deaths as compared to the Taiwan and Iraq averages. But we must not miss the point that the public was willing to accept *over sixty-eight hundred deaths* to accomplish the mission. The researchers stated that "the public's estimates for the mission to restore democracy in the Congo were much lower, but were nonetheless substantial. In fact, they were many times higher than the actual casualties suffered by the U.S. military in all post–Cold War military actions combined."[32] The cumulative weight of evidence provided by TISS research is consistent with past public opinion on the role of casualties in prospective or actual conflicts and supports the contention that policy makers and senior military leaders have attributed to the public an aversion to casualties that does not, in fact, exist. The number of deaths that the public indicated it would accept was, in all cases, more than those specified by civilian and military elites. The magnitude of the disparity, as mentioned earlier, has implications for national security and military operations.

Implications for Policy Makers

Our current national security strategy calls for both engagement in the international arena and the use of economic, diplomatic, informational, and military instruments of national power to shape an environment with multiple centers of regional power.[33] In the absence of cold-war-type threats to our national existence, engagement is an attempt by our civilian leadership to prevent the development of pariah states, such as Germany and Japan after World War I, and to reduce the potential for a multifaceted conflict with a nuclear-armed power. These goals are threatened, however, not by a lack of national resources, but by the casualty-aversion myth working among our policy makers and senior military leaders.

The perception among civilian elites—the policy makers who determine national strategy—that the public is casualty-averse

hinders coercive diplomacy and limits military options in support of our national strategy. In fact, James Nathan argues in "The Rise and Decline of Coercive Statecraft" that Clausewitz has been turned "on his head" and that the "current policy theory reverses the Clausewitzian insistence of the supremacy of policy over any autonomous logic attendant to arms."[34] Nathan contends that policy makers have surrendered to the [Caspar] Weinberger Doctrine and [Colin] Powell restrictions on the use of force and that the military has an effective veto over policy options that fall short of vital interests. This flies in the face of a security strategy that champions engagement at a level significantly below vital interests in order to shape the international environment. The effort to shape the environment specifically calls for military actions to prevent challenges to vital interests in the first place.

Nathan contends that the unwillingness of our policy makers to use force to back up diplomacy enfeebles such efforts: "Without a credible capability to use moderate force, fate rather than statecraft determines the future."[35] When tyrants see that our statecraft is weak due to the lack of a "big stick," they remain undeterred. In 1994 a Serbian official commented on the potential introduction of peacekeepers into Bosnia by saying, "Clinton has his own problems. . . . He can't afford to have even a few soldiers killed in Bosnia."[36] Statements or actions by our political leaders that demonstrate an unfounded casualty aversion based on the myth of a weak-kneed public weaken coercive diplomacy and embolden future adversaries. As a result, deterrence crumbles, and we must use military forces to contain the Saddam Husseins and Slobodan Milosevics of the world who refuse to heed diplomatic warnings.

A potentially worse scenario than our inability to deter enemies is the potential for policy makers to abandon military force when we need it. As Mark Lorell and Charles Kelley comment, "In the future, a President may elect to delay or forgo direct U.S. military intervention in a Third World conflict—even though it may be needed to defend legitimate U.S. interests—because of concern that public support may decline or collapse once the United States is deeply committed."[37] This fear of casualties among our political leaders encourages renegade world leaders to take risks, based on the potential that their actions will skirt under the threshold of US interests that would elicit a response. If they are successful, engagement is weakened, and other rogue groups will likely test US resolve in areas closer to vital interests. This does not imply that the United States must respond to every disturbance in world harmony but that the decision to respond should be based upon our national security strategy and not upon our need to dispel the myth of casualty aversion.

Implications for Senior Military Leaders

As noted earlier from the TISS study, senior military leaders exhibit an intolerance for casualties that far exceeds the intolerance level of the public and policy makers in typical post-cold-war interventions. Potentially, this has widespread implications for military planning and the military ethos. The Goldwater-Nichols Department of Defense Reorganization Act codified joint war fighting and gave immense responsibility to senior military leaders, especially the war-fighting commanders in chief (CINC). Such responsibility, if tainted by a belief that military action must be casualty free, can have the unintended consequence of shifting the burden of risk to the people our military mission says we should protect.

Of course, legitimate reasons exist for military leaders to tolerate or accept fewer casualties than would the public or political leaders. As Feaver and Gelpi point out, it is entirely rational for "military officers to give lower casualty estimates for nontraditional missions" when "they do not believe those missions are vital to the national interest."[38] Military leaders adhere to the principle of economy of force and do not want to fritter

away limited assets on missions that might detract from the ultimate mission of defeating vital threats to national security. The danger, as mentioned earlier, is that military leaders will trump civilian policy and, in a bout of self-interest, "deter" missions that are essential building blocks in the national strategy of engagement.

It is also true that military commanders care about their troops and do not want to waste lives. The conviction that fewer casualties are warranted may indicate that there are better ways to fight than the World War I practice of frontal attacks. Most people agree that we should maximize effective planning and asymmetric strategies, which apply American technological strengths to enemy weaknesses, to dislocate, confuse, and defeat an enemy[39] but that we should not use them as a panacea because of a mistaken belief that the mission must be risk free. As one author stated, "Reduced casualties have always been a goal of a good commander. Yet stating this as an absolute requirement that can be fulfilled by our advanced technology simply ignores the true nature of mankind and war."[40] The argument is not that commanders should avoid unnecessary casualties—duty demands no less. The issue is the impact of excessive casualty aversion on planning and the military ethos.

Deliberate planning at the theater strategic and operational levels of war is the domain of the war-fighting CINCs. If, as this article argues, senior military leaders are casualty-averse or erroneously believe that the American public will not accept losses, this process can be skewed and produce plans that fall short of their intended purpose. The Vietnam legacy for senior officers entails a belief that American lives "were needlessly lost" and a determination "to avoid putting military personnel at risk unless absolutely necessary."[41] The Gulf War corollary states that the American public will not tolerate future operations which promise more than a "handful of casualties."[42] Geographic CINCs and their senior staff officers produce theater engagement plans, write commanders' estimates of the situation, and provide courses of action to the National Command Authorities, all of which are affected by these legacies.

Military leaders adhere to the principle of economy of force and do not want to fritter away limited assets on missions that might detract from the ultimate mission of defeating vital threats to national security.

Casualty aversion on the part of senior officers, or the erroneous perception that the public demands casualty-free interventions, can produce a self-limiting filter or paradigm through which all plans must pass. One wonders whether Inchon would be possible today—would the plan be found "not acceptable" due to excessive risk?

A potentially greater threat posed by excessive casualty aversion is the destruction of the military ethos. Feaver and Gelpi highlight the views of Donald Snider, a retired Army colonel and West Point professor, who argues that the military ethic "is built on the principles of self-sacrifice and mission accomplishment. Troops are supposed to be willing to die so that civilians do not have to."[43] Charles Dunlap agrees: "Uniformed professionals need to ask themselves whether the military's altruistic ethos, axiomatic to its organizational culture, is being replaced by an occupationalism that places—perhaps unconsciously—undue weight on self-preservation over mission accomplishment."[44] One can best see the degrading impact of casualty aversion in excessive force protection, which shifts mission risk from the US military to others.

The ongoing operations in Kosovo provide an insightful case study on the impact of casualty aversion on mission accomplishment and the military ethic. In a positive example, Lt Col Bruce Gandy, a Marine battalion commander, wrote an article in the *Marine Corps Gazette* describing his unit's successful operations in Kosovo. His unit filled the vacuum

left by retreating Serbian forces and provided security for the local population. He described the mission by saying, "Although we minimized risk wherever we could, we quickly realized force protection cannot be paramount. First and foremost is the mission. Marines must always answer the call to arms no matter what the cost."[45]

The Marine Corps accomplished the mission by decentralizing operations and giving companies control of individual sectors. Companies lived in the areas for which they were responsible, and the company commander acted as the police chief and civil administrator. These decentralized operations quickly gained the trust of the local population, but they were not without risks. Gandy states, "Decentralization while projecting a visible presence is not without risk. Marines are taught to seize the initiative. In peace enforcement operations, this means exposing our Marines and sailors to danger."[46]

In contrast to the mission-focused approach of the Marine Corps, the follow-on Army forces are plagued by excessive force protection and casualty aversion run amuck. In an attempt to drive the casualty rate to zero, the US military is building an isolated, multi-million-dollar compound to provide a comfortable, secure environment. Allied soldiers who still live among the people, as marines did previously, ridicule the American compound, calling it "Disneyland."[47] In its mission statement, the brigade responsible for one-fourth of Kosovo lists its foremost objective as "self-protection" while other "peacekeeping tasks, such as maintaining 'a safe and secure environment' and . . . building a civil society receive lesser priority."[48] It is not surprising that the brigade lists self-protection as its first objective, given the fact that the Army's European Command "holds that its primary objective is 'To Protect and Take Care of the Force.' "[49]

The compound in Kosovo is not the issue. The problem is that casualty-averse military leaders have determined that risk avoidance takes precedence over the mission given by American and North Atlantic Treaty Organization (NATO) policy makers and have shifted the risk to our NATO allies and the people of Kosovo. If presence in one sector declines, all of the adjacent areas are in greater danger, and the people in those sectors are at greater risk for reprisals. Even if civilian deaths do not increase, the greatest casualty is the military ethos—the warrior ethic of service before self, willingness to sacrifice for the society we protect, and the responsibility to minimize risk to those whom we protect. Excessive casualty aversion by senior military leaders does not accurately reflect the view of the American public and, instead of protecting the force, may actually be sowing the seeds of its destruction.

Conclusion

The cold war is over, and the world is still a dangerous place. American national security interests are no longer defined by the bipolar confrontation with the Soviet Union, and the threats to our national security are more subtle and hard to describe. As the only remaining superpower, the United States has embarked on the path of engagement—exercising active, decisive leadership in world economics and diplomacy to make the world a more prosperous and democratic entity. By engaging on many levels on which our interests are less than vital, our strategy seeks to preserve our vital interests and status as a superpower.

In a world without a governing authority, however, our ability to engage and resist those who do not share our vision of freedom and prosperity depends on the instrument of military power. At present, the United States has the most powerful armed forces the world has ever seen; but dictators, terrorists, and allies challenge our status as a superpower, based on the perception that a casualty-averse public limits our ability to wield military power.

Research shows that the public is not an irrational mass calling for immediate withdrawal from military interventions at the first news reports showing American deaths. Instead, the public weighs the expected and

actual costs with the benefits and prospects for success and makes a decision with the aid of cues from political leaders. Public support is not all-encompassing but can be counted on when civilian leadership adequately frames the debate in terms of a positive ends-and-means calculation. The conventional wisdom that the public is casualty-averse is wrong, but civilian policy makers and military elites still act on the mistaken assumption that the public will no longer accept the risks of military action.

By attributing casualty aversion to the public, civilian and military elites have masked their own aversion to casualties and threaten our status as a superpower. Casualty aversion on the part of civilian leaders renders coercive diplomacy ineffective and undermines deterrence. Casualty aversion on the part of senior military leaders becomes a filter that limits bold options and aggressive plans and insidiously destroys the military ethos. The misinterpretation of public casualty aversion by policy makers and senior military leaders hurts our foreign policy and military credibility. A casualty-aversion myth "is hardly sound footing for American foreign policy"[50] and military operations. □

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Combat Search and Rescue
A Longer Look

COL DARREL WHITCOMB, USAFR, RETIRED

Editorial Abstract: Several other authors in this issue address military casualties in general; in this article Colonel Whitcomb looks at a casualty status unique to combat aviation—that of the downed aircrew. In this sense, casualty aversion relates to our strong desire to rescue our people and our historical practice of doing so. As Whitcomb points out, however, an inverse relationship appears to exist between the level of effort directed toward CSAR and the level of military and political effort/commitment involved in any particular conflict. Important to the issue is recognizing that ***CSAR is combat, not just rescue.*** *Commitment to bring back our people is part of the American soldier's article of faith that willingness to accept risk or to sacrifice is based on two things: (1) such sacrifice is not needless and (2) the nation will make every effort within mission dictates to recover its soldiers from enemy territory. This keeps Americans fighting for each other and our way of life.*

AS THE RECENT events in Serbia indicate, combat search and rescue (CSAR) is still with us. The successful rescues of the pilot of an F-117—known as Vega 31—and of Hammer 34, the pilot of an F-16, make for exciting stories, but little has appeared in print on these two operations. No doubt, this is prudent because operations continue in-theater. But when the stories are eventually told, readers will find much in common with SARs or CSARs from earlier conflicts. These accounts will take their place in the rich lore of rescue operations, which go back to the beginning of manned flight and honor the men who go in harm's way so "that others may live."

From a historical perspective, these rescues seem to fit into long-term patterns from which we can draw lessons to apply to future operations. Winston Churchill, a great student of history, once said, "The farther backward you can look, the farther forward you can see."[1] Aviation history abounds with stories of rescue. Perhaps some of that history

would prove useful to stimulate discussion or debate to help us take a longer look at the subject. The reason we do this seems obvious. After all, those are our troops out there, and we will try to get them out if they go down. But perhaps the answer is not quite that simple—perhaps there is quite a bit more to this complex issue.

In any military operation, we must be prepared for CSAR for any crew, group, or team that may be isolated behind enemy lines. This means being able to rescue people from a single-seat fighter, an airborne warning and control system aircraft, a special forces team, or myriad other sources. (The three US soldiers not rescued from Serbia during the recent Balkans conflicts were on a routine ground patrol.)

The first and perhaps main point is that *CSARing is war fighting*—pure and simple. We cannot think of it separately. CSARing is just another form of battle. In that vein, the principles of war do apply. There will be a time and place for mass or economy of force and perhaps deception operations, depending on the situation. Unity of command will be essential to focus the effort. Security will be critical because of the need for timely, focused action and the realization that the enemy will try to counter our actions. We must carefully guard critical information and intelligence.

In a theater of operations in which many actions, battles, and perhaps campaigns take place, CSARs will add to the fog and chaos of war. As opposed to other types of operations whose objectives are not clear or easily understood, however, a CSAR's objective is clear, understood by all, and easily measurable. Furthermore, it appeals to us on a human level—perhaps a dangerous trait because it can detract from other efforts. That is, we find it easy to divert resources meant for other battles to a CSAR effort. Are we willing to rescue somebody regardless of the cost? Seemingly, the mantra today is that "the war will stop for CSAR." Is this prudent?

It goes without saying that CSAR demands absolute precision. In a larger theater of operations with so many other things going on, we literally have to reach into realms of organized chaos to pluck a specific person or persons out.

Experience shows that when an aircrew is down, time works against us. Our enemies realize that we will make the effort and will try to rescue our personnel. We must assume that they know of our efforts and probably have some knowledge of our specific techniques. A recent test at Nellis AFB, Nevada, suggested that after two hours on the ground, the odds begin to turn against a successful rescue.[2]

CSARing seems to involve two paths of knowledge. For lack of better terms, the labels *logos* or logic and *pathos* or emotion will suffice. Both have a role in this business.

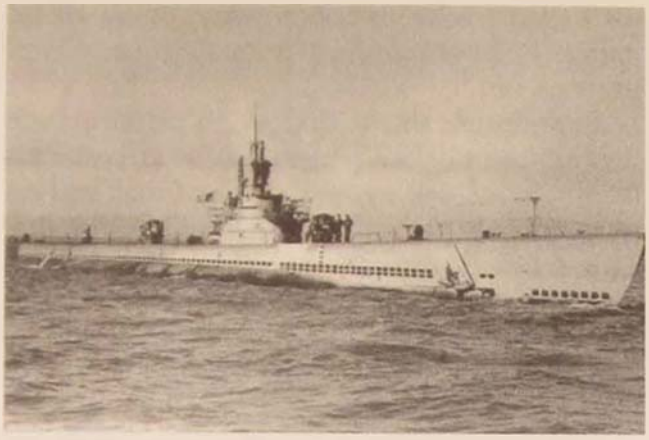
Logos

Looking at all of this historically, the accomplishment of five things dramatically increases the chances of a successful rescue. Of course, no one can guarantee success because, after all, we are operating in the realm of conflict and chance.

First is the matter of *position*—we have to find the survivor(s). This sounds very basic, but that is the point. It is absolutely fundamental to the whole process. As a recent CSAR report stated, "Accurate coordinates are critical" to recovery[3] (remember that the *S* in CSAR stands for *search).* In the old days of Southeast Asia, we used to send in a pack of A-1s to sweep the area to find the survivor(s). Today, with sophisticated radars, guns, and missiles, this is becoming harder to do. We should be prepared to use all available assets, both theater and national, to locate the survivor(s). This is critical because we cannot begin to properly marshal our forces for a recovery until we know their whereabouts. We should also emphasize that we must prevent the enemy from discovering the location of the survivor(s).

Position appears to have value on four levels:

1. *Strategically.* The location of the survivor in relation to national boundaries can have a substantial impact on the rela-



During World War II, airmen were rescued by US Navy submarines.

tionship of nations, rules of engagement, and such matters as the need for overflight privileges. In Southeast Asia, we had different operation rules for South Vietnam, North Vietnam, Laos, and Cambodia. We launched no rescue operations for crews lost over China.

2. *Operationally.* We must determine whether the location of the survivor(s) will affect anything else going on in the larger conflict. Will a focused CSAR operation in a particular time and place interfere with some other operation, or can we conceivably use some aspect of that operation to aid the recovery effort?

3. *Tactically.* What do we have to do to get into the immediate area of the survivor(s) to effect the recovery? This requires classic intelligence preparation to understand what we must do to counter enemy attempts to defeat the CSAR effort.

4. *Precision.* What do we have to do to facilitate the actual linkup of the survivor and his recovery vehicle—the most critical event in the entire process? Once we commit the recovery vehicle, it must expeditiously maneuver to and link up with the survivor(s) and then depart the area.

Second, we must establish *communication* with the survivor(s) and those agencies necessary to plan, coordinate, command, and execute the rescue. The Korean War showed us that we needed to equip our downed crews with survival radios.[4] Preplanning can prove very effective here in determining how disparate units and elements can come together to execute a short-notice CSAR. The air tasking order and special instructions can be very useful in this regard, as well as common terms understood by all. Conversely, code words understood by one element of the CSAR effort but not by others can sow confusion at absolutely the wrong moment. Do we all agree on the meaning of *bingo?* How many fighter guys know what a *spider route* is? How many helicopter drivers know what *magnum* means? Moreover, during the intensity of a CSAR event, we must exclude those who cannot contribute. Useless information or chatter is just communication jamming.

Third, we have to have a recovery vehicle. They do not just happen. We always think of the big rescue helicopters—we call them *Jolly Greens*—as the vehicles, but we must think beyond that. Naval vehicles, ground vehicles, or maybe even a ground team can do the job. It does not matter what patch that vehicle wears. The vehicle is not important—the recovery is.

Fourth, we need to have *smart survivors.* As a recent CSAR report states, "Survivor actions are an integral part of the success or failure of any rescue operation."[5] The history of successful rescues resounds with this theme.

Fifth, we must be able to establish around that survivor the necessary level of situational superiority so that we can control events long enough to effect the recovery. One of the lessons learned from the Korean War was that air superiority is critical to the successful operation of a recovery task force.[6] But the necessary superiority is really three dimensional, for some of the most serious threats today are ground based. This makes CSARs unique, separating them from SARs. The first four points actually apply to just about any rescue operation. But again, in combat the enemy will oppose our actions. We must impose our will. We must control events long enough in

the survivor's area to allow the recovery vehicle to make the recovery and depart. This is battle. This is war fighting. We now turn to several historical examples from which we can learn.

World War II

In February 1944, a carrier task force attacked the Japanese forces at Truk Atoll. During the battle, a Grumman F-6F from the USS *Essex* was shot down. The pilot ditched his aircraft in the lagoon surrounding the islands. The flight leader watched him go down, fixed his position, and saw that he was alive and in his raft. He then called back to the *Essex,* requesting air-sea rescue. Another ship in the task force, the USS *Baltimore,* launched an OS2U-3 Kingfisher amphibious aircraft to recover the pilot. Before the aircraft could arrive, however, the flight leader spotted a Japanese destroyer entering the lagoon, apparently to capture the pilot. He led repeated attacks on the ship, driving it away and maintaining enough situational superiority around the survivor to facilitate his rescue.[7] This procedure repeated itself two months later but with a twist. As the task force once again pounded Truk, more Navy aircraft went down. In one incident, another Kingfisher, this time from the battleship *North Carolina,* recovered 10 downed airmen. Too heavy to take off with survivors literally camped out on the wing, once again Navy fighters covered the Kingfisher as it taxied out to open water and transferred survivors to a waiting submarine, the USS *Tang.*[8]

Korean War

In June 1951, a pilot ditched his flak-damaged Mustang fighter in the Taedong River, 50 miles northeast of Pyongyang. His flight mates saw him swimming in the river and called for a rescue aircraft. An SA-16 Albatross flown by 1st Lt John Najarian responded and flew to their position. The covering Mustangs, joined by other flights, suppressed the enemy guns along both shores as Najarian landed in the cold waters and picked up the pilot. But the sun had gone down, and the current swept the Albatross toward high-power lines across the river. To help Najarian see the wires, the Mustang pilots turned on their landing lights and flew just above him as he made his takeoff under the wires.[9]

Vietnam War

A number of stories about Southeast Asia deserve telling, one of them being Oyster 01 Bravo. In May 1972, an F-4 was shot down northwest of Hanoi. The weapon system operator (WSO), 1st Lt Roger Locher, evaded the enemy for 23 days before he established communication with friendly forces, who positively located him. Rescue forces in the theater responded, but enemy forces initially drove them off. Gen John Vogt, commander of Seventh Air Force, directed that the entire next day's effort be dedicated to establishing enough local superiority to support the rescue operation. Those efforts proved successful.[10]

Bat 21 Bravo/Nail 38 Bravo, a huge SAR, the largest of the war, took place in April 1972. Our forces established communications with the survivors and easily located them. Although we had rescue forces available, we could not establish local superiority so that a rescue helicopter could recover them. Indeed, the enemy shot down several in the effort. A small ground team, using stealth and very precise fire support, recovered the two men.[11]

An unsuccessful recovery, Owl 14 Bravo, is nevertheless instructive. Another F-4 went down over North Vietnam in May 1972, just north of the demilitarized zone. Only one survivor (Capt Ray Bean, the WSO) made radio contact with covering forces, who located him. Rescue assets were available, but thick enemy antiaircraft forces covered the area. Before we could suppress them enough for a helicopter to enter the area, the enemy captured Bean, releasing him from Hanoi a year later. Captain Bean said that the enemy forces were so heavy that they would have destroyed any helicopter entering the area.[12]

Gulf War

On 21 January 1991, an Iraqi missile downed Slate 46, an F-14. We established intermittent radio contact with the pilot but had only general knowledge of his position. The enemy captured the radio-intercept officer. An MH-53 piloted by Capt Tom Trask proceeded deep into Iraq. In the general vicinity of the survivor, a flight of two A-10s joined the helicopter. They managed to locate the survivor and vector the helicopter crew to him. But enemy troops were in the area, including some trucks obviously homing in on the pilot's radio transmissions. Capt Paul Johnson, the lead A-10 pilot, attacked the enemy forces and vehicles—only 150 meters away from the Navy pilot—and facilitated his recovery.[13]

Balkans War

Also useful is knowledge of the failed recovery of Ebro 33, a French Mirage crew shot down in late August of 1995 during the North Atlantic Treaty Organization's (NATO) Operation Deliberate Force. We never established radio contact with the survivors and never determined their location. Although we had rescue forces available and possibly had sufficient force to establish enough local superiority, we never recovered them; in fact, friendly forces were injured in the search efforts.[14]

Pathos

We now turn to pathos, the emotional "why" of all this. Again, the answer seems obvious. The survivor is one of ours, and we never leave our people behind.

But don't combat aviators accept the risk of loss and death in battle? Don't they get extra flight pay to accept the risk? As one US Air Force general said in 1972, at the height of the Bat 21 Bravo SAR, "As airmen or soldiers or sailors, we should expect that there are times when as one person, we must be sacrificed for the overall [mission]."[15]

Yes, we do accept the risk but have never easily accepted the view that our people are easily expendable—especially in a war we do not seem intent on winning. So, why so much for one man? Several reasons come to mind.

First is *human nature.* Rescue stories are some of our most heroic. People always come forward to help those in distress. The fact that the enemy contests CSARs only causes us to redouble our efforts.[16]

Second is the fact that *we can.* We have developed the hardware to recover anybody from just about anywhere. Additionally, we do not hesitate to use any technology if it benefits the process. We have also learned how to organize our forces to achieve the necessary level of situational superiority for our rescue forces to operate.[17] For *Joint Vision 2010* junkies, we call that dominant maneuver and precision engagement.

Third, rescue operations involve a *morale factor* for our troops, something Gen Hap Arnold noted in World War II. He directed the initial establishment of rescue forces to recover downed airmen, as had the British and Germans.[18] Part of his thinking was, in fact, pragmatic, for it takes an incredible number of resources to produce trained crew members.[19] This is not to say that in humanistic terms, they are more valuable than other Americans—just that they are harder to replace. Gen Hugh Shelton, chairman of the Joint Chiefs of Staff, addressed this recently when he said, "By pledging to put every effort into recovering our highly trained [personnel], we send a powerful signal about their importance and help sustain their spirit under the stress of combat."[20]

Fourth, rescuing our people denies the enemy a valuable resource. Intelligence and propaganda value are the obvious issues here. Consider Mogadishu or the shootdown of Capt Scott O'Grady by the Bosnian Serbs.[21] During the Gulf War, Saddam Hussein tried to exploit captured aircrews. No doubt, he will do so again if we lose any personnel in Operation Northern or Southern Watch.

Finally, a covenant or bond binds the brotherhood of airmen. Again, General

Specialized recovery vehicles such as this SB-17 aided in saving downed aircrews.

Arnold noted that aircrews performed their missions more efficiently with the expectation that if they went down, we would make every effort to rescue them.[22]

Ground warriors call this bond unit cohesion, noting that, over time, soldiers must believe in what they do and must believe that the cause they fight for is worth the sacrifice. If not, they will fight for each other. Stephen Ambrose has eloquently documented this phenomenon among American fighting men in World War II.[23]

Our covenant is not so much unit specific as it is specific to the breed—the breed of airmen. It is the common thread stretching from the beginning of flight to the recent rescues in Serbia. What is that bond? It is simple: if at all possible, we will not leave our downed fellows behind without making an attempt to get them out.

This does not mean that we are unrealistic about war. Airmen understand, accept, and expect that we will take losses. But we do not give up those losses lightly. We expect that whatever we are asked to do is worth the sacrifice—that we will not be wasted for some specious task or mission and that our troops "shall not have died in vain," as President Lincoln said at Gettysburg.

But I would suggest that our propensity to prosecute CSAR missions exists on a sliding scale inversely proportional to the level of effort we are willing to expend in any conflict. In other words, in a total conflict in which national existence is at stake, we will pay any price. I clearly remember as an A-10 pilot in the 1980s listening to a NATO general telling us that he would "litter the west bank of the Elbe River with A-10s to keep the Warsaw Pact forces from crossing." I was horrified by his pronouncement until I thought through what that statement meant. Such an event would have been a total conflict, and the survival of our nation would have been at stake. The intensity of operations would have forced such sacrifices upon us. Our nation has accepted such losses in time of crisis, such as the Civil War or World War II. But in limited conflicts, we will be prepared to pay only a limited price. Why?

I am reminded of the old saw that military forces do not fight wars—nations do. And they fight for political objectives. Carl von Clausewitz explained all this many years ago when he said, "The political object is a goal, war is a means of reaching it, and means can never be considered in isolation of the purpose."[24] But that goal or objective determines

the war's value, against which the public assesses the costs of the war in determining its support for the war. The public measures these costs in terms of taxes and, more importantly, risks to the lives of its sons and daughters. Again, Clausewitz explained this by saying, "Once the expenditure of effort exceeds the political object, the object must be renounced."[25]

In a total conflict, then, CSARs will be limited—but not so in limited engagements, in which we prepare ourselves to pay only a limited price to achieve a limited objective. Today, it seems that airpower is the weapon of choice for doing so. Indeed, our political leaders evidently feel—based on what they hear from their constituents—that the public has little tolerance for loss. The fact that aircrews are now about the only ones put at risk puts a real premium on CSAR, accentuating the covenant. I saw this happen firsthand as a young lieutenant in Southeast Asia.

About 1969, my nation had begun to turn against the war. The object, whatever it was, was not worth the price. America wanted to withdraw. President Nixon called it "peace with honor." But I clearly remember hearing my squadron commander say to us, "There is nothing over here worth an American life—except another American."[26] That gave us cause for reflection, considering the fact that we were fighting alongside our allies.

By 1972, after eight years of war, we were still fighting there without any real dedication to a cause—except withdrawal. Like warriors from earlier wars, we fought for each other. We kept that article of faith that if we went down, the Jolly would come for us. In fact, the rescue helicopter became the symbol of that bond or covenant. To the rescue crews, it was a call sign. To the rest of us, it was a prayer. To many, it was salvation. It was the bond.

Now, we airmen have not been too good about recording these feelings. But consider the words of a US Navy PT boat sailor who explored this subject in a different way. When discussing a failed attempt to recover buddies lost in a night battle, he said, "The gain in going back is in the message it sends. Even if you're seen to disappear in a ball of flame, your friends will come back looking for you."[27]

Again, General Shelton recently accentuated this determination when he said, "This bond among warriors promises not to leave a comrade behind on the battlefield, a promise that extends to a shipmate at sea or a wingman who gets hit deep behind enemy lines."[28]

But there is danger here. We must not do this at the expense of our ground forces. We must perform rescue operations as part of the larger battle and must do so in proportion. Where does the line break? I don't know. Again, Churchill gives us a useful vector. In 1940 the German armies overran the countries of Western Europe, driving the British army back into an enclave at the French port of Dunkerque. The Royal Navy and individual British seamen in their private boats rallied to bring a large portion of that force safely back to Great Britain—without equipment or organization. After a spring of constant bad news and humiliation, the British people celebrated this event as a major victory. But Churchill stood in Parliament to remind them that "we must be very careful not to assign to this deliverance the attributes of victory. Wars are not won by evacuations."[29] One can also argue that they are not won by CSARs. But the ability and propensity to execute CSARs are key to the aircrew morale, *especially* if they are the only ones at risk. General Vogt understood this when he sent that large task force up near Hanoi to rescue Roger Locher in 1972.

We must never rescue our people at the expense of our allies. In coalition warfare, the relationship between allies is a center of gravity that a skillful enemy can exploit. Hitler tried to do this to the grand coalition in World War II. The North Vietnamese were very skillful in driving a wedge between us Americans and our South Vietnamese allies. We must make sure that we are willing to do CSAR for all our allies—as we did for Ebro 33.

So that is the pathos. These are powerful forces, and we are occasionally reminded of them in small but very significant ways. In No-

vember 1997, several hundred of us gathered at Arlington National Cemetery to bury the crew of Jolly Green 67, the men lost in the Bat 21 Bravo rescue effort in 1972. It was a beautiful, memorable day. One could not help noticing all the veterans of that era who gathered to welcome home the crew. Indeed, the blue suits of the highly decorated vets covered the site and part of an adjoining hill. Two MH-53 helicopters, descendents of the Jolly Greens, made a magnificent flyby. Lt Gen Dave Vesely, representing the chief of staff of the Air Force, said, "All of us who have flown in harm's way know what a difference it makes to believe that every effort will be made to rescue us if we are down. . . . Today while we count the high cost, we should also count ourselves fortunate to be the beneficiaries of these, the best of men—men who gave their lives so 'that others may live.'"[30]

As the ceremony ended, many of the now aged veterans of those times, missions, and battles went up to the coffin. Some laid their maroon berets on it or placed roses or stickers. Some saluted or just touched it. In all of that there was a message. Those still proud veterans had come for the Jolly because they remembered a time when, if necessary, the Jolly would have come for them.

That is the covenant, the bond that binds this brotherhood of airmen. It is palpable, and, as we saw again in Serbia, it is timeless. □

In June 1951, an SA-16 made a dramatic rescue in North Korea.

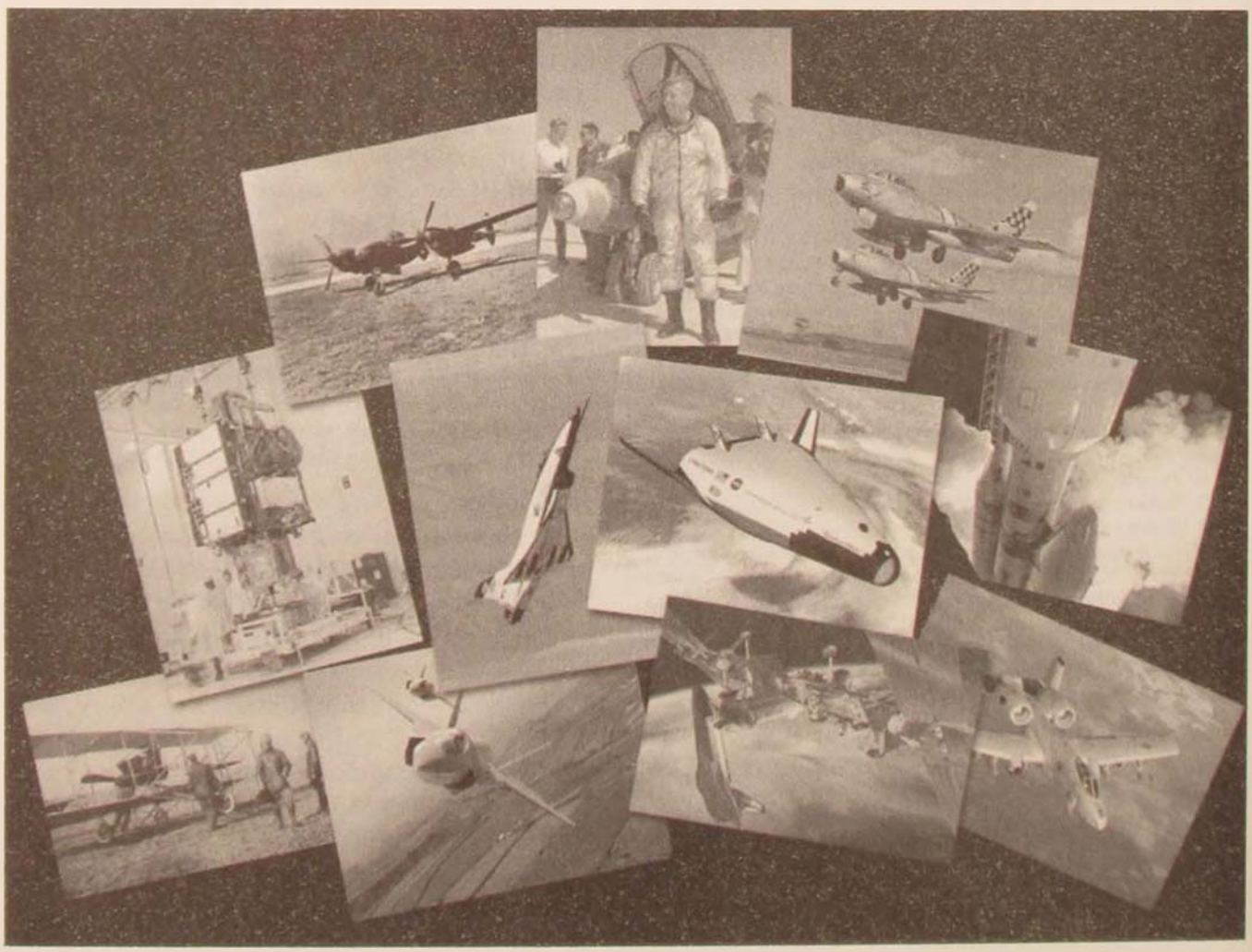
Notes

1. James C. Humes, *Churchill: Speaker of the Century* (New York: Scarborough Books, 1982), 269.
2. This data comes from the Joint CSAR Joint Test and Evaluation recently completed at Nellis AFB, Nevada.
3. Joint Services S.E.R.E. Agency, *F-16 Lessons Learned: Introduction*, 3 December 1999, 17. (Secret) Information extracted is unclassified.
4. Robert F. Futrell, *The United States Air Force in Korea, 1950–1953* (Washington, D.C.: Office of Air Force History, 1983), 583.
5. *F-16 Lessons Learned*, 14. (Secret) Information extracted is unclassified.
6. Futrell, 583.
7. Robert J. Cressman, "Rescue from Truk Lagoon," *The Hook*, Winter 1993, 24.
8. Battleship *North Carolina:* Kingfisher Truk Rescue, 30 April 1944; on-line, Internet, 16 March 2000, available from http://www.battleshipnc.com/kingfisher_truk_rescue.htm.
9. Futrell, 578–79.
10. Jeffrey Ethell and Alfred Price, "Man on the Run," *Air Power History*, Fall 1989, 45.
11. See Darrel Whitcomb, *The Rescue of Bat 21* (Annapolis, Md.: US Naval Institute Press, 1998).
12. Ibid., 152.
13. Lt Col Tom Trask, interviewed by author, 17 February 2000.
14. Adm Leighton Smith, press conference, Naples, Italy, 22 September 1995; on-line, Internet, 4 January 2000, available from http://www.hri.org/news/misc/misc-news/95-09-22.misc.html.
15. Earl Tilford, *Search and Rescue in Southeast Asia: 1961–1975* (Washington, D.C.: Office of Air Force History, 1980), 119.
16. Joint Publication 3-50.21, *Joint Tactics, Techniques, and Procedures for Combat Search and Rescue*, 23 March 1998, I-1.
17. Ibid., II-12.
18. Tilford, 5–7.
19. John Warden, *The Air Campaign: Planning for Combat* (Washington, D.C.: National Defense University Press, 1988), 49.
20. Gen Hugh Shelton, remarks at the Department of Defense Personnel Recovery Conference, Fort Belvoir, Va., 27 October 1999; on-line, Internet, 3 November 1999, available from http://www.defenselink.mil/news/#News Articles.
21. Air Force Doctrine Document 2-1.6, *Combat Search and Rescue*, 30 September 1998, 4.
22. Tilford, 3.
23. See, for example, *Band of Brothers: E Company, 506th Regiment, 101st Airborne from Normandy to Hitler's Eagle's Nest* (New York: Simon and Schuster, 1992).
24. Carl von Clausewitz, *On War*, ed. and trans. Michael Howard and Peter Paret (Princeton, N.J.: Princeton University Press, 1976), 87.
25. Ibid., 92.
26. Whitcomb, 142.
27. Dick Keresey, "Farthest Forward," *American Heritage*, July/August 1998, 60.
28. Shelton remarks.
29. Winston S. Churchill, *The Second World War* (New York: Time Inc., 1950), 72.
30. "Jolly Green Funeral Ceremony," Headquarters United States Air Force TV Center, 11th Communications Squadron, Pentagon, Washington, D.C., 25 November 1997.

Integration ? Amalgamation? Aerospace ? Air and Space ?
AeroSpace ? Space and Air ? Weaponization of Space ?
Space Guard ? Space Force ? Aerospace Force ?
Lots to ponder . . .

ON AEROSPACE

Editor's Note: We have dedicated the following special section to air and space integration, a topic of increasing interest in the aerospace community. As indicated by our frequent selection of space-oriented articles and by the recent change in our journal's name, we are consciously trying to focus on space and its ramifications—operationally, technologically, organizationally, and financially—for the Air Force and its sister services. Recently, some of our articles have generated productive dialogue that we wish to promote here, and we hope that our readers will continue to give their attention to this very important subject.



Protecting Global Utilities

Safeguarding the Next Millennium's Space-Based Public Services

LT GEN BRUCE CARLSON, USAF

Global Utilities: Civil, military, or commercial systems—some or all of which are based in space—that provide communication, environmental, position, image, location, timing, or other vital technical services or data to global users.

INVISIBLE LINES OF satellite information are rapidly supplementing the sealanes, roads, and cables of today and yesterday. Television, voice, weather, images, location, and other data stream down to Earth from satellites orbiting above—all of which are operated by military, civil, or commercial entities. These satellites perform functions similar to those of terrestrial public utilities, providing needed goods and services. Unlike their earthbound counterparts, which service only a neighborhood or city, these utilities are used on almost every continent by billions of people and may thus be appropriately labeled "global utilities." They are critically important to the national security, economies, and safety of the user nations. In May 1998, 40–45 million pager subscribers lost service; some ATM and credit card machines could not process transactions; news bureaus could not transmit information; and many areas lost television service—all because of the loss of *one* satellite.[1] Over the past years, the reliance on satellites for all types of global utilities has increased, and future loss of any of these satellites, whether through operator error or subversion, would have drastic implications.

Satellite services are invaluable to the United States and its allies. The use of space is one of this country's greatest strengths, but extensive reliance on global utilities also represents a substantial liability. Currently no physical system exists for protecting these global utilities. We can bring to bear economic, political, and other multilateral pressures on an offending nation or group, and we are party to treaties and agreements that prohibit certain activities—these have worked well in the past. But what if the threat comes from nongovernment organizations, terrorist groups, or an adversarial nation? Or what if we are unable to identify the sources of the offense? Treaties and sanctions may not prove so effective. We will need some other source of protection.

Because of the critical nature of these services, they should not be left without some form of security or escort. We provide protection for other potentially vulnerable goods and services traversing the seas or land. Specifically, the Navy has the ability and duty to escort and protect domestic and allied vessels through hostile seas, and the Army aids in disaster or famine relief in some countries and secures transit lines during some operations. But we provide space-based utilities no such security or assurance of safe passage or operation.

International laws and treaties—such as the various United Nations treaties—permit free travel in space, but history has demonstrated that international laws protecting the open seas can mean very little in a conflict. It

is likely that in some future battle, space will become a battleground, as have all other mediums in the past. Yet, satellite systems[2] of the United States and its allies are, for the most part, unprotected on the open seas of space. Unfortunately, we have no method of protecting them from attack. The argument presented here is that protecting global utilities is a natural extension of the Air Force mission to protect other high-value airborne assets; it is also an extension of the Department of Defense's (DOD) protection of all friendly assets.

Why Protect Global Utilities?

Utilities provided by satellites are numerous and varied (fig. 1). New commercial remote-imaging and communications satellites are being launched at an increasing pace. World reliance on satellite utilities increases every day and no doubt will continue to do so, with most projections indicating growth in communications satellites and a tripling of the number of satellites in service (fig. 2).

Let us consider one of the most important global utilities—the Global Positioning System (GPS). Although GPS provides precise positions for military, civil, and commercial purposes worldwide, it may be even more important as the "global clock." Users everywhere rely on GPS as a means of "time transfer" to clock a multitude of products precisely, from communications circuits to bank transactions—all to within a few billionths of a second. To see how important this is, consider what happened when a real error occurred in 1996. A satellite controller at the Air Force's GPS control center accidentally put the wrong time into just one of GPS's 24 satellites. The erroneous time was broadcast for only six seconds before automatic systems detected it and shut the satellite signal down. Nonetheless, over one hundred of the more than eight hundred cellular telephone networks on the US East Coast—which rely on precise GPS-provided timing—failed. Some took hours and even days to recover. GPS di-

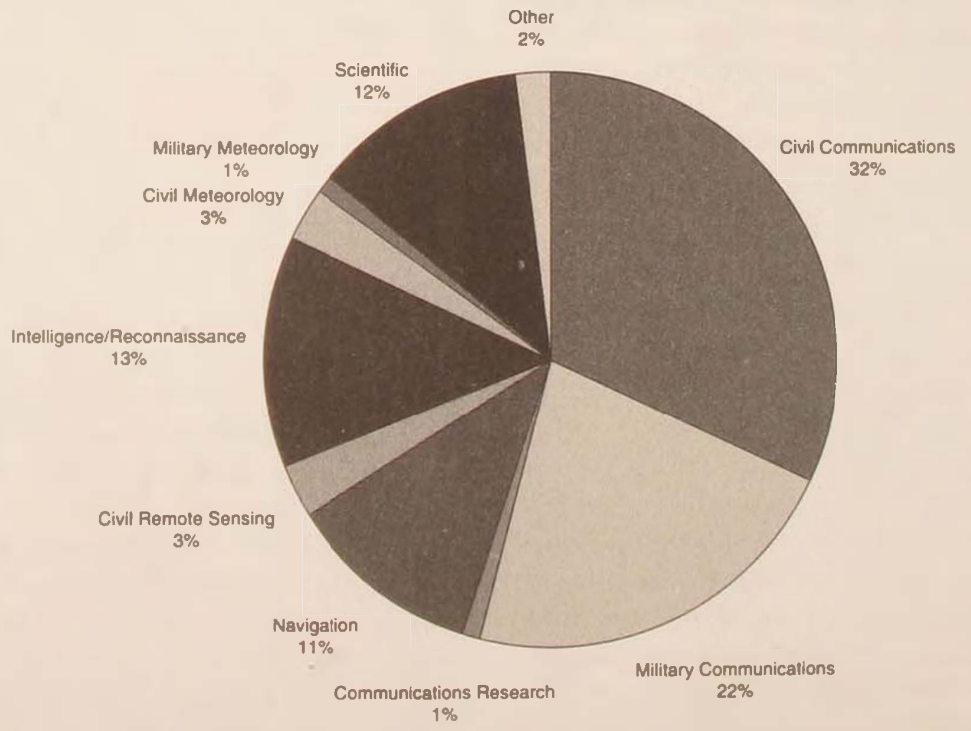


Figure 1. Satellites by Mission (1996)

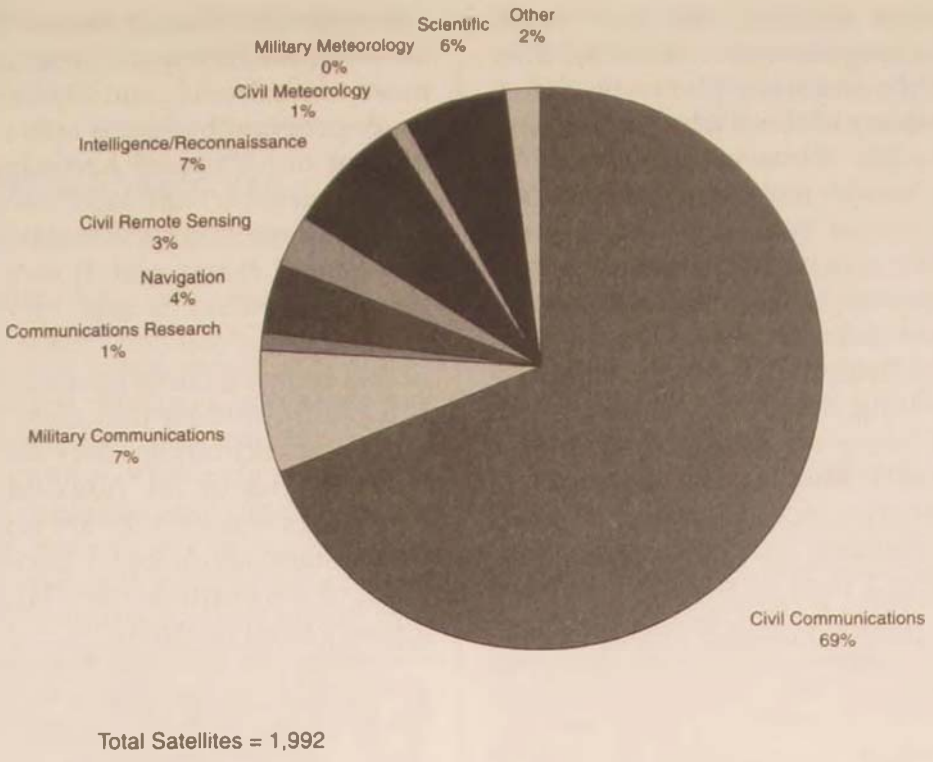


Figure 2. Satellites by Mission (2010)

rectly produces several tens of billions of dollars in revenue for the United States yearly. Indirectly, it produces many times this amount, so the economic implications are tremendous.

This kind of dependence on global utilities continues to grow. Almost two thousand satellites may provide service to the billions of people on Earth by 2010 (fig. 2), and none of them will have protection from an attack. We must develop a security system to ensure continued operation of these critical global utilities. Doctors depend on communications satellites to tell them if a patient is sick or if a donor organ is ready. Meteorologists rely on weather images from space. Banking and investing organizations count on real-time quotes and instantaneous transactions provided by satellites. War fighters, airline pilots, and others depend on GPS to tell them where they are and what time it is. Missiles rely on targeting information provided by satellites. These end users could find themselves without service due to an attack, and a lack of such service could result in casualties, political instability, or a risk to security.

Who Should Protect Global Utilities?

Many, if not most, current global utilities, such as GPS and the Internet, with its global communications links, arose from DOD and US Air Force developments. More than likely, DOD—specifically, the Air Force—will build the initial increments and systems of new global utilities.

It seems self-evident that these utilities should receive protection. The larger question is, Who will provide it? The answers vary—from commercial sources, the US military, a multinational defense network, and so forth. Moreover, some people believe that there should be no organized protection system—that the operators should provide for the safe operation of their own satellites. They also believe that owner-based protection would remove the need for a military presence in space and, in turn, would preclude

the militarization of space. But this idea—analogous to asking car owners to build their own roads—is a nonstarter. The redundancy, costs, and efficiency of this framework make it the worst possible scenario. Every satellite manufacturer would have to create both a space-based defense system and a ground-segment security system, but no satellite manufacturer or operator currently has the financial resources or impetus to do that.

For the near future, a commercial protection system—along the lines of security services for buildings—seems highly improbable. Commercial satellite operators or a commercial security service would not likely invest in developing, building, launching, and maintaining a fleet of security satellites. Perhaps this might prove feasible further down the road, when launch costs decrease, technology becomes less expensive, and operators believe in the threat to their systems. Gen Richard Myers, commander in chief of US Space Command, echoed this mentality:

> Industry seems comforted by a number of assumptions and perceptions. First, space is seen as a peaceful medium—an international sanctuary for generating revenue. Accordingly, industry sees no threats on the horizon. In other words, they see neither the capability nor the intent to threaten their assets. Industry's imperative is, of course, to exploit space for profit. Therefore, given the perceived lack of threat, they see no business case for protection. Indeed, industry assumes the multinational aspect of space provides its own protection—sort of virtual neutrality enhancing the financial bottom line.[3]

Industry may realize, too late, that space offers no such sanctuary from attack.

A multinational security force is no more probable than a commercial one. Such an operation would involve civil and military space administrations from participating countries. Cost-sharing experiences with the International Space Station illustrate the advantages and disadvantages of using a multinational framework to mitigate costs. Countries like France, Japan, and Russia would have the most interest in conducting such an operation with the United States. Unfortunately, however, Russia's space-program budget is almost nonexistent, and the entire Japanese space-program budget is only a small fraction of what our National Aeronautics and Space Administration annually receives. Fiscally, then, this scenario places a larger burden on the United States and France, even though poorer partners would receive an equal amount of protection. Aside from the economic issues, security issues enter the picture. It is highly unlikely that these nations will reveal what technology they use on their current satellites or the function of those satellites. Furthermore, they are not likely to share proprietary technologies during the development of a security system. Thus, the scenario appears dead on arrival.

Having the Air Force assume responsibility for global satellite protection as an extension of its existing space-control responsibilities seems the most feasible option. Since the Air Force is tasked with controlling space,[4] placing global utilities under the protective umbrella of space control would be a matter of policy—not an expansion of technology or costs. The program description for the protection aspect of space control seems to make the point clearly: "Protection includes active and passive defensive activities to protect U.S. *and friendly* space-systems assets, resources, and operations from enemy attempts to negate or interfere" (emphasis added).[5] Global utilities, domestic or foreign, are vital to the United States, so it seems clear that the Air Force's task to protect US space capabilities includes all global utilities used by this country.

One should also note that although it is imperative for the United States to protect utilities, regulation—or even preventing an adversary or hostile state from using space services—could become an effective option to prevent conflict. Just as naval blockades form an essential part of our current diplomatic and economic sanctions to prevent war, blocking or preventing hostile groups from accessing space-based global utilities will become an increasingly formidable national se-

curity tool for the nation or nations with this ability. It is essential that the United States have this capability.

Where Should We Place the Protection?

Maj Alexander P. de Seversky stated that "only air power can defeat air power."[6] Thus, it follows that only space power can defeat certain space-based threats. Certain threats can be effectively and economically countered from the ground, while other threats require a timely response and capabilities afforded only by space-based operations. For example, a direct-ascent nuclear attack on a satellite would require a very quick and deadly response, meaning that we will need a space-based system to protect global utilities in the direst situations. Without space-based capabilities in these situations, we may experience partial to total loss of global utilities—not to mention national security satellites. We cannot absorb a loss of this magnitude.

Active protection systems that could counter space-based threats range from space-based lasers, to kinetic-energy antisatellite weapons, to co-orbital "bodyguard" satellites. Passive-protection systems in space and on the ground will also augment other space-based capabilities. Those ground-based measures range from increased ground-station security to antijamming technologies.

Having a space-based presence provides quicker response time, a visible deterrent, and force-projection capability. Ground-based systems can protect only in their given theater, and they offer no force-projection capability. The presence of protective systems in space, however, will show an adversary that an attack on a space system of US interest will meet with a direct response—and hopefully deter the adversary from acting in the first place. We can best defeat an adversary's ability to attack global utilities with little or no warning by using in-theater space-based systems that can quickly respond to a threat. Space-based global-utility protection is the only option for effective security.

The key to space-based global-utility protection is the ability to access space swiftly and affordably and to reach any point in space with ease. The Air Force's start in developing reusable "space planes" and "microsatellites" plays an integral role in this capability. These programs could be ready for deployment later in the first decade of the twenty-first century. We must give them the highest priority.

Conclusions

The best time to enunciate a global-utility protection plan is now. The long lead time needed to implement a comprehensive protection system necessitates immediate action in order to anticipate the increasing threat level. Our increasing reliance on satellites adds to their vulnerability as potential targets, so we have no excuse for leaving them unprotected.

We know what global utilities are, why we should protect them, who should protect them, where we should locate the protection, and when we should start protecting them. Global utilities are indispensable. Any loss of a utility and the ability to use space freely would have an enormous impact on society, the economy, and national security. The Air Force must step up now to meet this critical national security issue. □

Notes

1. The *Galaxy 4* satellite, owned by PanAmSat, lost attitude control on 19 May 1998.

2. A satellite system is defined as the terrestrial and space components necessary for a satellite to operate and perform its functions.

3. Gen Richard B. Myers, remarks to US Space Foundation, Colorado Springs, Colo., 7 April 1999.

4. Air Force Doctrine Document (AFDD) 2-2, *Space Operations*, 23 August 1998, 7–13.

5. Space-Control Technology Research, Development, Test, and Evaluation (RDT&E) Budget Item Justification Sheet, February 1999.

6. Alexander P. de Seversky, *Victory through Air Power* (New York: Simon & Schuster, 1942), 24.

Aerospace Integration, Not Separation

MAJ GEN (SEL) JOHN L. BARRY, USAF
COL DARRELL L. HERRIGES, USAF

PRESIDENT DWIGHT D. Eisenhower once said, "Our real problem is not our strength today; it is rather the vital necessity of action today to ensure our strength tomorrow." His words conveyed a simple truth recognized by all successful leaders. An organization must constantly renew itself. It can never stand still—never settle for the status quo. Forward movement is key to the health of every institution.

Continuous revitalization has long been a hallmark of the United States Air Force (USAF). Our service has renewed itself over the years with new technologies, new operational concepts, and new leadership. This trait, although fatiguing at times, is recognized by all as critical to our long-term strength.

One of the latest steps in this process is called "aerospace integration." It embodies our organizational commitment to change the way we think about air and space power. In essence, *we are committed to becoming an aerospace force, operating in a seamless medium unconstrained by arbitrary divisions of the vertical dimension.* This is no easy goal. It will prove difficult to obtain. However, it is a necessary step if we are to progress as a leading-edge institution.

Unfortunately, this initiative is opposed by some. Reasonable people argue that operations in the air and in space differ so fundamentally as to require separate organizations. This argument has even gained a following among some influential members of the defense community. But the argument is unsound. It is based on physics, not military art. By their nature, however, military operations in the aerospace continuum require a mix of air and space systems. It would be unsound to divide the development of one area from the other.

Examples of Aerospace Operations

For example, imagine a future conflict with each side contesting the other's space operations. One of the first targets in any space supremacy campaign would undoubtedly be the enemy's ground-control stations. These stations uplink commands to satellites and download data. They are critical nodes in any space architecture. The small number of these critical nodes makes them particularly attractive targets. Disable these ground stations and the utility of subordinate satellites drastically decreases.

If you were designing future air and space forces for this mission, what would you develop? What air and space tools would you provide future commanders to destroy enemy ground-control stations? Deorbiting munitions? Penetrating bombers with precision munitions? Cruise missiles? Hypersonic missiles? Information warfare? Conventionally armed intercontinental ballistic missiles (ICBM)? Each of these attack options could work. However, a total reliance on any one of them would be a mistake. An enemy could focus defenses to defeat a single type of attack. If the single type of attack failed, there would be no "plan B."

A better approach would mesh air and space capabilities into an integrated aerospace attack. The task would be to destroy an enemy's satellite ground-control capabilities. The means would be a multiaxis attack by aerospace forces, compelling the enemy to

defend its ground stations against simultaneous, multifaceted attacks from every axis in the vertical dimension.

Another example could involve an enemy antisatellite (ASAT) weapon. The overall campaign objective would be to negate the threat posed by an enemy ASAT to a US satellite or constellation. The means could vary. The friendly satellite could maneuver. It could have internal defenses. An airborne laser could intercept the ASAT in boost phase. A missile or bomber could destroy the ASAT's launchpad. If the ASAT is air launched, fighters could attack the launch aircraft. Alternatively, should the ASAT hit the satellite, the effect could be negated either through rapid replacement of the satellite or by transferring the satellite's function to another satellite or to a high-altitude unmanned aerial vehicle (UAV). As in the previous example, the best solution would fuse a range of aerospace capabilities, as opposed to fixating on any single solution set.

These examples treat only one aspect of a strike's calculus (the actual attack). The same logic applies to every aspect of a strike, whether the target is air or space related. To illustrate this concept, take each individual step in an aerospace strike: find, fix, track, target, engage, and assess (known in the USAF by its acronym F^2T^2EA). Any strike of mobile targets must find the target, fix its exact location, track any movement, orchestrate an attack package, engage the target, and then assess the results. As with the two attack examples in the previous paragraph, each of these individual steps could be conducted by a mix of air and space platforms:

- Signal-intercept platforms on-orbit or airborne could identify the type of target and its general location. (Find)
- A high-altitude UAV with a laser designator, using the Global Positioning System (GPS) for precision, could generate the exact coordinates. (Fix)
- A joint surveillance, target attack radar system aircraft; Global Hawk UAV; or a Discoverer-type satellite could track any movement. (Track)
- An integrated command and control (C^2) system could task a mix of space and air systems to expedite time-phased attack packages. (Target)
- As stated above, a mix of air and space systems could conduct the actual attack(s). (Engage)
- Satellites and aircraft (manned and unmanned) could determine the extent of the damage. (Assess)

Iterative and Changing Technologies

A subtle point, often missed by those pushing space separatism, is that technologies underwriting a multifaceted aerospace approach are rapidly advancing. Stealth, space launch, precision, and bandwidth are only some of the key aerospace technologies whose potential remains optimistic but opaque. Complicating the challenge is the fact that these technologies are not only advancing, they are doing so at widely different rates. They are not moving forward in parallel; rather, they each leap ahead at unpredictable times and at unpredictable rates. Because these technologies (1) enable each aspect of a future campaign and (2) interact with each other, professionals must constantly adjust the time phasing of their development and deployment.

Designers of tomorrow's aerospace force must mix evolving technologies. They must keep one eye on marginal advantage and the other on time phasing. Stealth, propulsion, sensors, bandwidth, precision munitions, materials, range, C^2, interoperability, electronic warfare, information warfare, directed energy, infrared spectrum, and simulation are but a few of the changing technologies incorporated in practically every aerospace system. With each technology advancing at a different rate, their integration is an immense task. This integration is difficult when managed by

a single service. It would be even more difficult if subjected to the "roles-and-missions" frictions inherent when separate military services work the same task.

Understandably, no one mix of systems will ever satisfy advocates of each individual component. Whenever we prioritize, someone inevitably gets the lowest priority—and advocates for that system predictably complain. Nonetheless, history shows that a singular leader dedicated to the success of the overall operation can best translate multiple advancing technologies into an overall system of systems. Because air and space systems work together for mutual benefit and because air and space technologies are rapidly advancing, integration of aerospace priorities is critical to the future benefit of both.

Cost-to-Orbit Challenge

One of the impediments to progress in space operations is the high cost to achieve orbit. It's expensive to put an object of any size and capability in space. A good rule of thumb for cost to orbit is $10,000 per pound, a rule that has held constant for 20 years.[1] This means that placing five one-thousand-pound weapons in space, for example, would cost somewhere around $50 million. Those would be five expensive bullets.

This is one of the reasons weaponization of space has progressed slowly. Space platforms have centered on surveillance and communications, not weapons. They relay communications, observe surface events, and enhance navigation. There are no space-superiority weapons in space. The only weapons to contest space superiority are atmospheric (e.g., lasers to disrupt satellites, bombers to attack satellite ground-control stations, and information attacks on datalinks).

We expect this situation to change, especially as costs to orbit decrease. Space weapons will become more cost-efficient versus atmospheric systems over time. While the evolved expendable launch vehicle will improve the current situation, the most promising technology to change the paradigm is hypersonics. A single-stage-to-orbit launch vehicle using hypersonic technology is the goal of the National Aeronautics and Space Administration's reusable launch vehicle project (although an operational variant is still over a decade away).

This program is a follow-on of the national aerospace plane, a project cancelled in 1994. The "aerospace" nature of this technology conveys its dual capability. It will operate in both the air and space. This means the technology with the greatest promise for increasing operations in space is aerospace by its nature. How ironic it would be to divide air and space institutionally at the same time technology is fusing the two media!

Cold War

Air and space integration is nothing new to the USAF. During the cold war, air and space operations overlapped with a mix of strategic reconnaissance aircraft (e.g., SR-71, U-2) and satellites combined to surveil the Soviet Union. In addition, a mix of satellites (e.g., Defense Support Program [DSP]) and ground radars (e.g., ballistic missile early warning system and the PAVE PAWS type of phased array radars) combined to give strategic warning, and a mix of ICBMs, bombers, and air defense fighters stood continuous alert. In other words, this was a situation in which space and air systems combined to accomplish the USAF's strategic deterrence mission.

During this era, space systems were funded due to their critical support to nuclear deterrence. The single integrated operational plan (SIOP), a series of strategic nuclear war plans, demanded integrated air and space operations. The alert status of B-52 bombers, for example, was based on the warning time afforded by DSP satellites. Targets and yields depended on information gained by overhead imagery. Strategy, force structure, and operational concepts were iterative between the space and air communities. Gen Thomas White, former USAF chief of staff, could state in 1957 without qualification, "There is no division . . . between air and space. Air and

space are an indivisible field of operations."[2] Hence, during the cold war, there was little distance between the USAF's nuclear deterrence forces and its space operations.

This same close relationship also existed between the USAF and the National Reconnaissance Office (NRO). It was modeled on the successful USAF–Central Intelligence Agency partnership that prosecuted the strategic airborne reconnaissance mission (e.g., the U-2). In fact, the undersecretary of the Air Force served as the director of the NRO. It's safe to describe the two organizations as "joined-at-the-hip," as they formed a strategic partnership to accomplish the overhead reconnaissance mission.

After the Cold War

The end of the cold war and the explosion of the Information Age established additional links between the USAF's space and air forces. These links were apparent to all in the Persian Gulf War, where DSP satellites, procured to detect Soviet ICBM launches, were used to detect Iraqi Scud launches. Their launch cues were forwarded to both terminal defenses (such as the Army's Patriot batteries) and retaliatory strikers (the so-called Scud hunters). Reconnaissance satellites, also procured with the cold war in mind, were focused on this regional, conventional threat. Thus, the critical contributions of space systems in Operation Desert Storm prompted some to call it the first space war.

Today, all military communities use space assets on a daily basis. Everyone from peacekeepers to supply officers routinely depends on space support to perform daily tasks. All consider space infrastructure critical to operations.

Given this critical dependence, the search for a new organizational structure for space is understandable. The cold war, pre–Information Age construct is clearly obsolete. One of the more popular alternative structures would concentrate all space assets in a dedicated organization. Because space support is a limited national asset, the argument goes, a single manager could best develop and distribute space support to users, irrespective of service tie. For some, this is the preferred model for organizing military space capabilities.

The emphasis on space support, however, is a curious argument. It organizes space assets around its support function. If space is simply the home for a support infrastructure, that approach may be valid. However, the better argument is that the value of space goes far beyond its support to other military operations. The secretary of defense made the department's view clear on this point: "Spacepower has become as important to the Nation as land, sea and air power."[3] The Air Force believes space has evolved into a national strategic center of gravity. It fully subscribes to the national security strategy's assertion that "unimpeded access to and use of space is essential for protecting US national security."[4] In that respect, it is important to heed the cautions of the commander of US Space Command that our nation's space systems are "too tempting a target for terrorism or adversarial military operations."[5] As the Hart-Rudman Commission recently stated, "Space will become a critical and competitive military environment. . . . Weapons will likely be put in space."[6] Simply put, space is an economic and military center of gravity at the strategic level of war. Our space architecture needs positive protection. With space systems critically important to the nation and the potential for space to evolve into a contested medium, the most prudent military approach would organize military operations in space around war fighting, not just support.

Because any fight for space control would require a mixture of air and space operations, the optimal organizational structure should encompass both. That organizational structure, of course, already exists. The USAF, which conducts war in the vertical dimension, transcends any arbitrary boundary between air and space. By encompassing both media, the USAF is positioned to exploit emerging synergies. It is the USAF that can best make the most correct (though still painful) force

structure trade-offs with the most important factor—war fighting—in mind.

One of Many Integrations

Aerospace integration can be seen as part of a pattern. Since the early 1990s, the USAF has undergone a series of integration actions. So-called strategic and tactical bombers were joined into Air Combat Command. The education and training establishments were integrated into Air Education and Training Command. Aerial refuelers, previously tethered to the Strategic Air Command and the SIOP, were combined with airlifters into the new Air Mobility Command. The people who develop new systems and those who maintain and modernize those systems were merged into Air Force Materiel Command. These and many other mergers cut across stovepipes no longer relevant to the Information Age and the post-cold-war world.

Some argue that one of the last stovepipes separates the space community from the rest of the USAF. Along with the fissure between active and reserve forces, the gulf between those who fly satellites and those who fly bombers, transports, and fighters has been identified as needing a fix.

The goal is simple: an eventual full-spectrum aerospace force. As the secretary of the Air Force recently said, "Most importantly, we must integrate all of our stove-piped forces into a single *aerospace* force that draws on the strengths of all of our skills and all of our forces, whether those forces operate missiles from below the ground, fly aircraft above the ground, or work on the ground to operate and maintain our satellites and UAVs" (emphasis added).[7]

This challenge is not unique to the USAF. Each of the services must integrate space with its other operations because each of the services has immense equities in space. However, the USAF may be distinctive in one respect. It not only uses space to enhance its air operations, but is also dedicated to migrating core roles and missions into space when it makes sense. This commitment is core to our singular vision: aerospace integration is one of two key elements of our Air Force Vision (the other being the Expeditionary Aerospace Force).

In concrete terms, there are positive steps in the integration process, such as the Aerospace Integration Center at Nellis AFB, Nevada. In addition, the space quotient is now more emphasized in our professional military education to include the new Aerospace Basic Course and the development of a new continuum of education. Also under development is an Aerospace Integration Plan. By the spring of 2000, this plan will specify tasks to further the integration of air and space capabilities within the Air Force. As with previous integration efforts, the USAF is dedicated to the success of this undertaking.

Organizational Identities Will Remain

In the best of worlds, aerospace integration will have its limits. There will remain marked differences between space operations and operations in other USAF specialties. However, they will not become one interchangeable whole, each blending perfectly with the other. Such an integration is neither possible nor desirable.

In today's USAF, there are many communities. Fighters, bombers, and airlifters each form a separate community, as do logisticians, security police, and so forth. Cross-flow between them is modest. A fighter pilot, for example, is seldom selected to command a bomber squadron. An airlifter and a security policeman may go to school together or serve on a staff together, but they will likely return to their separate communities for operational assignments.

Within the operational communities as well, there are many subspecialties, similarly rigid in their assignments. Very few C-130 pilots will ever fly the C-5, and very few F-15 pilots will ever fly an F-16. They will train and fight together, and they will influence each other—but each will retain an operational identity.

The space community is no different. Space has its own subcommunities. There is a difference between satellite flyers (e.g., operators of

GPS, DSP) and satellite watchers (space surveillance). The missileers constitute another category. Those who concentrate on acquisition comprise still another community.

This is not to argue that subcommunities are inherently good. We only need acknowledge their ingrained presence. If the litmus test for aerospace integration is completely interchangeable air and space communities, such a goal is probably unrealistic. It would go beyond any integration achieved within existing USAF communities. Yet, having professionals with an aerospace mind-set (and associated skill-set) as opposed to a narrow community focus is a very achievable and desirable situation. It is the right path for the USAF to follow in the months and years ahead.

Summary

"The English writer C. S. Lewis (1898–1963) once contended that 'the first qualification for judging any [thing] . . . from a corkscrew to a cathedral is to know what it is—what it was intended to do and how it was meant to be used.'"[9] This is a useful reminder for USAF planners. As we renew our service for the changing political and technological environment, it is important to emphasize *effect* ("what it was intended to do") as opposed to organizing around *means,* such as a specific technology. This is true whether the technology is a corkscrew or a cathedral, an aircraft or a satellite.

Those who would split air and space today fail to keep in mind the integrated nature of air and space operations. Each depends on the other. Space depends on air for weapons. This dependence will continue as long as costs to achieve orbit remain exorbitant. It will continue even longer if hypersonics proves to be the ultimate cost-cutter to achieve orbit (because it is inherently aerospace). Air operators, on the other hand, would be at untenable risk without the intelligence, communication, and positioning provided by space. This dependence was true during the cold war. It will continue for the foreseeable future. This is the reason we are continuing to pursue aerospace integration. Despite the different physics of their means, air and space forces maximize their potential when they combine into a unified aerospace effect.

Aerospace integration is not a new concept. It was the norm during the cold war. Satellites, bombers, and missiles combined to produce nuclear deterrence. Aerospace integration can also be understood as part of a series of internal USAF integrations. Bombers, educators, and scientists have all been affected by previous mergers. The result of these mergers is not that all parts are interchangeable and everyone looks the same. Rather, it is that all parts retain their identities while working together for a common purpose. This is the goal of aerospace integration: enhance the USAF's overall war-fighting performance across each aerospace capability. While retaining their separate credentials and expertise, those who fly and develop satellites, bombers, and transports will better integrate their efforts. Because air and space systems work together and because air and space technologies are rapidly advancing, integration of aerospace priorities is fundamental to improving the war-fighting capabilities of the joint team and the nation. Now is the time for continued aerospace integration, not separation! □

Notes

1. "Depending on the requirements and the launch vehicle used, costs vary between $10,000 and $30,000 per kilogram of payload." James E. Oberg, *Space Power Theory* (Washington, D.C.: Government Printing Office, 1999), 91.

2. Lt Gen Roger DeKok, *Beyond the Horizon: Realizing America's Aerospace Force,* white paper (Washington, D.C.: Department of the Air Force, November 1999).

3. Secretary of Defense William Cohen, *Annual Report to the President and the Congress* (Washington, D.C.: Government Printing Office, 1998), 7-1.

4. The White House, *A National Security Strategy for a New Century* (Washington, D.C.: Government Printing Office, 1998), 25.

5. Gen Richard B. Myers, commander, US Space Command, remarks to the US Space Foundation, Colorado Springs, Colo., 7 April 1999.

6. "Phase I Report on the Emerging Global Security Environment for the First Quarter of the 21st Century," *The United States Commission on National Security/21st Century,* 15 September 1999, 6.

7. Secretary of the Air Force F. Whitten Peters, keynote address, Air Force Association luncheon, 15 September 1999.

8. DeKok.

9. Excerpted from Dr. James H. Toner, "Gallant Atavism: The Military Ethic in an Age of Nihilism," *Airpower Journal* 10, no. 2 (Summer 1996): 14.

Organizational Options for the Future Aerospace Force

RALPH MILLSAP
DR. D. B. POSEY

We already have a Space Force—it is the Air Force.

—Vice Adm Herbert A. Browne
Deputy Commander in Chief
US Space Command

ADDRESSING THE FUTURE of aerospace power in the twenty-first century, F. Whitten Peters, secretary of the Air Force, states that the Air Force "views the flight domains of air and space as a seamless operational medium. The environmental differences between air and space do not separate the employment of aerospace power within them."[1]

Critics, however, disagree and have called for a reorganization of the military services through the creation of a separate Space Force. Some members of Congress seek to create a single voice for space, consolidating all Department of Defense (DOD) space activities. Furthermore, these critics say that a consolidated Space Force will improve visibility of space programs, increase the space budget, eliminate redundancy, and promote development of space professionals. They also suggest that a new organization will advance space war-fighting capabilities and enhance space support to the war fighter.

Although well conceived, the pursuit of a new organization dedicated to space is premature. Based on historical precedent of past DOD organizations, space does not meet the test for independence. Reorganization does not address all of the critics' concerns, and in some cases may have the opposite effect. Reorganization will incur significant overhead expenditures, further stressing limited DOD resources.

Critics argue that the Air Force mission has reached a crossroads of air and space operations. Pointing to the post–World War II reorganization that created a new organization with new capabilities, some in Congress believe the time has come for the Air Force to relinquish its claim to space—yielding to a new organization dedicated to space power. Supporters of integrating air and space, however, argue that the current state of US space capabilities is more akin to the pre–World War I era. Today, the space component of the aerospace mission is defined in terms of supporting terrestrial missions: surveillance, targeting, communications, and navigation. The focus of this effort is on earthbound missions for the foreseeable future. When military operations become concerned with effects in space, then they may warrant the establishment of a Space Force. Until then, the integration of space-support missions with existing Air Force infrastructure and capabilities is the more efficient organizational model.

This article argues a point that may have serious ramifications for DOD's structure: the US military mission in space has not sufficiently evolved to warrant the establishment of a separate military service for space operations.

The US Space Mission

The United States is the world leader in the exploration and use of space. This leadership role will be maintained through a strong, stable, and balanced national space program that serves the nation's goals for security, foreign policy, economic growth, environmental stewardship, and scientific and technical excellence. Access to and use of space is central for preserving peace and protecting US national security as well as civil and commercial interests.[2] The goals of the US space program include strengthening and maintaining the national security of the United States and promoting international cooperation to further US domestic, national security, and foreign policies.[3]

Current US Space Objectives

Current national space objectives require supporting a strong, stable, and balanced national space program that serves our goals in national security, foreign policy, economic growth, environmental stewardship, and scientific and technical excellence. Access to and use of space are fundamental to preserving peace and protecting US national security as well as civil and commercial interests. Goals of this program, as they pertain to the US military, are to strengthen and maintain the national security of the United States and to promote international cooperation to further US domestic, national security, and foreign policies.

The United States is committed to the exploration and use of space by all nations for peaceful purposes and for the benefit of all humanity. "Peaceful purposes," as understood by US policy makers, allow for defense and intelligence-related activities in pursuit of national security and other goals. The United States considers the space systems of any nation to be that nation's property, which can be used with free right of passage in space without interference. Purposeful interference with space systems is viewed as an infringement of national sovereignty. In this respect, the United States government will maintain and coordinate separate national security and civil space systems to accommodate different needs.[4]

National security guidelines stipulate that the United States will conduct space activities necessary for national security; this includes supporting our inherent right of self-defense and our defense commitments to allies and friends. Such activities include deterring; warning; defending against enemy attack, if necessary; and assuring that hostile forces cannot prevent our own use of space. The United States also has the right to counter space systems and services used for hostile purposes, to enhance operations of US and allied forces, and to ensure our ability to conduct military- and intelligence-related space activities. The goal is to satisfy military and intelligence requirements during peacetime or conflict.

More specifically, defense-sector guidelines require that DOD shall maintain the capability to execute the mission areas of space support, force enhancement, space control, and force application. DOD, as launch agent for both the defense and intelligence sectors, will maintain the capability to evolve and support those space transportation systems, infrastructure, and support activities necessary to meet national security requirements. It will also be the lead agency for improvement and evolution of the current expendable-launch fleet, including appropriate technology development.

Future National Space Objectives

Future national space objectives mandate that DOD will pursue integrated satellite control and continue to enhance the robustness of its satellite-control capability. DOD will continue to coordinate with other departments and agencies, as appropriate, to foster the integration and interoperability of satellite control for all governmental space activities. The United States will develop, operate, and maintain space-control capabilities to ensure freedom of action in space and, if directed, deny such freedom of action to adversaries. It will maintain and modernize space surveillance and associated battle-management command, control, communications, computers, and intelligence to effectively detect,

track, categorize, monitor, and characterize threats to US and friendly space systems and contribute to the protection of US military activities. It will also pursue a ballistic missile defense program to provide enhanced theater missile defense capability, a national missile defense deployment readiness program, and an advanced technology program to provide options for improvements to planned and deployed defenses.[5]

> The United States will consider and formulate policy positions on arms control and related measures governing activities in space and will conclude agreements on such measures only if they are equitable, they are effectively verifiable, and they enhance the security of the United States and our allies. The Arms Control and Disarmament Agency (ACDA) is the principal agency within the Federal Government for arms control matters. ACDA, in coordination with DoD, DCI [Director of Central Intelligence], Department of State, DoE [Department of Energy], and other agencies will identify arms control issues and opportunities related to space activities and examine concepts for measures that support national security objectives.[6]

Building an Independent Space Force: Requirements and Obstacles

There are several options or alternatives to consider in creating a new independent Space Force. Each option must be studied in light of its requirements, responsibilities, and obstacles.

Option One: A US Space Force

As conceived by those proposing an independent US Space Force, this would require establishing a new military department. Modeled on the US Air Force's evolution to an independent military department from the US Army Air Forces, the new Space Force would be DOD's single space entity. All space assets—personnel, space systems, and ground-based support systems—would be transferred to the Space Force. This restructuring would require the development of organic logistic and support capabilities.

Existing space procurement, including personnel as well as operation and maintenance (O&M) costs, would transfer to the new Space Force budget. All related functions (headquarters staff and secretariat at the level of the Office of the Secretary of Defense [OSD]; field-support agencies; expanded Joint Staff; Pentagon offices; research, development, test, and evaluation [RDT&E]; programs for space-specific research; and increased military and civilian manning) would fall under the purview of a US Space Force.

Such an organization would focus DOD space operations—but with prohibitive implementation and operational overhead costs. As the junior service, the Space Force would probably have less political clout than other service components, facing stiff challenges to prove its ability to develop, field, and successfully demonstrate its independent war-fighting capability. The organization would complicate the new focus on joint operations by adding a fifth service—adding to the complexity of integrating space into joint operations. Stovepiped acquisition processes and operational control, with an emphasis on space control versus space exploitation, would further complicate the joint mission. The Space Force would lack the in-depth, war-fighting perspective and experience found in the other services. This fact, in combination with the continuing requirement to provide space support to the other service components, would hinder further maturing as an independent organization. Finally, and most significantly, the development of an independent Space Force might signal to the rest of the world that the United States intends to weaponize space.

Option Two: A US Space Corps

With this option, the space mission might be better served through the establishment of a Space Corps, modeled on the two-hundred-year-long evolution of the US Marine Corps in both organization and function. The Marine Corps provides rapid-deployment forces in support of naval operations and relies on

the Navy to provide all logistic and administrative support. The Space Corps would become DOD's single space entity within the Department of the Air Force. All DOD space assets, including personnel, space systems, and ground-based space-support systems would be transferred to this corps. This organizational structure would be able to leverage USAF logistical and support capabilities already in place and focus the Space Corps on space war fighting. Yet, there are a number of organizational issues that must be examined further.

Existing space procurement, personnel, and O&M costs would transfer to the Space Corps budget. The new organizational structure would create additional high overhead costs: a headquarters staff under the Department of the Air Force; the establishment of field-support agencies to support administrative and operational requirements; expansion of the Joint Staff and offices in the Pentagon; replication of costly RDT&E programs to conduct space-specific research; and an increase in military and civilian manning to duplicate administrative functions previously supported by other services.

Reorganization would generate other implementation costs that are difficult to quantify, such as converting and constructing administrative and RDT&E facilities. Some expenses, of course, could be estimated initially, but history suggests that actual spending would likely spiral well beyond the most liberal cost estimates.

The Space Corps would help focus DOD space operations but at a significant cost. The organization would require additional implementation and operating costs. Trade-offs among space priorities would take place within its own budget, rather than within the overall Air Force budget—as occurs with the Marine Corps and Navy. A Space Corps would complicate joint coordination by adding a fifth service—thus inhibiting integration of space for joint operations. As an organization within the USAF, a Space Corps would likely increase interservice rivalry. Finally, establishing a Space Corps would limit exposure of space professionals to DOD's war fighters. No service has any operators with space warfighting experience, as this capability does not exist today within DOD.

Option Three: ASD/SPACE/Major Force Program-12

A US Space Command/Major Force Program-12 (USSPACECOM/MFP-12) option, modeled on the US Special Operations Command (USSOCOM) and the Assistant Secretary of Defense Special Operations/Low-Intensity Conflict organization created in 1986, would gain procurement authority for space operations. Under this model, each service would retain responsibility over service-specific space capabilities. The commander in chief of Space Command (CINCSPACE) and the assistant secretary of defense for space (ASD/SPACE) would coordinate joint requirements and training, overseeing space-peculiar procurement under MFP-12. USSPACECOM would become OSD's space coordinating agent, with CINCSPACE and ASD/SPACE taking on additional responsibilities, while the services retain space assets and supporting responsibilities.

There are organizational issues for the USSPACECOM/MFP-12 structure to resolve. Obviously, an ASD/SPACE position in OSD, along with a Space staff, would have to be established. In addition, existing USSPACECOM personnel and funding would have to expand to take on new responsibilities. Overhead costs, in the form of new personnel for the ASD/SPACE staff, a USSPACECOM staff to mirror that of USSOCOM, and the establishment of MFP-12 procurement offices must be factored into the new organization's overall costs. Memoranda of agreement (MOA) with each service, defining what space-peculiar procurement projects would fall under USSPACECOM's purview, would be essential but far more difficult to quantify than the other issues listed above. The same is true for interoffice cooperation agreements with the National Reconnaissance Office, the Ballistic Missile Defense Organization, and the National Security Space Architect.

USSPACECOM/MFP-12 would carry little weight in DOD policy discussions, and

ASD/SPACE and CINCSPACE would have less influence than the service secretaries. This would place the organization at a considerable disadvantage in internal and congressional battles. The lack of a congressional subcommittee focusing on space would be an additional major disadvantage, and coordination problems would exist due to the lack of an established planning, programming, and budgeting system process. USSPACECOM would be forced to rely on the services for many requirements and would have to negotiate MOAs as DOD developed new technologies and new procurement programs with space components. Trade-offs would occur within the USSPACECOM budget rather than in the larger USAF budget.

This organization would also inhibit joint operations with stovepiped acquisition processes and operational-control issues. The emphasis would be placed on independent space-war-fighting capabilities at the expense of space exploitation and support to the joint war fighter. Finally, USSPACECOM would further differentiate the space community from other war-fighting communities, thus moving away from effective joint operations.

Option Four: An Aerospace Force

Here, aerospace integration focuses DOD space efforts through an evolutionary process within the existing force structure of the US Air Force. It requires few new overhead costs, and it benefits from organizational strength that is already well established. Aerospace integration would improve DOD space operations by further institutionalizing USAF space support for joint war fighting. This organizational structure gives space-control research and doctrine development a firm foundation from which to expand, benefiting from proven Air Force concepts of air superiority as well as research and development efforts spanning both air and space applications.

Aerospace integration seeks the proper mix of air, space, ground, and information capabilities, building a professional aerospace cadre and instilling within it an aerospace mind-set that includes war-fighting and support functions throughout the aerospace continuum. It will be capable of addressing congressional concerns about DOD investments in space, seeking to advance both space control and space exploitation.

Conclusion

Independence is not appropriate for space today. The Air Force was established as an independent force when airpower had at least reached adolescence—only after combat-tested technology, doctrine, and leadership were well established. Military space is still in its infancy, with no unique mission, untested doctrine and personnel, and unfinished technology.

Military space capabilities contribute to all levels of military activity and conflict but have yet to evolve into a full-spectrum, war-fighting force. The US experience suggests that space should be allowed to mature within an established parent organization to determine whether it can develop and refine a unique war-fighting capability.

Aerospace integration is the most appropriate model for managing space today. This model allows for development of space capabilities within an established organization—like the US Army Air Corps of the early 1940s. It also concentrates space spending on people and systems rather than on overhead. Historical defense reorganizations and congressional goals suggest that the aerospace-integration approach is the sensible option for best managing the military space mission today. □

Notes

1. F. Whitten Peters, *The Aerospace Force: Defending America in the 21st Century* (Washington, D.C.: Department of the Air Force, 2000).
2. The White House, National Science and Technology Council, Fact Sheet on National Space Policy, 19 September 1996.
3. Ibid.
4. Ibid.
5. Ibid.
6. Ibid.

US SPACE GUARD? NO THANK YOU!

I am writing this letter in response to Lt Col Cynthia A. S. McKinley's "The Guardians of Space: Organizing America's Space Assets for the Twenty-First Century" (Spring 2000). In this article, Colonel McKinley suggests that America's space assets should be reorganized as the US Space Guard, analogous to the US Coast Guard model. In terms of Air Force doctrine, this new organization would provide space support, force enhancement, and space-control capabilities, leaving space-force application responsibilities within the Air Force. In short, it would essentially be a separate space force within the Department of Transportation (DOT), with over 98 percent of today's space assets and personnel. This approach would be unacceptable for today's military operations and disastrous for meeting tomorrow's challenges. I will explain why the Coast Guard analogy is the wrong organizational model for our nation's space assets, discuss the "cultural tension" issue, and close with a proposed alternative focus that helps both our nation and the joint team.

Let me briefly explain why I believe the US Space Guard model is flawed. The services of the Coast Guard are not critical to the joint team, but our space communication, weather, navigation, surveillance, and intelligence capabilities *are* critical to joint operations. None of these functions are tertiary for successful employment of our nation's military capabilities.

In terms of acquisition, space capabilities are generally major acquisition programs, usually with some degree of risk in leading-edge technologies. The nation's space capabilities are changing rapidly and require technical and political leadership to support multiyear procurements. The Coast Guard does not have major program acquisitions with significant technical risk. Additionally, if the Space Guard were assigned to DOT, how would the military services coordinate space requirements? What priority would take precedence—military, civil, or commercial requirements? Who would make these decisions?

Furthermore, the nation's taxpayers would have to pay to create a separate Space Guard. What will our nation get in return? Unless we terminate some existing space agencies, one item we can count on is additional overhead costs to form yet another player in the federal bureaucracy. This will also add complexity to our existing coordination challenges for joint military training and operations.

So why should our nation even consider reorganizing its space capabilities? According to Colonel McKinley and others, one of the primary drivers is cultural "tension" within the Air Force. She contends that air operators think in terms of a "war-fighter mind-set" and that space operators are restricted to existing in a "support mind-set." I contend that every successful military operation requires a broader mind-set that selects operational options from within the entire spectrum of warfare, along with the corresponding support required to sustain those operations. In the Air Force today, we are creating this type of culture—we call it the "aerospace mind-set." The Air Force is shaping this environment by continuing to take positive steps. Some examples include the formation of the Aerospace Basic Course for all newly commissioned officers, the new Continuum of Education program at Air University that incorporates space-based academics into functional blocks of instruction, and the establishment of the Air Force Weapons School Space Division to educate and train officers in the most advanced aspects of aerospace operations. Most recently, the Air Force is planning to provide opportunities for space-experienced and other officers to attend the Joint Force Air Component Commander Course, open unmanned aerial vehicle operations to nonrated officers, and further integrate space-experienced airmen into staffs at all levels.

I make my final comments not from the perspective of a fighter pilot, space operator, aerospace engineer, or acquisition specialist, but as an Air Force officer. I envision a future Air Force that includes airmen who employ and support air, space, ground, and information capabilities to defend our country and its vital interests in the most effective and efficient manner possible. But we will not achieve such a vision unless we come together as airmen to master all of the required disciplines and then train, exercise, develop, and fight as a single team. I contend that our Air Force people are becoming such a team with an aerospace mind-set. I further contend that this is one of the strongest arguments for keeping space-savvy airmen, as well as our space capabilities, within the Air Force. Consideration of a different organizational construct for space management should be delayed to a future time frame, when the focus of our nation's issues are not on this Earth.

When the nation calls upon its military to fight in, from, and through space, we will need leaders capable of understanding the limitations and capabilities of space within the context of war fighting as members of the joint team. These leaders must also be able to make the appropriate trade-offs among air, ground, space, and information options to accomplish given military functions, create the desired effects, and achieve the needed results. Finally, they must be able to work with other professional space agencies and commercial enterprises to form visionary strategic partnerships to share ideas, gain cost efficiencies in research and development as well as operations, and execute long-range plans to keep America on the leading edge of space. These are the types of leaders the Air Force is developing today—those with an aerospace mind-set. I suggest that we focus our efforts on finding, training, developing, and keeping these types of people and leave space as an integral part of the Air Force. I believe that this approach is in the best interests of our country.

Col Darrell L. Herriges, USAF
Washington, D.C.

SPACE GUARD IDEA OFF BASE

I wish to take exception to several of the issues raised in Lt Col Cynthia A. S. McKinley's article "The Guardians of Space: Organizing America's Space Assets for the Twenty-First Century" (Spring 2000). The one that clearly stands out above the rest is her assertion that "air warriors think in airpower war-fighting terms. . . . Space operators think in terms of space services support. . . . Like trying to mix oil and water, it is, quite simply, unrealistic to expect the two to become one" (pp. 38–39). I have little doubt that some of today's space operators have what Colonel McKinley terms a support mind-set, but I hope they are few in comparison with those who have a war-fighter mentality.

I'd like to believe that any person who wears a uniform and serves in any branch of our nation's armed forces does so with the understanding that he or she is a warrior. Unfortunately, I know this is not the case. Even so, the fix to this problem of different cultures is *not* to cull out some support-only space guard. Instead, let's fix the problem. Let's bring a war-fighter mentality to those in the space business who need it—and that's *everyone!*

As Saddam Hussein, Slobodan Milosevic, Osama Bin Laden, and other tyrannical "leaders" know, if you pit your ideas and actions against the national interests of the United States, you will lose. US space capabilities are a big reason why. Colonel McKinley says that "in the next couple of decades, the Air Force's core competencies . . . will transform it from an air force into an aerospace force that operationally employs both air and space platforms to achieve our nation's military objectives" (p. 39). That's not in a couple of decades—that's *now!* Can the United States win without space? Probably, but without the communications, imaging, signals intelligence, navigation, theater missile defense, and space-control capabilities available from space *today,* the US military would be far less effective. With regard to "operationally employ[ing] both air and space platforms to

achieve our nation's military objectives," Colonel McKinley says "we are speaking of the future—not the present" (p. 40). She is simply wrong.

Colonel McKinley believes that the Air Force "must relinquish its non-core, non-war-fighting responsibilities for providing space services" (p. 40). As I look at our six Air Force core competencies—air and space superiority, information superiority, precision engagement, global attack, rapid global mobility, and agile combat support—I see space integrally linked with most, if not all, of these competencies.

In her comparison of Coast Guard responsibilities and space requirements (table 2, p. 43), Colonel McKinley seems to have omitted several significant areas that do not fit her Space Guard model. She clearly excludes the war-fighting applications of imagery, signals intelligence, and theater missile defense, and the table makes no mention of communications and space control. Each of these five areas, along with navigation, is vital to the ability of the United States to effectively preserve the peace and, if necessary, wage war.

My bottom line is threefold: (1) if you wear a military uniform, you should find the idea of having a "non-war-fighting culture" (p. 38) anywhere within the Department of Defense totally unacceptable; (2) people in the space business—whether in satellite operations, surveillance, missile warning, launch, ICBMs, acquisition, or research and development—need to know (if they don't know, they need to find out) how their jobs and their unit's mission contribute to the combat capability of the United States Air Force; and (3) people in leadership positions should try to instill a war-fighting mentality in their troops. The professional development of enlisted personnel and officers is much more than ensuring that your folks get the right level of professional military education. Instilling a war-fighting mentality should be a routine, integral part of that professional development.

Lt Col William G. Chapman, USAF
Nellis AFB, Nevada

The most fatal heresy in war, and, with us the most rank, is the heresy that battles can be won without heavy loss.

—Sir Ian Hamilton

Opportunity Lost

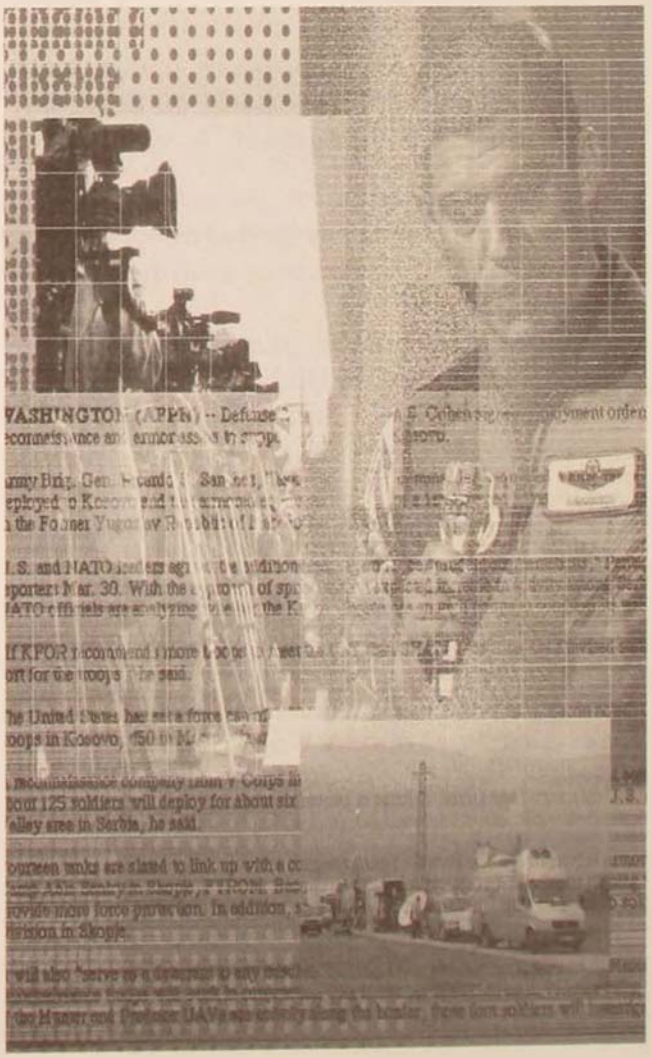
Public Affairs, Information Operations, and the Air War against Serbia

MAJ GARY POUNDER, USAF

Editorial Abstract: The wartime communiqué—a government's version of how a conflict is progressing—is a feature almost as old as war itself. In this article, Major Pounder examines the control and release of military information to the public during the air war against Serbia. He concludes that, in spite of the increased attention we have placed on information operations, the United States and NATO were ill prepared to win the "media war" (the competition for press attention, credibility, and—ultimately—sympathy for one side's views). These failures represented shortcomings in doctrine, organization, and training and, to a certain extent, a cultural gap between the public-affairs officer and the "information warrior." He offers recommendations for fighting and winning the public-information campaign that is certain to accompany the next war.

BRUSSELS, 19 APRIL 1999—The auditorium at the headquarters of the North Atlantic Treaty Organization (NATO) was packed with reporters awaiting a press briefing. Representatives of virtually every major US and European news organization jockeyed for position and photo angles; crews representing cable and broadcast news networks prepared to beam the event around the world. The level of media interest and attendance seemed reminiscent of a summit meeting or a visit by a head of state. But there was no summit or visiting leader at Brussels that day; instead, the world press had gathered at Headquarters NATO to hear an official explanation of a bombing attack gone awry in Kosovo. Less than a month into NATO's landmark military campaign against Serbia, media attention had shifted from overarching political and military issues to a single tactical event that had seemingly acquired strategic importance.

Five days before the briefing in Brussels, US Air Force F-16s mistakenly attacked two civilian convoys near the Kosovo village of Djakovica, killing at least 12 refugees. NATO hoped the press conference would put the episode to rest, ending the banner headlines and nonstop TV coverage generated by the



incident. "Civilians Are Slain in Military Attack on Kosovo Road," trumpeted a front-page article in the *New York Times*.[1] "Convoy Deaths May Undermine [NATO's] Moral Authority," wrote the *Los Angeles Times*.[2] Cable News Network (CNN), quoting a Serbian official, called the attack "a humanitarian catastrophe."[3] CNN correspondent Alesso Vinci, escorted to the scene by Serb officials, filed graphic reports from Djakovica, featuring gruesome images of burned and bloodied corpses scattered among bombed-out vehicles. Video footage from the scene led evening newscasts in the United States and Western Europe; equally searing still photographs from the scene received prominent play in subsequent editions of *Time*, *Newsweek*, and hundreds of newspapers around the world.

Now, after almost a week of media speculation, coverage, and analysis, NATO would offer its own account of what happened on the road near Djakovica. The room fell silent as a NATO public affairs officer (PAO) moved to the podium and introduced the scheduled briefer, Brig Gen Dan Leaf of the US Air Force. Commander of the 31st Expeditionary Wing at Aviano Air Base, Italy, Leaf led NATO's official inquiry into the incident. His selection for the task seemed appropriate since the F-16s that dropped the errant bombs had been assigned to his command. Drawing from the results of his inquiry, General Leaf offered a highly detailed discussion of the event, outlining the chronology of the attack and offering insights on the difficulty pilots face in identifying ground targets at medium altitude. Leaf also conceded that "it is possible there were civilian casualties at both locations" bombed by the F-16 pilots.[4]

It was, by most accounts, a bravura performance; one public-affairs report claimed that General Leaf's "detailed and thorough briefing put the issue to rest."[5] But the media seemed less inclined to let the event fade away, given NATO's earlier contradictory statements on the attack. The *Washington Post* noted that "Leaf's acknowledgement marked a sharp change of tack" for the alliance. *Post* reporter Dana Priest, who covered the Djakovica incident, claimed that "NATO officials obfuscated about operations while evidence accumulated that NATO bombs accidentally killed civilians."[6] Other broadcast and print outlets also compared Leaf's statement with earlier NATO statements. The alliance, according to *Newsweek*, "couldn't get its own story straight, contrasting General Leaf's comments to initial statements by Supreme Allied Commander General Wesley Clark (who blamed the attack on the Serbs), and later assertions from Pentagon spokesman Ken Bacon ("we only hit military vehicles"). In the end, *Newsweek* observed, NATO's varying pronouncements on the Djakovica tragedy "hurt its credibility far more than Milosevic did."[7]

Allied Force may also be remembered as the first true "media war," in which the power of instantaneous coverage and dramatic visual images rendered strategic importance to a handful of tactical events and threatened to undermine political and military coalitions in the process.

Welcome to the media war.

Six months after the last bomb fell on Serbia, it seems increasingly apparent that Operation Allied Force represented a watershed in modern warfare. The first major conflict won through airpower alone, Allied Force may also be remembered as the first true "media war," in which the power of instantaneous coverage and dramatic visual images rendered strategic importance to a handful of tactical events and threatened to undermine political and military coalitions in the process. The power of public information—particularly television images—to influence and transform public opinion cannot be underestimated, even in an air war that lasted just 78 days. General Leaf, the wing commander who faced the press that day in Brussels, believes NATO's slow response to the

Media "army" camped outside Aviano Air Base during Operation Allied Force

Djakovica incident "could have cost us the war,"[8] despite the fact that errant bombs represented less than one-tenth of one percent of those dropped in the Balkans.

Dr. Jamie Shea, NATO's chief spokesman during the war, offered similar views of the media's potential impact on military operations. Allied Force—viewed through the media prism—became a conflict in which "the individual incident is played up, and the general trend is played down . . . a series of individual newsworthy events, some of which are decisive to the outcome of the conflict, others of which are totally irrelevant."[9] In this media environment, according to Dr. Shea, media preoccupation with a handful of collateral-damage incidents—what he termed "the 0.1% of failure"—became "the central drama of the conflict and the yardstick for judging NATO's military and moral effectiveness."[10] Recognizing the media's ability to define and redefine conflicts virtually overnight, Shea observed that "winning the media campaign is just as important as winning the military campaign—the two are inseparable. You can't win one without the other."[11]

Not surprisingly, the United States and its NATO partners attempted to do just that during Allied Force as part of a comprehensive information operations (IO) campaign. Well before the first bombs fell in the Balkans, dedicated IO cells were organized at the command and joint task force levels, tasked to integrate—and employ—such diverse tools as civil affairs, electronic warfare, intelligence, and public information in an effort to control and dominate the "information battle space."

While NATO attempted to saturate the world's airwaves with near-constant briefings and interviews, the Serbs also succeeded in getting their own message out, forcing the alliance to react to a steady stream of public pronouncements, propaganda attempts, and media-manipulation efforts. Contrasting the NATO and Serb media campaigns, Adm James Ellis, commander of Allied Forces in Southern Europe during Allied Force, observed that "the enemy was much better at this [public information and public affairs (PA)] than we were . . . and far more nimble. The enemy deliberately and criminally killed innocents by the thousands, but no one saw it. . . . We accidentally killed innocents, sometimes by the dozens, and the world watched on the evening news. We were continuously reacting, investigating, and trying to answer 'how could this happen?' "[12]

As IO matures into the cornerstone of modern war fighting, questions regarding the employment of PA and public information in IO are timely, relevant, and require immediate consideration. In an era of relentless, real-time coverage, the media has an indelible impact on public opinion, long identified as a critical center of gravity for any US military campaign. Indeed, if information is "the currency of victory on the battlefield,"[13] then PA—through its public information mission—can clearly supply some of the capital required for winning the media war (as part of the IO campaign) and can bolster public support for the overall military effort. However, successful integration of public information into IO remains problematic; although IO planners and PAOs clearly had designs for what they hoped to accomplish during Allied Force, the doctrinal foundation for incorporating public information into IO remained unprepared for the challenges at hand.

The IO Revolution: Doctrine Leads, Procedures Lag

When they trace the evolution of IO in modern warfare, military historians may well regard 9 October 1998 as a minor milestone in the IO revolution. On that date, less than six months before the start of Allied Force, the US military published its first joint doctrine on information operations. Officially known as Joint Publication (Pub) 3-13, *Joint Doctrine for Information Operations,* this publication (in some respects) formalized the revolution by outlining theories, principles, and capabilities associated with IO.[14]

Joint Pub 3-13 also marked the culmination of a decade-long race to embrace and harness the tantalizing potential offered by IO. By the mid-1980s, theorists recognized that rapid advances in computer, communications, weapons, and guidance technologies would revolutionize warfare, an assertion affirmed by the stunning US victory in the Persian Gulf War. Writing shortly after that conflict, futurists Alvin and Heidi Toffler postulated that the world was witnessing a "third wave" of global change, based upon the control and exploitation of information and its associated technology. The Tofflers' book *War and Anti-War: Survival at the Dawn of the Twenty-First Century,* published in 1993, became required reading at service schools and war colleges, spawning a flood of student papers and military-journal articles that explored the Tofflers' ideas and related them to new concepts in US military thought, including something called information warfare (IW).[15]

By the time *War and Anti-War* reached the bookstores, Air Force efforts to develop its own IW doctrine and organization were well under way. The service officially established IW as a priority in 1993, shortly after the Department of Defense developed its own IW policy. By 1993 the Air Force Information Warfare Center had opened its doors at Kelly Air Force Base, Texas, followed by the service's first IW squadron (at Shaw AFB, South Carolina) two years later. Gen Ronald Fogleman, then the Air Force chief of staff, affirmed the commitment to IO in 1995, when he described it as "the fifth dimension of warfare . . . critical to military success in the future."[16] The Air Force subsequently defined information superiority as one of its "core competencies," as "critical to conflict now as controlling air and space, or occupying land was in the past,"[17] and implemented additional measures to realize its IO vision. Barely three years after General Fogleman's speech, the Air Force had developed its own IO doctrine (Air Force Doctrine Document [AFDD] 2-5, *Information Operations,* published in August 1998) and created dedicated IO organizations at the numbered air force and major command levels. Staffed by IO experts and guided by the latest doctrine, the IO flights were expected to "lead the way in planning and executing warfighting IO."[18] Allied Force would provide the first major test for IO doctrine and organization; US Air Forces in Europe's (USAFE) fledgling IO flight began preparing for potential operations in the Balkans just weeks after AFDD 2-5 was published.

As IO planning began to take shape, no one gave much thought to using public information as a pillar of the IO campaign—and with good reason. Since the early 1990s, the Air Force, along with the other services, had largely ignored the potential of public information to support and enhance IO. Although events in the Persian Gulf highlighted the ability of public information—delivered through the news media—to underscore national intent, influence military decision making, and sway public opinion at home, there was no real attempt to harness its potential for the IO effort.

Although the Gulf War underscored the potential benefits of a public-information campaign, the conflict also provided a cautionary tale on the power of public information and its potential impact on military operations. On 10 February 1991, barely three weeks after the air war began, a US Air Force F-117 attacked a suspected Iraqi leadership bunker in the Baghdad neighborhood of Al Firdos. Unknown to the pilot or coalition

planners, the Al Firdos complex was actually a civilian air-raid shelter. Hundreds of civilians died in the attack; the same CNN correspondents who had earlier described pinpoint strikes in glowing terms now highlighted the consequences of an attack gone astray—images of dead civilians being removed from the bunker became a staple of TV coverage. The impact on the air war was immediate; worried about potential political fallout, the US government essentially halted bombing against Baghdad for the next 10 days. Gen Colin Powell, chairman of the Joint Chiefs of Staff, directed the theater commander, Gen Norman Schwarzkopf, to personally scrub all target lists and transferred approval authority for Baghdad targets from the area of responsibility to Washington.[19]

"Everyone—commanders, IO specialists, and public affairs officers—needs to understand public information is a battle space that must be contested and controlled like any other."

Unfortunately, the lessons drawn from public-information efforts in the Persian Gulf appear to have been largely ignored as IO planning for Allied Force continued. Although some attempts were made to integrate public information into IO planning, these efforts eventually came to naught. One IO planner at Headquarters USAFE recalls that PA officers "seemed reluctant to participate in info ops,"[20] preventing the implementation of IO initiatives based on public information.

Analyzing the impasse over the potential role of public information in IO, Col (select) Jack Ivy, deputy director of the Air Force's Public Affairs Center for Excellence at Maxwell AFB, Alabama, believes the problem stemmed from several factors, including a lack of education. "Everyone—commanders, IO specialists, and public affairs officers—needs to understand public information is a battle space that must be contested and controlled like any other," he observed.[21] Within this context, Ivy believes, one can effectively employ public information as an IO tool—as long as those efforts are based on the truth, a principle endorsed by virtually all IO practitioners and PA officers. From Colonel Ivy's perspective, truth-based public-information efforts represent the best of both worlds, allowing full integration of public information into the IO campaign without sacrificing the credibility and integrity of the PAO. According to Ivy, public information must be a part of IO in a media-driven world. The alternative, he observed, is "leaving the [public information] battlespace to either chance or the enemy."[22]

Interestingly, Ivy's views on the public-information "battle space" have stimulated a healthy debate within the PA community. P. J. Crowley, a retired Air Force colonel who now serves as principal assistant secretary of defense for public affairs, believes that Ivy's battle-space definition has "dreadful implications." According to Crowley, establishing public information as a battle space establishes our own press as antagonists and the enemy media as possible targets. Such an environment, Crowley observes, sets the stage for an adversarial relationship with our own reporters and potential retaliatory action against Western journalists in enemy territory, complicating the overall public-information effort. "Public information should be a marketplace, not a battlespace," he notes.[23]

Although some members of the PA community have tried to define their element of IW, initial IO doctrine and training efforts have done little to identify the role of public information and PA in IO. Joint Pub 3-13 outlines the potential tasks for PA and public information in IO, but the Air Force's own IO doctrine identifies PA as only a "temporary member" of the IW team, suggesting that public-information specialists would only "contribute special expertise as the need arises."[24] Existing PA doctrine, guidance, and procedures have proven to be equally vague; the first Air Force PA doctrine document that addressed IO was published in October

1999—four months after the last bombs fell in the Balkans. These difficulties have been compounded by a lack of dedicated IO training for PA officers; even today, entry-level PAO training does not address IO, and PA personnel do not attend specialized IO courses, including the new "graduate-level" training program conducted at Hurlburt Field, Florida.[25]

During Allied Force, the lack of definitive guidance for employing public information in IO resulted in an ad hoc approach to the integration issue. The IO campaign plan that eventually emerged made no mention of public information in the allied IW effort, effectively sheathing a potentially valuable weapon. PA (and public information) would eventually play a minor, reactive role in IO but only after the conflict was under way, when NATO found itself responding to Serbian claims and charges in the "new" media environment that enveloped Allied Force.

Public Information and the New Media Environment

By focusing the camera first on one crisis, then almost overnight on another, the media increasingly set the public agenda, and force politicians to deal with a constant flow of crises and controversies.

—Alvin and Heidi Toffler

One of the most important lessons of the Gulf War focused not on stealth aircraft or precision weapons, but on the impact of real-time news coverage of military operations. If Vietnam was the first "television war," then Operation Desert Storm was the first "cable news conflict," thanks to the ubiquitous presence of CNN and its legion of correspondents. During one memorable incident, General Schwarzkopf watched from his Riyadh command center as a TV news crew provided live coverage of an artillery duel between the 82d Airborne Division and Iraqi troops. Schwarzkopf's amazement turned to shock when the correspondent named the US division, giving Iraqi intelligence an opportunity to locate the 82d through communication with artillery units. More disturbingly, the report threatened to expose coalition war plans, since the 82d was already in a preassigned flanking position, just prior to the start of the ground war.[26] Fortunately, the Iraqis never discovered the division's location, but the incident illustrated the potential hazards of live, unfiltered coverage from the battlefield.

As evidenced by the "live" artillery duel that General Schwarzkopf watched on TV, the dynamics of media coverage had clearly changed by the early 1990s. The same advances in computer and satellite technology that triggered the revolution in military affairs fueled similar, sweeping changes in mass communications. Satellite phones and portable, "flyaway" transmission dishes made it possible for CNN and its competitors to broadcast words and images from virtually any point on Earth, around-the-clock. The impact of this communications revolution on political, diplomatic, and military decision making was immediate and apparent. As Carl Builder noted in the mid-1990s, "Cable News Network now appears to be more pertinent than the CIA for current White House intelligence. The significance of CNN to the White House is that it represents information which is in the hands of the public, and must be reckoned with by the political elites. CNN can, by default, set the public agenda."[27]

Military leaders also wrestled with the consequences of the so-called CNN effect,[28] having experienced it firsthand during both the Gulf War and the ill-fated US military operation in Somalia. In fact, the Somalia campaign was something of a media creation, "a military operation launched by the evening news," as *TV Guide* called it. Influenced by media reports from the scene, the Bush administration committed US troops to a humanitarian-relief mission in Somalia. Eventually, humanitarian operations would evolve into a security mission that resulted in conflict between US/United Nations (UN) forces and armed Somali clans.

Events in Somalia reached their zenith on 3 October 1993, when US Army Rangers launched a raid in Mogadishu to capture fugitive warlord Mohammed Farah Aidid. Isolated in the narrow streets and alleyways of the Somali capital, the Rangers fought a pitched, desperate battle with Aidid's soldiers while a UN relief column tried to reinforce American positions. When the battle was over, 18 Americans were dead, 77 wounded, and one had been captured. Aidid's troops celebrated by desecrating the body of a dead American, dragging it through the streets of Mogadishu. A reporter from the *Toronto Star* recorded the event with his 35-millimeter camera and a home video recorder. Ironically, US news organizations did not cover the incident; they had evacuated their personnel from Somalia two weeks earlier, fearing for their safety.

Reaction to the debacle in Mogadishu was swift and predictable. Congress and the American public expressed outrage, demanding an immediate end to the US military mission in Somalia. Sen. Robert Byrd of West Virginia sponsored an amendment to cut off funding for the operation, signaling that Congress would no longer support the Somali mission. Facing a firestorm of domestic criticism and dwindling public support, President Bill Clinton ordered US forces out of the war-torn African nation. The commanding power of the media—which (arguably) had led the United States into Somalia—now echoed the drumbeat for an American withdrawal. As Anthony Lake, former US national security advisor, later noted, "American foreign policy is increasingly driven by where CNN points its cameras."[29]

Noting the potential perils of live coverage and instant analysis, many commanders and PAOs began to view the press as a less reliable partner in keeping the public informed. As one senior PAO told James Kitfield of the *National Journal*, "With the explosion of 24-hour news outlets, there's greater pressure not only to report in real time, before facts can be evaluated and confirmed—but then those factually unreliable stories are instantly dissected, analyzed, and commented upon the air. The irony is that this environment of 24-hour news coverage and 'talking-heads' programming is creating more heat, but less and less illumination."[30]

As the media environment became more competitive and interpretive, the number of reporters considered expert in military matters continued to decrease. Mark Thompson, defense correspondent for *Time* magazine, estimates that less than 50 percent of the reporters with Pentagon press credentials cover the military beat full-time. That number declines even further, he says, when one factors out reporters for newsletters and specialized, narrowly focused defense publications. The result is fewer journalists with the knowledge and experience required for reporting complex, military-related stories to a mass audience.

The trend toward less experienced journalists on the defense beat, coupled with the increase in punditry and instant analysis, has reinforced Pentagon perceptions that the press can't be trusted with sensitive information that could jeopardize operational security or the lives of US service members. Not surprisingly, most defense reporters refute that charge, noting that journalists knew in advance—and kept quiet about—the "left hook" maneuver against the Iraqi Republican Guard during Desert Storm. More recently, CNN anchor/reporter Bill Hemmer, who covered Allied Force from Aviano AB, Italy, stated that his network "went to great pains" to protect information (when required for security reasons) during the Balkans conflict.[31] Bradley Graham, reporter for the *Washington Post*, believes that a "number of very reliable news organizations and journalists . . . cover the military in a responsible manner" and are willing to respect security concerns.[32]

Most reporters would support Graham's assertion, but many also believe that the proliferation of cable-TV news channels has had a deleterious effect on coverage of the military. CNN's ratings—and financial success—during the Gulf War spawned a legion of imitators. By 1999, cable subscribers in many

American cities could choose from as many as nine different news and information channels, most of them controlled by a handful of media conglomerates. NBC, for example, had two cable outlets (CNBC and MSNBC), in addition to its long-standing broadcast network; CNN, the pioneer in cable news, had no fewer than six information channels on the air when Allied Force began. Not surprisingly, the rapid expansion of cable news outlets further fueled media competition, creating an enormous demand for content to fill round-the-clock news programming.

Nowhere was the demand for content greater—or more apparent—than at NBC, where the news division supplied content for no fewer than three separate networks. Yet, as Howard Kurtz of the *Washington Post* points out, NBC viewed the prospect of military operations in the Balkans as something of an opportunity—a chance to showcase the "news machine" built by the network and its news division president, Andrew Lack. In particular, NBC hoped its war coverage would reverse a recent ratings slide at MSNBC, the three-year-old cable channel co-owned with Microsoft. To do that, MSNBC followed its familiar, "big story" approach, providing saturation coverage of the Balkans the same way it had covered the O. J. Simpson trial and the Clinton-Lewinsky scandal.[33]

Using that strategy, MSNBC would (eventually) devote 97 percent of its programming to the Balkans conflict. Not surprisingly, NBC's wall-to-wall approach to war coverage quickly paid big dividends; barely three weeks into the conflict, MSNBC's ratings had more than doubled. Audiences for other cable news channels—including CNN—also showed a substantial increase, as each outlet tried to outdistance its rivals in covering the war. Although some analysts worried that ever-increasing competition had reduced reporters to little more than "speed bumps on the information superhighway," there was little room for introspection as long as war raged in the Balkans.[34]

But hypercompetition, saturation coverage, and decreased objectivity weren't the only changes shaping the new media environment. As the 1990s drew to a close, traditional broadcast, print, and cable outlets faced a threat from a new source for news and information—the Internet. In 1998, one in five Americans visited the World Wide Web for news and information during any given week, a threefold increase over usage levels in 1996.[35] To satisfy this demand, hundreds of news-related web sites sprang up, some literally overnight. Many of the sites were established and maintained by mainstream media organizations, but a few upstart operations managed to claw their way to the front of the Internet news pack. Matt Drudge, a former gift shop manager with no previous journalism experience, created one of the web's most popular news sites from his Hollywood apartment. By early 1999, more than a million people a day were accessing the *Drudge Report* for breaking news and information.[36]

More outlets meant even greater competition, accelerating the rush to get stories out first or to provide a new twist on those already reported.

Globally, Internet use remained relatively low (only about 90 million people around the world had access in 1998), but studies indicated that web-based news sites attracted a premium audience. In America (and elsewhere) Internet news and information services reached consumers who were—on the whole—younger, better educated, and more affluent than traditional media audiences.[37] More importantly, as global governments moved on-line, the Internet also demonstrated an ability to reach the power elite, bypassing traditional communications channels. When Matt Drudge first revealed the existence of Monica Lewinsky, his web site received more than twenty-six hundred "visits" from the White House computer users in less than 12 hours.[38] It was, essentially, the same

effect demonstrated by CNN in the Gulf War, when world leaders used the cable outlet for breaking news and even intelligence data. However, in the Internet age, the power of instant information was multiplied again and again through the explosion of web sites, bulletin boards, and chat rooms.

Unfortunately, the advent of web-based news only exacerbated existing trends in journalism. More outlets meant even greater competition, accelerating the rush to get stories out first or to provide a new twist on those already reported. Additionally, the explosion of Internet reporting did little to improve journalistic accuracy. Drudge, who claims that "the reports on my web gossip sheet are 80% accurate," reported (erroneously) that a White House aide beat his wife, prompting a $300 million libel suit.[39] Web sites operated by mainstream media outlets had their problems as well; during Allied Force, a *Washington Post* headline announced that NATO had softened its demands on Serbia—despite the fact that alliance communiqués showed no change in the negotiating stance. The *Post*'s inaccurate headline was subsequently echoed on various web sites (including its own), prompting additional, inaccurate reporting on the matter. As *Brill's Content* later noted, "In the age of the new media machine, where the story of the day gets the full 'Monica' treatment, once a negative scoop gets out there, there's no stopping it."[40]

As the media environment evolved, IO practitioners and PAOs continued to neglect the public-information element of their battle space, setting the stage for Allied Force. Although both disciplines would provide unique contributions to the NATO war effort, the resulting IO campaign (ultimately) lacked the synergy that could have been achieved by linking PA and IO through a robust, fact-based public-information effort. The seeds of NATO's public-information problems—including the infamous incidents of collateral damage—were sown long before the first bombs fell on Belgrade.

Public Information Operations during Allied Force: A Winning Hand or Pyrrhic Victory?

Despite doctrine limitations, a lack of concrete procedures, and little regard for a changing media environment, IO planners and PAOs still made an effort to integrate public information into the IO campaign for Allied Force. When USAFE's IO cell began active planning for the air campaign in December 1998, the command's PA staff was invited to participate; senior PAOs attended several IO planning meetings, but these sessions produced little in the way of specific public-information objectives for the planned IO campaign.

Part of the problem apparently stemmed from differing perspectives on the role of PA in IO. A former USAFE PA officer claims that IO planners appeared more interested in "media manipulation" than dissemination of factual information, a perception that prompted the PA staff to limit its participation in IO. However, Capt John Shaw of USAFE's IO Flight believes that PAOs carried away the wrong impression: "There was never an intention to involve PA to participate in a distortion of truth or threaten their credibility," he recalls.[41] Another IO planner claims that the IO staff approached PA about the possibility of public information as a "deterrent factor" in January 1999—almost two months before the operation began. According to that IO specialist, PA appeared "uninterested in the idea," and the proposal quickly died.[42]

Debate over PA's exact role in IO also reignited a controversy within the PA community. Although most PAOs acknowledged that they could play a key role in IO, many worried that their participation would damage their credibility with the press and the public—audiences that demanded truthful, credible information. Lt Col Barbara Carr, USAFE's deputy director of public affairs during Allied Force, said it best: "A PAO's credibility is essential. Once lost—in reality or perception—word spreads through the media in

Later in the war, NATO eased its restrictions on media interviews with flag officers. Here, General Leaf discusses the air campaign with Ted Koppel of ABC News.

record time. And that PAO (and sometimes other PAOs in the vicinity who get painted with the same brush) can no longer function effectively in his mission. We need to be very careful on how our role in IO is articulated. I wouldn't say participating in IO puts us on a 'slippery slope,' but the potential is there."[43]

P. J. Crowley echoes Carr's views on the integration issue for PA. He believes that full incorporation of PA into the IO effort would damage the credibility of PAOs. According to Crowley, PA needs to "cooperate more fully" with the IO community, while "avoiding integration into IO cells and other specialized units."[44]

However, Colonel Ivy believes it is possible for PA to play an active role in IO without sacrificing its credibility. As an example, he cites press coverage of US amphibious training in the Persian Gulf in late 1990, before the start of Desert Storm. PA officers encouraged reporters to cover the event, which highlighted potential US capabilities against Iraqi forces in Kuwait. When the amphibious-landing option was later scrapped, members of the press corps accused PAOs of deceiving them. But, as Colonel Ivy points out, amphibious landings were still a military option when the press corps covered the training event. From his perspective, reporters were not deceived, and PA succeeded in its goal of communicating allied intent and capabilities through public information.[45]

Lt Col Virginia Sullivan, US Air Force, Retired, a former PA officer now on the journalism faculty at Arkansas State University, agrees with Ivy's assessment: "When you are dealing with factual information or the mission of the campaign, PA and IO can work together without compromising the mission or ethics." As a PAO during initial US ground operations in Bosnia in 1995, she recalls that messages regarding the alliance's intent were developed and communicated through public information channels as part of the overall IO effort. One most notable success in this area, according to Professor Sullivan, was communicating the intent of the Implemen-

tation Force (IFOR) "to deal evenhandedly with all three factions to maintain the peace."[46] Sullivan believes that these efforts were instrumental in building confidence in both IFOR and the peace process.

Ironically, USAFE conducted similar PA efforts in the months leading up to Allied Force, although they remained outside the umbrella of an IO campaign. In June 1998, for example, the command's PA staff helped coordinate extensive media coverage of a major NATO air exercise over the Balkans. The operation was essentially a show of force for the Belgrade regime, but Colonel Carr recalls that PAOs "pulled out all the stops" in making the event visible to the press. A similar effort was mounted in October 1998 during the deployment of US bombers to Great Britain. According to Carr, both media events "sent a clear message to Milosevic," and "while they did not prevent the eventual bombing campaign, it may have postponed it."[47]

Despite their potential deterrent value, not everyone in the allied chain of command supported these public-information initiatives. For example, USAFE's operations-security staff initially opposed publicizing the bomber deployment, claiming that media coverage would jeopardize potential operations. USAFE's PA staff faced similar criticism when it established a "Kosovo home page" on the Internet in September 1998, responding to media queries about the types of forces being arrayed against Serbia. Intelligence officers asked PA to shut down the web site, claiming that it revealed sensitive information to the Serbs. Intel later rescinded its request, however, when the deterrent value of the home page became apparent. Along with press inquiries, the web site received thousands of "hits" from Eastern Europe, including many from Serb government locations.[48]

Unfortunately, these types of public-information initiatives were never integrated into the IO campaign against Serbia, something Colonel Carr attributes to a lack of understanding on both sides: "I got the sense they [IO planners] were not sure just how much information to share with us. Likewise, I don't think we were sure how much we needed or should know." On a couple of occasions, according to Carr, PAOs were barred from portions of IO meetings or planning sessions and were told, "It's not something PA needs to know."[49] Colonel Ivy disagrees with that approach. For PAOs to be full members of the IO team, he observed, "they need to be completely in the loop." He noted that PAOs who remain outside or only partially in the IO loop will have a much harder time doing their job, particularly when something goes wrong.

Managing the public-information campaign was further compounded by challenges associated with a coalition effort. The PA staff at Headquarters NATO faced a daunting challenge: developing, coordinating, and managing PA policy for a 19-member alliance whose members often had sharply different views on releasing information and dealing with the press. Balancing political sensitivities and security concerns against the need to tell the "NATO story," the alliance (in concert with the Pentagon) eventually adopted restrictive policies on the release of information. The Pentagon's official media ground rules for Kosovo operations noted that "specific information on friendly force troop movements, tactical deployments, and dispositions could jeopardize operations and endanger lives. Therefore, release of some information will be denied or embargoed."[50]

The limited-release policy enjoyed strong support from some NATO commanders who worried that real-time reporting would tip off the Serbs about planned military operations; however, other military leaders favored a more open approach. General Leaf, for example, believes that the military "could have been more accessible without giving away the farm."[51]

Not surprisingly, the allied decision to limit information triggered complaints from the press. But Pentagon and NATO officials stood their ground, citing a *Washington Post* article that identified targets in downtown Belgrade—before they were bombed—as proof

that the press placed "getting the story" ahead of operational security.[52] Bradley Graham, who wrote the story, refutes that accusation, claiming that the Belgrade targets "were common knowledge" in the Pentagon. Mark Thompson of *Time* agreed: "Those targets were well known before the war began. It was no surprise that they were on the target list."[53]

As another key element of its information strategy, NATO also elected to limit media contact among its senior officers. By barring its wing commanders, component commanders, and joint task force commanders from speaking with the press, NATO thought that this would allow them to focus on their wartime duties while still maintaining a "unified" alliance message. When Allied Force kicked off in late March, the only flag officer authorized to conduct media interviews in the area of responsibility was General Clark, the supreme allied commander.

In theory, the concept made sense, but in execution it left much to be desired. The requirements of running the war and holding the NATO coalition together quickly consumed General Clark's attention, leaving him little time to talk to the press. With General Clark (and other senior officers) largely unavailable, the media renewed their complaints about the dearth of information and the lack of access to military leaders.

Despite limits on the amount and type of information that could be released, NATO still tried to saturate the media with its message. In his remarkably candid postwar speech in London, Jamie Shea observed that "our credo at NATO was just to be on the air the whole time, crowd out the opposition, give every interview, do every briefing."[54] In practice, this strategy consisted of a series of daily press conferences designed to shape and dominate television coverage of the war. As Shea recalls, "We had an MOD [Ministry of Defence] briefing from London late in the morning, and just as the audience was switching off from that, on came the 3 P.M. briefing (from NATO), and as soon as the 3 P.M. briefing was off the air, up jumped the Pentagon, the State Department, and the White House. We occupied the whole day with our information. And the more we did, the less the media put on talking heads and others who could be nullifying our effort."[55]

In retrospect, according to Shea, "the one thing we did well in the Kosovo crisis was to occupy the media space. We created a situation in which nobody in the world who was a regular TV watcher could escape the NATO message." Dr. Shea also noted that the allied briefings satisfied a key requirement for cable television news outlets: "It suits CNN or BBC [British Broadcasting Corporation] World Service to have a daily show. . . . They have a lot of space to fill, and they want to do it cheaply. The best way of filling an hour virtually cost-free is to put NATO's daily briefing on the box."[56] Even NATO's daily briefing time (3 P.M. in Brussels) was aimed at the TV audience; at that hour, viewers in Australia, Asia, Europe, and North America were awake and able to watch the "daily show" live. P. J. Crowley, who assisted with the PA effort in Brussels, believes that the saturation strategy worked: "Between our three daily briefings, we were able to command 18 hours of the 24-hour news day. The media dwelt more on our information than they did on Belgrade's."[57]

From the other side of the briefing room, NATO's media campaign received less-than-rave reviews from many of the reporters and columnists who covered the war. Lt Gen Bernard Trainor, US Marine Corps, Retired, a military analyst for the *New York Times,* stated bluntly that "the media manipulation got so transparent that I didn't believe anything Jamie Shea and Ken Bacon had to say." Because the military controlled the cockpit video, General Trainor commented, "We couldn't prove when they were wrong."[58] Trainor believes that the tight control of information represents payback time for what the military still believes the media did to it in Vietnam. He claims that, increasingly, the military's attitude toward the press is, We'll tell you what you need to know.

Other members of the press corps were more charitable in their assessment of military motivations behind the information pol-

icy. Bradley Graham noted that "Secretary Cohen, General Shelton, General Clark, and other allied officials were genuinely concerned about security, and they made a judgement call—but they swung too far in the direction of security over the public's right to know."[59] Mark Thompson believes that oft-stated security concerns may have actually been a smoke screen for the political sensitivities of NATO members, who worried about the release of military information in the mass media: "A lot of the missing data was the result of political restrictions. NATO countries had veto power [over military operations], so the US was far more accommodating in restricting information than with its coalition partners during the Gulf War."[60]

The military's information policy exasperated reporters, who vainly pressed for any new information on the air campaign against Serbia. *Time* likened Pentagon press briefings to "jousting sessions," in which journalists tried vainly to "divine the most banal battlefield data."[61] During one particularly frustrating press conference, reporters asked Vice Adm Scott Fry of the Joint Staff how many allied sorties had been aborted due to bad weather. "I'm afraid I can't get into that level of detail off the top of my head," he replied. "How about an approximation?" a correspondent inquired. "I'd prefer not to even approximate it," stated Admiral Fry. "A ballpark figure?" asked another reporter? "I don't have that information available," said the admiral.[62]

As one result of the media "gray out," according to James Kitfield, the press "badly misrepresented the size and scope of the air campaign in its first weeks." Early headlines in US and European newspapers implied a massive attack; the *New York Times* described initial air strikes as a "broad barrage," and a *Washington Post* headline reported "Bombing Spreads" just a few days later. With little amplifying or qualifying data, most journalists simply accepted the official line of an ever-intensifying war. When it became apparent that Allied Force was a much more modest effort—at least initially—the press accused NATO and the Pentagon of deception and secrecy, prompting executives from major news organizations to ask Defense Secretary William Cohen for greater cooperation with the media.[63] Although reporters (eventually) received more information on the numbers of sorties flown and targets attacked, they still complained that the military was less forthcoming than in the past. "We were starving for information," recalls Mark Thompson.[64]

Predictably, the perceived lack of information created a further rift over the oftentense relationship between the military and the press. Some Pentagon correspondents claimed that senior Department of Defense officials and military officers misled them during Allied Force—a serious accusation. But other observers put at least part of the blame on the media. "It's easy to feel misled if you simply listen to what's being said without serious examination," observed Bradley Graham, who believes that defense reporters need to "listen more carefully and read between the lines."[65] Mark Thompson faulted some of his colleagues for "not doing their research in advance" and asking "dumb" questions, suggesting (from his perspective), that some reporters "wanted to be spoon-fed."[66]

Reporters who covered the war in Europe voiced similar complaints about the lack of information. CNN's Bill Hemmer, who reported from Aviano AB and Headquarters NATO, said reporters at those locations felt "half fooled" because they could not gain critical information, including the numbers of sorties flown, the types of tactics employed, and the exact scope of the US military contribution. Hemmer believes that interviews with commanders could have filled in important details of the air campaign, offering context and perspective that the American public wanted. Hemmer noted, ironically, that he spent two weeks covering the air war at Aviano but never met—or interviewed—the wing commander (General Leaf) until his press conference in Brussels.[67]

The allied media strategy also spurred internal critiques. Jamie Shea, P. J. Crowley, and others noted that NATO entered Allied Force with a PA staff that was undersized and lack-

Outside Aviano AB, the World Media observed and reported NATO flight operations.

ing in expertise. Crowley recalls that the headquarters PA staff had only three media specialists when the war began, necessitating the deployment of additional personnel—including Crowley himself—to deal with the horde of reporters that descended on Brussels.[68] Jamie Shea concedes that the Supreme Headquarters Allied Powers Europe/NATO public-information system "was not functioning optimally"[69] during the first month of the air war, a period that coincided with some of the alliance's most embarrassing media episodes, including the Djakovica convoy bombing. Dr. Shea believes that NATO's press and media organization should be strengthened "from the moment NATO's involvement in a crisis or conflict appears inevitable." Crowley observes that NATO is already making changes in that area, "institutionalizing" an expanded media-relations cell to be better prepared to deal with the press during future crises.[70]

Another weakness in NATO's media strategy, according to Dr. Shea, was a lack of expertise on NATO's opponent. During Allied Force, he observed, "It took several weeks before we had people knowledgeable about Yugoslavia in the MOC [Media Operations Center] or started to monitor the Yugoslav press or TV closely."[71] Lacking that expertise, NATO's media managers sometimes found it difficult to respond to Serb statements and propaganda attempts. "If we had had this expertise from the beginning," Shea believes, "we could have an-

ticipated some of Milosevic's moves, and learned to counter them better."[72]

Outside Headquarters NATO, PA personnel at other levels faced their own challenges. Aviano AB, Italy, became "ground zero" for press coverage of Allied Force, when an army of six hundred media representatives descended on the installation. Capt Edward Thomas, chief of the 31st Fighter Wing's Public Affairs Office at Aviano, recalls that "our workload went [up] 600 percent at the beginning of Operation Allied Force; the first few days of the war, we were just not manned to deal with the mass numbers of the media."[73] However, even with limited augmentation from deployed units, the Aviano wing's PA shop never had more than 15 assigned personnel, complicating efforts to handle the media horde on its doorstep. Capt John Haynes, deputy public affairs officer for the 31st Fighter Wing, notes that "limited manning was truly killing us. Our staff routinely worked 15- and 16-hour days, seven days a week."[74] Haynes recalls that he once literally began dozing in the middle of a live interview on BBC radio, after a series of marathon workdays. Despite the demands of handling a huge press contingent, the Aviano PA office never asked for additional manning, and senior PAOs insist that combat units had enough PA specialists to meet their mission requirements.[75]

With limited PA manning, Aviano (and other operational bases) quickly implemented media pool systems to deal with the media-coverage issue. Under the pool system, military representatives provided information to a small number of reporters who, in turn, shared the data with their colleagues. The press, predictably, griped about the pool arrangements and access to the base, but, as Captain Thomas remembers, "There was no way around the pool system." Eventually, he believes, reporters understood the need for a media pool, although complaints persisted until the end of the war.[76]

Despite these difficulties, US and NATO PA organizations produced more than a few success stories during Allied Force. Many PAOs and reporters believe that the alliance was ultimately successful in getting its message across, thanks (in part) to timely pronouncements by national leaders and Jamie Shea's saturation strategy. At the operational level, PA officers also claimed success in communicating the effectiveness of airpower, an assessment supported by some journalists as well. Bradley Graham believes that one of the lasting lessons of Allied Force is that "airpower can win a war," a theme echoed through public-information channels during the war. NATO's media managers also succeeded, on occasion, in providing a firsthand view of the air war by placing reporters on allied bombers and support aircraft. More than 250 journalists flew on US and NATO aircraft during Allied Force, generating hundreds of stories that illustrated the complexity of executing a major air campaign.[77] Unit-level PAOs also claimed success in showing the personal side of the war by providing media access to pilots, support personnel, and their families.

Yet, many observers also believe that the allied "war story" lacked critical elements or created false impressions, largely because of restrictive public-information policies. Colonel Ivy worries that the media reports during the first month of the war (when bad weather limited bombing effectiveness), followed by pictures of a largely intact Serb army leaving Kosovo, "made airpower look less effective than it really was."[78] Colonel Sullivan agrees: "The NATO 'story' failed to stress the successes of the air component, and the focus of the media became more on collateral damage." Sullivan also believes that war coverage also lacked a necessary human element, despite allied efforts to highlight the contributions of its members and their military personnel. "Where were the successes—who were the heroes, the soldier, sailor, or airman who helped a family or a refugee?" she asked.[79]

In sharp contrast, P. J. Crowley offers a completely different analysis of the relative success of NATO's public-information campaign against Serbia. He believes that the alliance

won the public-information war "by a large margin," comparing NATO's open admission of collateral damage to the steady stream of propaganda from Belgrade. By the end of the war, Crowley observed, "NATO had credibility with the press—Milosevic didn't."[80]

From a political perspective, some observers worried that NATO's information policies may have indirectly exposed minor fissures within the alliance—even inside member governments. With little information available on the progress of the air campaign, some reporters began to suggest that the war was not going according to plan, prompting criticism of the allied strategy. According to the *Washington Post,* "Pentagon planners" and "intelligence sources" claimed they had warned the administration of potential problems in the NATO approach, predicting that Milosevic might respond to air strikes "by accelerating his campaign of ethnic cleansing."[81] Noting the sudden rash of anonymous criticism, Howard Kurtz observed that "the moment it became obvious that the NATO attacks on Yugoslavia were in trouble was when unnamed American officials began using the media to distance themselves from the policy."[82]

Beyond the "blame game," other reporters viewed Allied Force in terms of missed opportunities for the press, public, and the military. *Post* Pentagon reporter Bradley Graham summed it up well: "Overall, my feeling is that the military lost something important because of the Pentagon-NATO media strategy. By staying quiet, they denied those involved their due for their heroism and bravery. We saw few of the individual faces and missed their particular stories. So much of the nitty-gritty of Operation Allied Force was lost on the press and the American public. Consequently, the public was much less engaged—essentially not invited into the war."[83]

Like other reporters on the defense beat, Graham also believes that the Balkans war represents another serious blow in the military-media relationship. "Unfortunately, I do think Kosovo represented a serious setback for relations between the military and the media," he told James Kitfield. "The Pentagon's whole approach left a lot of unnecessary ill feelings among reporters, particularly among those of us who have worked hard to understand the military."[84] Mark Thompson of *Time* echoes that sentiment: "Things were getting brittle [in the military-media relationship] by the end of the war." Yet, Thompson believes that the military may use a similar media strategy in future conflicts: "The Pentagon knew what they could get by with, in terms of information release. As long as the public supports a tight hold on information, then military and public sentiment can trump the press. The public feels like we won the war and doesn't take kindly to the press whining about information restrictions."[85]

However, Thompson believes that the military's media strategy may ultimately backfire. Had the United States and NATO suffered significant casualties during Allied Force, he observed, the public would have demanded more information and accountability, limiting the military's ability to control information. The Pentagon may also find it more difficult to generate media interest when it offers more substantial information, as illustrated by another incident that occurred during Allied Force. After almost two months of limited data and information delays during collateral-damage incidents, the Pentagon announced (on 22 May 1999) the "most active night of strikes so far . . . hitting 40–50 targets and virtually shutting down the entire Yugoslav electric grid." Pentagon Spokesman Ken Bacon believes the raids may have been "the turning point in the war."[86] Yet, when Bacon picked up the *New York Times* to see how the big story had played, he was aghast, according to James Kitfield. The *Times*'s editors, perhaps weary of the Pentagon's information game, had given the air strikes exactly one sentence in a picture caption.[87] In that context, allied "victories" in controlling the press and public information during the Kosovo war may have been nothing more than illusory.

Public Information, IO, and the Next War: What Lies Ahead?

Regrettably, many reasons exist for allied shortcomings in the public-information campaign against Serbia. In terms of IO doctrine alone, the failure to address public information as a key battle space set the stage for many of the problems that emerged during Allied Force. Focusing on technical aspects of IO (cyber attack, network defense, etc.), theorists and planners ignored the fact that much of the information war will be fought openly, through the mass media. Yet, allied public-information efforts remained largely defensive in nature, particularly when things went wrong. The alliance took five days to respond to the convoy attack and three days to respond to the bombing of the Chinese Embassy—an eternity in an era of instant, on-air punditry and 24-hour news cycles—raising suspicions that NATO had something to hide.

Another major problem was Belgrade's ability to set the tone for much of the media war. Using their own media and the Western press, the Serbs had little difficulty disseminating their message, accusing NATO of "deliberate attacks on civilians" and placing the alliance squarely on the defensive. Even Jamie Shea admits that "Milosevic's propaganda sometimes caught us by surprise."[88] In fact, the Serb propaganda and media campaign became such a concern that NATO eventually began bombing the facilities of RTS, the Yugoslav state-owned radio and television service. Results from these attacks were decidedly mixed; RTS usually returned to the air in a matter of hours, and NATO received sharp criticism for targeting journalists. Robert Leavitt, associate director of New York University's Center for War, Peace, and the News Media, said the attacks "created a dangerous precedent with regard to freedom of the press. Once we start defining journalists as legitimate targets, it becomes very hard for us to criticize any other attacks on media, including those by Milosevic."[89] Colonel Ivy offered a more succinct military analysis: "If we have to bomb the enemy's TV stations, then we've failed in our public-information campaign plan."[90]

If the allied public-information strategy failed to generate media trust, it also did little to boost public confidence in the war effort. In the United States, for example, public-opinion surveys showed that fewer Americans supported attacks on Yugoslavia (50 percent) than had supported the 1991 air campaign against Iraq (79 percent). A Gallup survey conducted in June 1999—just days after the war ended—indicated that 51 percent of Americans believe that "the United States sometimes goes too far in using air strikes for purposes that are less than vital,"[91] suggesting a measure of doubt about Allied Force and the motives behind it.

Outside the United States, support for the air war in other NATO countries was decidedly mixed; public opinion surveys in Great Britain, France, and Germany essentially mirrored those in the United States, with decreasing support noted in nations closest to the fighting (Hungary, the Czech Republic, and Greece). Jamie Shea believes that NATO should have done a better job in tracking public opinion in countries where support wavered and should have devised press strategies to assist national authorities. Shea's observation highlights the need for better integration of public information in IO. With public support constituting a strategic center of gravity for Western democracies, a more direct, aggressive, and systematic approach in public information might have bolstered public support for the air campaign and eased any lingering doubts.

Given these realities, it seems hardly surprising that NATO's public-information efforts were often reactive in nature. By limiting the release of public information, alliance officials gave themselves—and their PAOs—fewer options in advancing the NATO message or rebutting Serb propaganda efforts. An integrated public-information/IO campaign—highlighting NATO themes and countering the enemy's information efforts—would have clearly helped in this regard, but the lack of definitive doctrine and procedures dashed any hopes for a

successful public-information campaign under the IO umbrella. Divorced from the IO effort, the alliance's public-information efforts lacked the synergy that would have resulted through coordination and deconfliction with other IO initiatives. The result was a sometimes-muddled NATO message. Mark Thompson recalls that Pentagon reporters tried to zero in on "inconsistencies" between the "dueling briefings" from Brussels, London, and Washington.[92] One example of a mixed alliance message occurred during the first month of the air war. While spokesmen in Europe touted the widespread use of cruise missiles and other PGMs, senior defense officials in the United States expressed concern that stockpiles of these weapons would soon be exhausted, suggesting that NATO might not be able to sustain key elements of its air campaign.

Analyzing results of the allied public-information campaign during Allied Force raises an obvious question: How can public information be used more effectively in future conflicts? Actually, the answer to that question entails a five-step process. Optimal employment of public information will require changes in perception, training, planning, and procedures, creating a paradigm shift for both IO specialists and the PA community. IO practitioners, who have often cast their discipline in technical terms, must recognize that much of the information war will be waged in the public media, necessitating the need for PA participation. PA specialists, on the other hand, need to become full partners in the IO planning and execution process, developing the skills and expertise required to win the media war. Key steps in this process include the following:

1. *Recognizing the importance of public information as an IO tool.*
   As we have seen, the lack of an effective public-information strategy caused problems for the United States and NATO during Allied Force. Avoiding these difficulties during future conflicts requires recognition that public information is, in fact, a battle space that must be dominated like any other. Accepting that fact will compel commanders, IO specialists, and PAOs to address public-information strategy and planning issues, creating viable approaches for winning the media war. In today's media spotlight, where battlefield events are analyzed and dissected as they occur, ceding the public-information battle space to happenstance or luck is simply not a viable option.

2. *Strengthening doctrine.*
   The recent release of joint and Air Force IO publications represented an important step in the formulation of IO doctrine, but both documents are already in need of revision. The Air Force publication, for example, fails to address the potential role of public information in the IO campaign and assigns a temporary, supporting role to PA in the IO effort. Joint Pub 3-13 addresses some of these concerns but fails to provide an effective structure for IO planning and execution. Capt John Shaw, a member of USAFE's IO cell during Allied Force, described the problem well: "With each player in the IO cell working for a different boss, the IO cell is really nothing more than a round table for discussion and deconfliction. . . . This 'loose confederation,' while bringing the necessary IO players to the table, does not have the authority to perform formal, integrated IO planning and task the necessary organizations, assets, and personnel to create an effective IO campaign."[93] To replace the IO cell, Shaw suggests a major revision of the IO structure outlined in Joint Pub 3-13, replacing the IO cell with a joint information operations task force (JIOTF), an organization he believes would be better equipped to plan and execute an IO campaign. Manning for the JIOTF should include a permanently assigned PAO, providing needed expertise for the new IO organization.

3. *Understanding the evolving media environment.*
Clearly, the global media environment changed dramatically between the end of the Persian Gulf War and the start of Allied Force. The explosion of cable TV news, hypercompetition between rival media outlets, and the advent of Internet-based "new media" altered not only the way audiences receive their news but also the amount of information available. This evolving media environment dictates changes in public-information doctrine and procedures as well as new definitions for such key concepts as "audience," "journalist," and "media." In the Internet age, when anyone with a computer and modem can become a "war correspondent," methods must be developed for winning the public-information campaign in both traditional media *and* cyberspace.

Unfortunately, the techniques and procedures for conducting a cyber public-information campaign have yet to be developed. Allied IO planners admit that they "never had a game plan for new media"[94] during Allied Force, and some even concede that the Serbs "won the cyber war." Although the United States and NATO had a clear technological edge over their adversary, the Serbs still succeeded in placing their message on the Internet, using servers in Europe, the United States, and Canada. When USAFE's IO staff attempted to monitor Serb-influenced web traffic, they counted dozens of web pages, chat rooms, and bulletin boards used to advance Belgrade's message. TSgt Marilee Philen, a USAFE IO planner during Allied Force, says, "To this day, NATO has no idea how many Internet forums were being used by the Serbs to support their cause."[95] The rapid proliferation of these sites—and NATO's difficulty in countering them—underscores the requirement for an effective public-information strategy on the digital frontier.

Understanding the new media environment also requires an appreciation for the primacy of visual images. In a popular culture dominated by television, "the instantaneous image," as Jamie Shea observes, "becomes the reality of the day. . . . Pictures are believed, even if they are untypical or distorting; words are distrusted even if they are true."[96] While the press focused on the Djakovica convoy attack, Shea recalls, the Serbs expelled over two hundred thousand ethnic Albanians from Kosovo. Yet, the forced exodus received little media attention, at least initially. The reason? No pictures. Influencing the public-information battle space requires a steady supply of compelling visual images, but NATO's record in this area during Allied Force appears spotty at best. Although the US Air Force and other military organizations supplied thousands of still pictures and reams of video footage to media organizations, critical images were often lacking. Shea, for example, urged the Pentagon to provide satellite images of mass graves, burned villages, or displaced persons for use in the daily NATO press briefings. Without those pictures, he observed, "No one was going to believe me."[97] Providing such images in a timely manner will require the intelligence, IO, and public-affairs communities to develop new rules for releasing overhead imagery, video, and other products in support of the information campaign.

4. *Building a Public Affairs Corps for the twenty-first century.*
Virtually all of the PAOs who participated in Allied Force lacked formal training in IO, leaving them poorly prepared to support the planning and execution of the IO campaign. For PA to become a full-fledged participant in IO, its members must be trained in IO doctrine, tactics, and procedures.

To facilitate the training process, IO instruction blocks should be added to courses for entry-level PA personnel attending the Defense Information School at Fort Meade, Maryland. Beyond that, the PA community needs to develop its own cadre of IO experts, functioning as members of IO organizations at the numbered air force, joint task force, and component levels. Colonel Ivy suggests that selected PA noncommissioned officer billets—currently assigned to recruiting squadrons—be transferred to IO flights, ensuring PA representation and expertise at the planning and execution levels. PA personnel assigned to these billets would be required to attend the graduate-level IO course at Hurlburt Field, Florida. Colonel Ivy also recommends that numbered air force PAOs be trained as IO specialists, creating a two-member PA team to assist the numbered air force commander and IO flight in developing public-information options as part of the overall IO campaign.[98] The education effort should also extend to IO specialists to improve their understanding of what PA can—and cannot—do in support of the information war.

On a related note, NATO would also be well served in strengthening its own PA organization. As Jamie Shea and others have observed, NATO's PA organization in Brussels was not prepared for wartime operations, forcing an emergency infusion of personnel and resources to deal with the media crush. Dr. Shea advocates creation of a unit that can respond rapidly to controversial incidents and answer requests for information from NATO. Shea noted that "when we were unable to explain an incident, the story would play for days; when we were able to give information quickly, the story disappeared almost immediately."[99] Strengthening NATO's PA organization will require a significant commitment from alliance members for personnel training and support. Currently, only three (United States, Canada, and Belgium) of NATO's 19 members have "career" PA officers; the rest use officers from other career fields who return to their primary vocation at the end of their PA tour. American PAOs have long cited NATO's lack of a "professional" PA staff as one of the organization's greatest weaknesses.

5. *Planning and executing public-information efforts more effectively.*
By following the steps listed in the preceding paragraphs—recognizing the importance of the public-information battle space, strengthening IO doctrine, understanding the changing media environment, and improving personnel training—the IO community should prove more effective in its planning and execution efforts. However, building and executing a successful IO plan also requires more training for both commanders and planners. IO planning and execution drills should be incorporated into all major exercises and war games, giving commanders and their IO staffs a chance to rehearse critical wartime skills. Commanders must learn to prioritize IO and set clear-cut objectives for their program. IO planners, on the other hand, need to refine their skills in developing and executing IO campaign plans. Public information should (clearly) be an integral part of future IO planning and execution exercises.

Conclusions

In retrospect, many of the problems associated with public-information/IO integration during Allied Force were, perhaps, inevitable. After all, planners at Headquarters NATO and subordinate levels were attempting a first in military history: development and execution of a comprehensive IO cam-

paign, using public information as one of its many elements. Theirs was indeed a pioneering effort, a voyage into the largely uncharted waters of IO. Nowhere was this more apparent than in fledgling efforts to incorporate PA (and its public-information mission) into something called the IO campaign plan. Armed with vague doctrine references (and little else), IO planners and PA officers had no real guidance on how to effectively merge their skills into the larger IO effort. Without firm guidance, techniques, and procedures, mistakes were bound to occur—and they did. Yet, their efforts still contributed to NATO's ultimate victory; after all, it was Milosevic who capitulated, not the alliance.

However, the end of Allied Force also brought a realization that the margin of victory in the media campaign was perhaps smaller than originally thought. Despite a Western-dominated media culture and far greater technical resources, NATO still found itself playing catch-up in the media wars, responding to a series of collateral-damage incidents and Serb accusations of atrocities. Although the alliance proved adept at staging daily press conferences and showing cockpit video, it proved painfully slow at responding to Belgrade's charges and countercharges, fueling suspicion among the press. When NATO fumbled for an answer, isolated tactical incidents took on strategic importance. The Djakovica convoy incident—which claimed fewer than 30 lives—dominated world headlines for almost a week, while a much bigger story—Serb atrocities and ethnic cleansing in Kosovo—went largely unreported. In cyberspace, hundreds of web sites and forums promulgated the Serb message, frustrating allied efforts to win the "Internet war." As demonstrated by Allied Force, advantages in technology and media outlets did not necessarily translate into a clear-cut victory in the public-information wars.

A review of lessons from the media war against Serbia makes apparent the need for a better public-information/IO strategy. Despite reservations about lost credibility, PA must play a central role in future IO efforts—the public-information battle space is simply too important to ignore. However, the PA community must also do a better job of defining its IO role and creating a trained cadre of PAOs capable of planning and executing public-information-based IO initiatives. PA personnel all but ignored IO until recently, leaving their community ill prepared for the challenges of information warfare. Revised PA doctrine that addresses IO roles/functions remains a necessity, as is specialized IO training for PA personnel. Without these initiatives, PA will never assume its rightful place in IO, and the potential benefits of public information as an IO component will never be realized. As the media's impact on public opinion—and military operations—continues to grow, we simply cannot cede this critical battle space to chance—or our adversaries. □

Notes

1. "Civilians Are Slain in Military Attack on Kosovo Road," *New York Times*, 15 April 1999, A1.
2. "Convoy Deaths May Undermine Moral Authority," *Los Angeles Times*, 15 April 1999, A1.
3. "NATO Searches for Answers in Convoy Killings," *CNN Interactive*, 15 April 1999.
4. "NATO Concedes Its Bombs Likely Killed Refugees," *Washington Post*, 20 April 1999, A19.
5. Public Affairs After-Action Report on Operation Allied Force, 31st Expeditionary Wing, 24 March–20 June 1999, 2.
6. "NATO Concedes."
7. "Casualties of War," *Newsweek*, 26 April 1999, 26–29.
8. Brig Gen Dan Leaf, commander, 31st Expeditionary Wing, address to Air War College class of 2000, Maxwell AFB, Ala., 27 August 1999 (used with permission of speaker).
9. Jamie Shea, "The Kosovo Crisis and the Media: Reflections of a NATO Spokesman," speech before the Atlantic Council of the United Kingdom, Reform Club, London, 15 July 1999.
10. Ibid.
11. Ibid.
12. Briefing, Adm James O. Ellis, subject: A View from the Top, September 1999.
13. Gen Gordon Sullivan, former chief of staff, US Army, quoted in Joint Publication 3-13, *Joint Doctrine for Information Operations*, 9 October 1998, II-1.
14. Capt John Shaw, 32d IW Flight, "Does the JFC Need a JIOTF? Strengthening IO Doctrine," *Cyber Sword*, Fall 1999, 4.
15. Alvin and Heidi Toffler, *War and Anti-War: Survival at the Dawn of the 21st Century* (New York: Little, Brown, 1993), 3. As defined by the Tofflers, the "first wave" of change reflected the tran-

sition to agrarian societies, while the Industrial Revolution represented the "second wave." At the time (the early/mid-1990s), the term *information warfare* was an umbrella concept, defined as "any action taken to deny, exploit, corrupt, or destroy an adversary's information and functions, while protecting friendly forces against similar action." *Cornerstones of Information Warfare* (Washington, D.C.: Department of the Air Force, 1995), 3. Today, while IW is defined in similar terms, it is classified (along with information-in-war) as a subset of "information operations," supporting the ultimate objective of information superiority (Air Force Doctrine Document [AFDD] 2-5, *Information Operations*, 5 August 1998, 3.

16. Gen Ronald R. Fogleman, Air Force chief of staff, "The Fifth Dimension of Warfare," address to the Armed Forces Communications and Electronic Association, Washington, D.C., 25 April 1995.

17. AFDD 1, *Air Force Basic Doctrine*, 1 September 1997, 31–32.

18. Shaw, 4.

19. Michael R. Gordon and Lt Gen Bernard E. Trainor, *The Generals' War: The Inside Story of the Conflict in the Gulf* (Boston: Little, Brown, 1995), 326.

20. TSgt Marilee Phelen, USAFE/IO planner, interviewed by author, 3 January 2000.

21. Col (Sel) Jack Ivy, instructor, USAF Public Affairs Center for Excellence, interviewed by author, 14 December 1999.

22. Ibid.

23. P. J. Crowley, principal assistant secretary of defense for public affairs, interviewed by author, 10 February 2000.

24. AFDD 2-5, 31.

25. Ivy interview. In October 1999, the 39th Intelligence Squadron at Hurlburt Field, Florida, launched a three-and-one-half-month, graduate-level IO course, designed primarily to train personnel for IO flights at the numbered air force level. Although students from a number of IO disciplines attended the inaugural class, PA specialists did not, partly because many PAOs lack the required Sensitive Compartmented Information security clearance. Ironically, the new course offers a block of instruction on the role of PA/public information in IO, taught by US Air Force PA officers.

26. Gen H. Norman Schwarzkopf with Peter Petre, *General H. Norman Schwarzkopf: The Autobiography: It Doesn't Take a Hero* (New York: Bantam Books, 1992), 510.

27. Carl H. Builder, *The Icarus Syndrome: The Role of Air Power Theory in the Evolution and Fate of the U.S. Air Force*, 3d ed. (New Brunswick, N.J.: Transaction Publishers, 1996), 249.

28. The CNN effect is generally defined as the ability of CNN—and other broadcast media outlets—to galvanize public attention through its continuous coverage of events and force national leaders to make rapid decisions regarding national security issues. Somalia is a case in point; President Bush elected to deploy US forces to that country in late 1992, after a series of broadcast reports highlighted humanitarian concerns there. Graphic, televised images of starving Somalis greatly influenced the president's decision.

29. William G. Adamson, "The Effects of Real-Time News Coverage on Military Decision-Making," student paper (Maxwell AFB, Ala.: Air Command and Staff College, March 1997), 25.

30. James Kitfield, "Command and Control the Messenger," *National Journal*, 11 September 1999, 50.

31. Bill Hemmer, CNN anchor/reporter, interviewed by author, 23 December 1999.

32. Bradley Graham, defense correspondent, *Washington Post*, interviewed by author, 17 December 1999.

33. Howard Kurtz, "NBC's News Machine Marches to War," *Washington Post*, 21 April 1999, C1.

34. The level of media interest in the Balkans conflict is illustrated by the media contingent that descended on Aviano AB, Italy, hub of the allied air campaign. Eventually, the base would issue press credentials to more than seven hundred journalists, many from broadcast news organizations. By comparison, only about four hundred journalists were reporting from Vietnam at the height of that conflict.

35. "Internet News Takes Off," Pew Research Center Biennial News Consumption Survey (Washington, D.C.: Pew Center for the People and the Press, 8 June 1998).

36. "Drudge Report Traffic Statistics," *Drudge Report*, April 1999; on-line, Internet, 10 January 2000; www.drudgereport.com.

37. "Internet News Takes Off."

38. Brian O'Keefe, "The Drudge Phenomenon," New York University Department of Journalism, Brown Bag Speaker Series, 26 February 1998; on-line, Internet, 13 January 2000, available from www.nyu.edu/gsas/dept/journal.

39. Ibid.

40. Steven Brill, "War Gets the Monica Treatment," *Brill's Content*, July/August 1999; on-line, Internet 20 January 2000, available from www.brillscontent.com.

41. Capt John Shaw, USAFE IO Flight, interviewed by author, 10 December 1999.

42. Phelen interview.

43. Lt Col Barbara Carr, USAFE deputy director of public affairs, interviewed by author, 10 December 1999.

44. Crowley interview.

45. Ivy interview.

46. Lt Col Virginia Sullivan, US Air Force, Retired, interviewed by author, 28 November 1999.

47. Carr interview.

48. Ivy interview.

49. Carr interview.

50. Message, 232214Z MAR 99, OASD/PA, to Headquarters EUCOM/PA, subject: Media Ground Rules for Kosovo-Related Operations in the EUCOM Area of Responsibility, March 1999.

51. Brig Gen Dan Leaf, commander, 31st Expeditionary Wing, interviewed by author, 14 December 1999.

52. Kitfield, 25.

53. Mark Thompson, defense correspondent, *Time Magazine*, interviewed by author, 22 December 1999.

54. Shea speech.

55. Ibid.

56. Ibid.

57. Crowley interview.

58. Kitfield, 25.

59. Graham interview.

60. Thompson interview.

61. "Speak No Details," *Time*, 12 April 1999, 32.

62. Ibid.

63. Kitfield, 50.

64. Thompson interview.

65. Graham interview.

66. Thompson interview.

67. Hemmer interview.

68. Crowley interview.

69. Shea speech.

70. Crowley interview.

71. Shea speech.

72. Ibid.

73. Capt Ed Thomas, Public Affairs, 31st Fighter Wing, interviewed by author, 16 December 1999.

74. Capt John Haynes, Public Affairs, 31st Fighter Wing, interviewed by author, 16 December 1999.

75. Carr interview.

76. Thomas interview.

77. Carr interview.

78. Ivy interview.

79. Sullivan interview.

80. Crowley interview.

81. Howard Kurtz, "Duck and Cover," *Washington Post*, 5 April 1999, C7.

82. Ibid.
83. Graham interview.
84. Graham, quoted in Kitfield, 50.
85. Thompson interview.
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87. Ibid.
88. Shea speech.
89. "Off the Air," *The News Hour with Jim Lehrer*, 4 May 1999.
90. Ivy interview.
91. Gallup News Service, "Kosovo Intervention Hasn't Shaken Americans' Basic World View," 24 June 1999.
92. Thompson interview.
93. Shaw, 4–5.
94. Philen interview.
95. Ibid.
96. Shea speech.
97. Ibid.
98. Ivy interview.
99. Shea speech.

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Operation Allied Force

The View from Beijing

DR. JAMES D. PERRY

Editorial Abstract: This article addresses China's perspective on several key issues involving the US Air Force and NATO with regard to Operation Allied Force in the Balkans conflict, particularly the bombing of the Chinese Embassy. Coming from open sources, this perspective is particularly important today because China remains a country of great importance, not only to Asian but also world economic stability and security. The evolution in war fighting from the Gulf War to the Kosovo conflict impressed upon the Chinese the increasing role of precision strike and space-supported information operations in asymmetric warfare. It also showed them how their country stacks up to the West in terms of technological military strength. What the Chinese lack in technology they intend to offset by keying on enemy vulnerabilities. The message is clear that in order to better appreciate future East-West relations, we must pay close attention to how China views the recent Balkans situation.

WHEN THE NORTH Atlantic Treaty Organization (NATO) began bombing Yugoslavia, the Chinese press reacted with a storm of furious complaints that rose to a crescendo after the attack on the Chinese Embassy in Belgrade on 7 May 1999. Although the tone eventually softened somewhat, Chinese opposition to Operation Allied Force remained outspoken, and press coverage heavily stressed the Yugoslavian point of view. Do articles in open sources shed light on Chinese military thought, or are they sheer propaganda? This article argues that despite the venomous rhetoric which reflects the Chinese government's displeasure with US actions in the Balkans, Chinese writings on Allied Force are indeed important sources of information and speculation about the nature of future warfare and the revolution in military affairs.

Chinese open sources naturally have their limitations and should be used cautiously. Many important Chinese strategists are not permitted to publish in the open press.[1] The influence on official Chinese policy of those

who do publish is often impossible to gauge since many articles are unattributed, provide no information about the author, or are pseudonymous. Articles in periodicals owned by the People's Republic of China (PRC) usually assume a bombastic tone and employ Aesopian language or other forms of indirection to confuse the unwary reader. Despite these drawbacks, one can glean valuable insights from the open literature, and analysis must begin with consideration of sources. For example, China's National Defense University (NDU) and Academy of Military Sciences (AMS) are the leading think tanks of the People's Liberation Army (PLA), and their staff and alumni have written extensively on future warfare and the revolution in military affairs.[2] Articles by authors affiliated with these institutions, therefore, deserve close attention. Chinese leaders educate their domestic audience on strategic and political issues by means of the PLA newspaper *Jiefangjun Bao* and the Communist party newspapers *Renmin Ribao* and *Guangming Ribao.* Authors in these publications are military officers and party members, and their views, which represent the official "party line," also deserve attention. This article examines these and other sources[3] and focuses on Chinese views of six topics:

- American political purposes in launching the air campaign.
- Implications of Allied Force for future warfare.
- Information operations before and during the campaign.
- NATO mistakes and weaknesses revealed by Allied Force.
- Bombing of the Chinese Embassy.
- Allied Force's lessons for China.

The Chinese considered that [the rationales for Allied Force] . . . included removing obstacles to NATO's eastward expansion, reducing Russia's sphere of influence, and using NATO as a tool for "global hegemony."

Political Purposes

Most Chinese sources strongly criticized the use of force without United Nations sanction and rejected the ostensible rationales for Allied Force—to protect human rights and halt ethnic cleansing.[4] They noted that these rationales could be used to justify intervention practically anywhere on Earth, since a great many countries have ethnic conflicts in progress, and intervening on behalf of separatists in Kosovo would only encourage separatists elsewhere. Moreover, they believed that these rationales were simply fig leaves used to cover larger American geopolitical purposes. The Chinese considered that these purposes included removing obstacles to NATO's eastward expansion, reducing Russia's sphere of influence, and using NATO as a tool for "global hegemony."

Many Chinese journalists interpreted Allied Force as "anti-Russian" in character, noting that NATO expanded eastward in order to occupy Russia's "strategic space" (the traditional Russian sphere of influence in Eastern Europe) and deprive that country of a base for resurgence in Europe.[5] Hungary, Poland, and the Czech Republic enthusiastically embraced NATO, but the Federal Republic of Yugoslavia (FRY), which has always had good relations with Russia, represented an obstacle to further expansion. Air strikes and the occupation of Kosovo split and weakened the FRY, thereby punishing a traditional Russian ally and setting the stage for further NATO expansion. NATO's use of force without authorization of the United Nations Security Council diminished Russia's role in European security and the international community.

Some journalists contended that the next step in the "strategic conspiracy" is to expand

NATO's area of interest into Central Asia, the Middle East, and even the Asia-Pacific region.[6] Another author considered that one goal of Allied Force was to "open up the Balkan corridor" to the military, political, and economic influence of the European Union, which would serve to secure a land/river route for the flow of oil and gas from the Caucasus and Central Asia to Western Europe.[7] The author predicted that in the aftermath of the Balkan war, the United States would intensify its efforts to contain China. Containment would entail supporting India's missile programs, encouraging separatists in Xinjiang and territorial disputes in the South China Sea, and strengthening the defenses of Taiwan and Japan.[8]

Senior Col Yao Youzhi of the AMS argued that Eurasia plays a "decisive position in global geopolitical strategies." He claimed that the United States views North America as its base, South America as its backyard, Africa as a "broken continent that cannot be lifted up," and Eurasia as the "serious hidden danger to global dominance." America plans to control Eurasia by keeping Russia weak, manipulating NATO, and containing China through military alliances with Japan, South Korea, Taiwan, Australia, and New Zealand.[9]

Another researcher at the AMS, Cheng Guangzhong, interpreted Allied Force from the standpoint of geopolitics, contending that after the cold war, the United States became a python: "It uses its thickset body to coil tightly around the world, and prevent any country from possessing the ability to stand up to it." Currently, the python is principally concerned with tightening its control of Eurasia through NATO expansion into Eastern Europe, dual containment of Iraq and Iran, and expansion of the US-Japanese alliance.[10]

According to Cheng, Kosovo was an important step in the implementation of the Python Strategy. In Allied Force, the United States experimented with an expanded role for NATO in order to set the stage for future globalization of the alliance. NATO expansion "further squeezed the strategic space of Russia" and intensified the antagonism between Western Europe and Russia. The punishment of Yugoslavia removed an obstacle to NATO expansion and built a bridge between Europe and strategically important peripheral regions in the Black Sea and Caspian Sea. Weakening Russia and expanding NATO will permit the United States to shift its strategic emphasis to the Pacific, and, in this respect, Kosovo was "an important preemptive chess move for a possible conflict with China in the 21st century."[11]

B-2 taking off from Guam during a Pacific deployment

These darkly suspicious—even paranoid—views of the United States in some ways recall Chinese propaganda during the Korean and Vietnam Wars, but we have no way to determine whether Chinese leaders actually believe their rhetoric. However, Allied Force may well have strengthened a preexisting tendency to believe that an eventual clash with the United States—especially over Taiwan—is probable and that China should prepare its defenses accordingly. If so, then China will doubtless revise her military doctrine to incorporate the lessons of Allied Force.

Kosovo and Future Warfare

The Gulf War was a powerful incentive for China to modernize its military, and the Chinese have devoted considerable effort to deriving the correct lessons from this war.[12] After the Gulf War, Chinese military writings emphasized the importance of airpower; long-range precision strikes; information war-

B-2 dropping precision-guided weapons

fare (IW); and small, well-trained ground forces. Chinese writings stressed that an inferior force could defeat a superior force by means of "nonlinear" or asymmetric methods, such as preemptive blows on key centers of gravity.[13] Allied Force has drawn Chinese attention away from the problems of repelling large US ground forces and has focused greater attention on issues of air defense (particularly cruise missile defense), electronic warfare (EW), and IW. Moreover, Chinese authors are more aware than ever of the importance of space control to US military operations.

Professor Zhang Zhaozhong of China's NDU asserted that before the air strike, NATO had "already told the FRY what targets it planned to hit, including the time and method." This showed the transparency of the modern battlefield and NATO's desire to "threaten the FRY psychologically" with its ability to place every strategic target under accurate surveillance. The characteristics of the NATO air strike were as follows:

- Long-range cruise missiles were coordinated with short-range weapons and high-altitude bombing.
- All strikes were carefully planned and executed, and every move underwent intensive computer simulation.
- Yugoslavian air defenses and command and control (C2) systems were struck for three days (a much shorter period than during the Gulf War), after which, strikes focused on ground troops and logistics.
- Attacks came from all directions, in all weather, and at all times of the day.
- Attacks escalated in three ways: in types of targets (from air defense and C2, to ground troops, to economic targets), in geographic region (from south of the 44th parallel to north of it), and in intensity (additional forces joined the attack after the first three days).[14]

Ji Wenming of the General Staff Office noted that the air strike was a "war of all dimensions" (sea, air, land, space, and the electromagnetic spectrum) and that the wars in each dimension were launched "in intrinsic coordination." Intensive surveillance from space and EW preceded the air strikes and ensured that NATO was in a superior "information situation." Although US, British, and French forces predominated, the air strike involved many nations and was a "basically successful" multinational, unified action. Ji considered that NATO logistic support was highly effective, particularly in the realms of in-flight refueling, preparation and launching of cruise missiles, and ability to achieve a rapid aircraft-sortie rate.[15]

Su Size noted that the increased use of precision-guided munitions and advanced imaging technology in Yugoslavia showed that Allied Force had a "higher information technological level" than Operation Desert Storm. Su pointed out that Allied Force demonstrated several other trends that would be prominent in "local high-tech wars" of the future:

- Aircraft will fly at lower altitudes in order to recognize targets, despite the danger from antiaircraft fire.
- All targets will be nodes of a network, and the most critical node will be the "supreme command headquarters." Su observed that presidential palaces were bombed in both Serbia and Iraq.

- Defenders will wage an anti-information campaign with counterstealth, counterreconnaissance, and counterelectronic warfare components and will employ flexible tactics, dispersion, concealment, and the use of decoys. In addition to passive measures, the defense will strike back at the offense with electronic interference and network intrusions.
- The demarcation between strategic and tactical weapons and systems will become more obscure, as will the distinctions among the military services and between front and rear.
- "Large-scale annihilation of the enemy's effective strength will no longer be regarded as the target of war."
- Administrative structures will be streamlined, and command structures will be "short in length and wide in breadth."
- "Unconventional, asymmetric, nonlinear, nondeterministic, and nontraditional" methods will be used. Commanders and soldiers will be encouraged to be creative, and military training will seek to cultivate "independent and active combat skills."[16]

Several Chinese authors asserted that Allied Force was an example of American asymmetric warfare against the FRY. Senior Col Jia Weidong, for example, defined asymmetrical warfare as "avoiding strengths to attack weaknesses." The US Air Force specializes in asymmetrical warfare based on technological and information superiority, and this depends on "a perfect global early warning reconnaissance and intelligence system," navigation by means of the Global Positioning System (GPS), and precision-guided munitions. Jia considered that asymmetrical warfare is developing into "no-contact warfare" that strikes the enemy and leaves him unable to retaliate, thus reducing American risks and combat losses. Integrated use of space, air, land, sea, and electronic forces makes "asymmetrical warfare much smarter."[17]

Several Chinese authors asserted that Allied Force was an example of American asymmetric warfare against the FRY.

Jia also asserted that the "age of smart warfare has arrived" and that traditional ideas of warfare are no longer valid. Massed tank battles "will no longer be seen again," and China will be faced "mostly with an enemy who uses advanced smart weapons and long-range precision guided weapons to launch asymmetrical strikes." PLA weapons will remain inferior to American weapons for a long time, and closing the technology gap is an urgent task for China. The PLA must increase the "S&T [science and technology] information quality" of its officers and men, "stressing information as a new combat-effectiveness growth point." China must also develop its own "asymmetrical combat theory" based on special weapons:

> The side with the marked technical inferiority can still use certain special means to conduct nuclear, biological, and chemical strikes, either destroying the enemy's advanced information network, or striking with modern guerrilla warfare tactics such as unconventional warfare and terrorism. So developing our own asymmetrical combat theory, and studying new battle tactics that will enable us to win on high-tech terms, is our unavoidable choice.[18]

Two senior PLA officers observed that NATO's "asymmetrical" strikes employed "a number of new combat modes." Allied Force consisted of "a series of informationalized, digitized, and networked combat operations that surpassed those in the Gulf War." In their view, networked fighting centers will replace individual fighting platforms in future warfare, and networked military organizations will replace "tree-shaped" military organizations. The United States uses air raids, EW,

and information-control operations to maximize the asymmetric advantages of its high technology. Therefore, the PLA should "learn and master" anti-air-raid, anti-electronic-warfare, and anti-information-control operations.[19]

Information Warfare

Reporter Ye Lu observed that the US goal is to gain mastery of battlefield information and that the information enhancement of US weapons systems is already "an order of magnitude" greater than in the Gulf War. Before initiating combat,

> reconnaissance satellites, relay satellites, high-altitude reconnaissance aircraft, and low- and medium-altitude pilotless aircraft of all kinds are to be deployed in continuous, uninterrupted, all around, dynamic intelligence reconnaissance against military and civilian targets in Yugoslavian territory . . . while at the same time numerous intelligence organizations and every means of intelligence collection are to be marshaled to conduct repeated position fixing and simulated attack exercises against all military and non-military targets that might be encountered in the battlefield to come.[20]

Ye considered that despite all its advantages, the United States did not gain "information supremacy" in Yugoslavia. This he attributed to the expansion of the information domain through radio and computer networks that enable "both aggressors and defenders to attack and counterattack to the best of their abilities." Ye drew the following conclusions from Allied Force:

- China should research and develop high-tech precision weapons and should upgrade the information systems associated with existing weapons.
- China should develop IW equipment and techniques, especially those that can "reliably put constraints on the power of hostile forces."
- China needs a "corps of knowledgeable and experienced military information security personnel."
- China should create her own software for national defense and should find military applications for civilian high technologies.[21]

Senior Col Wang Baocun noted that US space systems played a crucial role in Allied Force. Some 50 reconnaissance, communications, data-relay, and weather satellites were used (this total probably includes 24 GPS navigation satellites). To complement the space systems, NATO extensively employed aerial reconnaissance, ground stations, and "more than 400 spies" to collect visual, communications, and electronic intelligence.[22] Unfortunately, Wang provided no indication of the source of this number (four hundred).

Wang considered that since "beheading" is a major principle of IW, NATO struck the Yugoslav command system first. Information was a major enabler of this strike and of the air campaign that followed. For example, the MiG-29 was not intrinsically inferior to NATO's fighters, but NATO's early-warning-and-control aircraft provided information that placed the MiGs at a decisive disadvantage. NATO EW planes cut Yugoslav forces off from their sources of information and prevented them from organizing an effective defense. NATO used television and radio propaganda for psychological warfare and publicized the effectiveness of the air strikes and the brutality of the Serbs, thereby winning the support of their own people and demoralizing the enemy. At the same time, destruction of the Serbian broadcast facilities hindered the Serbs from broadcasting their version of events and informing their people.[23]

Wang did not believe that NATO gained total "information supremacy." He contended that the FRY's defensive IW campaign was quite effective, principally due to intelligent use of camouflage, concealment, and deception. Command centers were dug in deeply, and radars were turned on only intermittently. Military equipment was dispersed and camouflaged, and movement took place only when NATO satellites were not overhead. The

FRY also used web sites to spread its version of events and spammed NATO sites. Wang concluded that all these measures denied NATO complete success and enabled the FRY to preserve its strength and maintain some degree of effective C².[24]

NATO Mistakes and Weaknesses

Chinese authors generally viewed the United States as casualty-averse. Journalist Yuan Bingzhong, for example, predicted in May that the United States would not launch a ground war because the complex terrain and stubborn defenders could create a "quagmire" that would lead to heavy casualties and an upsurge in antiwar sentiment.[25] Another author claimed that "modern Americans have a fragile psychology and very poor endurance for war."[26]

Somewhat at odds with the extensive commentary on NATO's sophisticated precision-bombing capabilities were the frequent complaints about the "indiscriminate" nature of the air campaign. Chinese journalists asserted that "homes, schools, hospitals, industrial plants, and communications infrastructures" were wantonly bombed. Some authors argued that this was a deliberate effort to pressure the Serbs psychologically.[27]

Space scientist Wang Zudian considered that Allied Force demonstrated what is now "the basic mode for recent and future high-tech regional war," in which "cruise missiles are the vanguard, aerial strength is the main power, and the ground, sea, air, space, and electromagnetism are integrated." However, Wang observed that because NATO made a number of mistakes, the air strikes failed to achieve their initial goals. Firstly, "the strategic airstrike was insufficiently prepared and failed to be a surprise attack." The Yugoslavs had plenty of time to prepare for the attack and consult with Iraq on defensive methods. NATO could obtain and transmit pictures of targets on the battlefield in "approximately real time," but terrain and bad weather still degraded accuracy. Moreover, according to Wang, "the United States does not dare to dispatch ground reconnaissance troops to conduct on-the-spot reconnaissance." NATO sent in many spies, but Yugoslavia responded with intensive counterintelligence operations and also conducted "numerous e-mail attacks."[28]

Wang considered that since "beheading" is a major principle of IW, NATO struck the Yugoslav command system first.

Maj Gen Guo Anhua of the Army Command College faulted NATO for underestimating Yugoslavia—especially its air defenses. NATO failed to send enough electronic-countermeasures aircraft and did not have sufficient reserves of cruise missiles when the operation began. Guo criticized NATO for commencing operations in March, when unfavorable weather supposedly reduced the effectiveness of cruise missiles by 70 percent. Curiously, Guo, like many other Chinese authors, overestimated the number of US combat aircraft shot down ("more than 20").[29] It is not clear whether Chinese authors uncritically accepted Serbian claims (and thus reached faulty conclusions about the effectiveness of Serbian air defenses) or whether they were aware of the true situation but cited the Serbian claims for propaganda purposes.

The Chinese Embassy Bombing

Chinese sources universally rejected the view that the bombing of the Chinese Embassy in Belgrade was an accident. One notes a range of views regarding the purpose behind the "conspiracy," including the derailment of a political solution to the Balkans crisis and a test of China's mettle. Unfortunately, we have no way of determining whether Chinese leaders actually believe these conspiracy theories.

Zhang Zhaozhong claimed that the embassy bombing could not have been accidental be-

Bombs from allied aircraft hit the Chinese Embassy in Belgrade on 7 May 1999.

cause the vast array of American intelligence means focused on Yugoslavia precluded such a mistake. He sardonically asked, "Why do you provide NATO with today's maps for today's bombing, and provide an old map for bombing the Chinese embassy?" He also observed that the use of B-2s from US territory showed that the order for the mission "was given by the United States in a manner concealed from NATO." The B-2 carried missiles that penetrated the embassy through the roof and then exploded on the ground floor. Therefore, the US goal was not to flatten the whole building but to destroy a specific target within the building—"a surgical strike to take out a vital organ."[30] This further supported the view that the bombing was no accident.

Zhang asserted that the deliberate bombing of the embassy served a number of purposes. The United States wanted to abort an unsatisfactory peace proposal and wanted to test Chinese reactions to a provocative move. It also wanted to see whether a strong stimulus could provoke internal chaos within China that would cause a change in China's orientation.[31]

Similarly, two reporters contended that the tactics and ammunition employed in the embassy attack indicated that it was "no accident." The authors insisted that alliance aircraft used either AGM-130 or AGM-154 missiles and that they were launched from two or three planes firing from different directions at high altitude. The purpose of the bombing, in their opinion, was to intimidate China because after Kosovo, the United States expected to shift its strategic focus to Asia, where China would become the "main target of attack."[32]

Columnist Jen Hui-wen described the bombing as a "planned and premeditated military provocation," the purpose of which was to punish China for supporting the FRY, probe China's reactions, and warn China not to use force against Taiwan. The bombing also sought to distract China from economic development and to "impose a heavy war burden on China."[33]

Journalist Li Tzu-ching reported that the "premeditated" embassy bombing provoked a jingoistic clamor in the PLA, which vowed to settle the "blood debt" with the United States.[34] In response to the bombing, the PLA would seek to modernize its military equipment, train its troops for a high-tech war against the United States, and prepare for "triphibious modernized warfare over blockade and anti-blockade of the Taiwan Strait." The PLA could not match US conventional power; consequently, it would have to use nuclear weapons in a war with the United States. According to Li, the PLA General Staff proposed an expansion of the Second Artillery Corps and accelerated production of "tactical nuclear weapons and neutron weapons."[35] Interestingly, several other journalists argued that the United States would not have bombed Yugoslavia had that country been armed with nuclear weapons or other weapons of mass destruction.[36]

Lessons for China

General Guo asserted that China's military reforms of 1993 did not go far enough because they "failed to pay sufficient attention to the favorite game of a strong high-tech enemy—long duration, multiple targets, large area, intensive precision strikes." Therefore, China should study ways to resist these strikes, to thwart long-range reconnaissance, to use ground forces to defeat air forces, and to use "low altitude fires to control high altitude fires." Solutions to these problems will

require China to upgrade its technology, tactics, and national psychology.[37]

Guo argued that the Yugoslavians won a moral and psychological victory against a materially superior enemy. They fought a "guerrilla air war" while maintaining their national pride and confidence and refused to give up. A "people's war under high-tech conditions" requires the involvement of every sector of society;[38] therefore, China's national defense education should be increased, and national pride and confidence should be fostered throughout the country.[39]

Guo claimed that the Kosovo conflict demonstrated that, given high-quality military personnel, an inferior force could overcome a superior enemy in a high-tech war. Thus, education and training should have a high priority within the PLA, and Chinese soldiers should be taught how to use low-tech equipment creatively to defeat a high-tech enemy. The author called for intensive study of US equipment, tactics, techniques, and procedures in order to learn their weaknesses and defeat them.[40]

Finally, NATO air strikes applied strategic and operational weapons (long-range bombers and cruise missiles) against tactical targets, allowing NATO to attack targets in hours or minutes that could formerly be engaged only from the ground over the course of several months. Because such strikes required the suppression of enemy air defenses, the survival of air defenses is of great importance. The author concluded that "we must do our best to combine defense of selected spots and the whole area in our deployment, extensively achieve mobility in the battlefield, combine cover for specific targets with cover for whole areas, preserve our own strength in mobile operations, and eliminate or weaken the enemy."[41]

Maj Gen Su Enze of the Air Force Command Academy agreed that China has not paid enough attention to the problem of withstanding air strikes because the previous consensus was that "future wars will mainly consist of attack and defense on land." He argued that China should improve her capabilities in four areas:

- *Civil Defense:* The people should raise their air-defense consciousness, and city planning and construction should take air defense into account.
- *EW:* This is a weak link in China's defenses, requiring further research.
- *"Air Defense from the Land":* China will have little capability for defensive air-to-air combat in the immediate future, and thus must mount her air defense from the ground. China requires quick-firing weapons that use terrain for concealment and that can employ highly flexible strategies.
- *Organization:* Centralized command is too easy to disrupt or destroy. China should create a networked system in which each node is capable of some independent action.[42]

Song Xinzhi claimed that NATO air strikes were not entirely successful because the FRY managed to employ clever tactics to frustrate a superior opponent. He highlighted Yugoslavia's use of mobility, dispersion, camouflage, concealment, deception, and its decision to permit some targets to be destroyed in order to conserve defenses for counterattacks. He contrasted this with Iraq's rigid efforts to protect key targets during the Gulf War, which quickly resulted in the annihilation of the Iraqi defenses.[43]

Song considered that a modern air defense system should seek to impose at least 1 percent combat losses on the enemy over a prolonged period of time. This requires the defender to preserve a counterattack capability and to avoid defending any given place to the death. China should focus on enhancing the survivability of its air defenses, principally by improving their mobility. Air defense weapons must be able to fire quickly and then move before the enemy responds. Fighter planes must have short takeoff and landing capability and be able to operate from primitive strips. All forces must be sheltered and cam-

CSS-2 intermediate-range ballistic missile being prepared at an alternate launch site during tensions in the Taiwan Straits in 1998

ouflaged, and there must be active measures to defeat enemy precision-guided weapons: "Smoke screens are very effective for countering laser-guided bombs; spraying water to reduce the temperature of infrared-guided bombs is rather effective; and jamming navigational signals will make GPS-guided bombs lose control. Setting up decoys and electronic deception means could also play important roles in protecting the safety of targets."[44]

Huang Guanghan noted that "long-range air attacks have become an important pattern of modern war." Such attacks can be launched rapidly, involve multiple means of attack, and cause tremendous destruction and casualties. Typically, the full depth of the defending country is attacked over a long period of time, and attacks focus on command, control, and communications centers; missile facilities; airfields; and transportation hubs. Therefore, China must learn to camouflage and protect such major targets, and one method involves using underground shelters. China should create "in-depth protection works . . . in possible battlefields . . . major cities and at strategic points." Command posts and communications hubs should be hidden deeply underground, and full use should be made of "cliffs, valleys, caves, ravines, jungles, and other natural shelters and structures." Smoke screens could be used as an additional camouflage. Huang observed that deception was of fundamental importance in Yugoslavia: "In future war, we should also skillfully set up false targets and false positions to confuse and deceive the enemy; we should use imitative materials, civilian vehicles, and scrapped weapons and equipment to set up fake command posts, fake airports, fake radar stations, and fake positions to attract the enemy's firepower and to preserve our combat forces."[45]

Movement serves to enhance survivability; therefore, "firepower and troops should be extensively mobile." An "integrated air-ground strike system" should be prepared to strike back at the enemy and to hit "boldly and powerfully" at enemy weaknesses and vital centers.[46]

Huang emphasized the role of information as an enabler of both enemy long-range strikes and friendly counterstrikes. In his view, "our army should step up the building of a theater digitized information network and build a relatively systematic, complete . . . all-army information system." For defensive purposes, China requires the capability "to disrupt the enemy's intelligence transmission system and to weaken his ability to wage information warfare."[47]

Yao Yunzhu, a member of the Foreign Military Department of the AMS, argued that, given the disparity in strength between the opponents, the FRY's performance was "exceptional." The FRY adopted the correct combat strategy: "to protect real strength and persist in resistance." The FRY refused to confront NATO strength directly; instead, the Yugoslavians hid their combat aircraft and antiaircraft missiles and preserved their radars by turning them on only sporadically. Yugoslavian forces were dispersed in difficult terrain, hidden among civilians in Kosovo, and fought even when isolated from higher command levels. Yao believed that China should adopt all these measures in the future.[48]

Four PLA officers from the Guangzhou Military Region held a forum on the implications of Allied Force and published a summary in *Jiefangjun Bao*. They reached the somewhat banal conclusion that "high-tech training on the basis of existing armament" should be a priority in the PLA because such training could potentially compensate for de-

ficiencies in equipment. Moreover, Allied Force showed that "counter-air raid combat" deserves close study. The Yugoslavs made clever use of climate, terrain, flexible C^2, and high-quality, well-trained officers and enlisted men in their resistance to NATO strikes. China should learn from these techniques.[49]

Unrestricted Warfare

In February 1999, the PLA Literature and Arts Publishing House issued *Unrestricted Warfare*, a book written by two PLA air force political officers, Senior Col Qiao Liang and Senior Col Wang Xiangsui. The venue for publication and the laudatory reviews of the book in official publications suggested that *Unrestricted Warfare* enjoyed the support of some elements of the PLA leadership. The Western press quoted various sensational passages from the book and described it in terms that verged on hyperbole.[50]

The book was not a blueprint for a "dirty war" against the West but a call for innovative thinking on future warfare. The authors presented a broad overview—somewhat reminiscent of the Tofflers'—of recent changes in technology and international politics that will shape future warfare. In their opinion, the power of the nation-state has declined with the rise of both global organizations and high technology. The future battlefield will be "everywhere"—from the human mind, to the electromagnetic spectrum, to cyberspace, to outer space—and everyone will be a potential combatant, including hackers, genetic engineers, and financiers. Warfare will no longer be the sole province of nation-states and soldiers and will not be resolved only with military means. Instead, "all means" will be used to fight these wars—including trade warfare, financial warfare, terrorism, ecological warfare, computer-network attack, media warfare, drug warfare, and psychological warfare. "Extreme means" need not always be used, but victory will go to those who best combine all the resources at their disposal without regard for boundaries, restrictions, rules, laws, or taboos.

Chinese military exercising cyber warriors in 1999

Because the book was published before Allied Force, it contains no specific commentary on that operation. However, the authors were interviewed later in 1999 and addressed the application of their theories to the war in Kosovo. Qiao criticized Slobodan Milosevic for "playing by the rules" when the rules favored the United States. Qiao argued that Milosevic should have sent small teams armed with surface-to-air missiles into Western Europe to attack NATO planes as they took off. A terrorism campaign in Europe might have convinced some countries to withdraw basing rights from US forces. Qiao also noted that the United States did not restrict itself to "purely military" means in Kosovo, as "media war, news restrictions, trade sanctions, and such financial attacks as freezing the other party's assets" were employed against the FRY.[51]

Conclusion

If these articles accurately reflect Chinese opinions, then the Chinese believe that long-range precision strikes will play a very prominent role in any future Sino-American conflict. This contrasts with their previous view, held since the Gulf War, that future warfare would be primarily characterized by a clash of ground forces. They consider that American long-range precision strikes would be preceded by intensive overhead reconnaissance, EW, and computer-network attack. Initial American targets would include airfields, air defense sites, and C^2 nodes.

The Chinese recognize that they will not be able to confront an American long-range precision strike campaign directly for quite some time; therefore, they hope to defend themselves through asymmetric methods. Potentially, these could include passive defenses (deep underground shelters, camouflage, concealment, and dispersion), active defenses (smoke screens, sprays, and jamming), and deception (multispectral decoys). The PLA air force would not fly except in exceptionally favorable circumstances or when an opportunity arose for a decisive counterblow. Meanwhile, the PLA would seek to attrit the US Air Force through the use of air defense guns and missiles that could fire rapidly and then immediately move. The PLA would focus its computer-network attacks on US communications links and would not exclude the use of weapons of mass destruction.

One can infer several other significant conclusions from Chinese writings: because the Chinese view the United States as casualty-averse, they would probably try to inflict maximum casualties on US forces and, possibly, the US civilian population. They would certainly attempt to hide their own forces among the Chinese civilian population. Finally, many Chinese writings focus on the crucial importance of US space assets, suggesting that the Chinese would seek to find ways to deny, disrupt, or degrade these assets, either through antisatellite warfare or other less direct means such as attacks by special operations forces on ground stations. □

Notes

1. Michael Pillsbury, ed., *Chinese Views of Future Warfare* (Washington, D.C.: National Defense University Press, 1997), xvii.

2. In his excellent book, Mark A. Stokes notes that China's NDU and AMS have "flooded China's strategy community with writings on information warfare." *China's Strategic Modernization: Implications for the United States* (Carlisle Barracks, Pa.: Strategic Studies Institute, US Army War College, 1999), 28. Many of the authors translated by Pillsbury are affiliated with these institutions.

3. Other publications surveyed for this article included *Xinhua* (the official Chinese news agency), *Zhongguo Tongxun She* (a PRC-owned news agency), *Keji Ribao (Science and Technology Daily)*, *Ta Kung Pao* (a PRC-owned daily newspaper), and *Cheng Ming* (a non-PRC-owned monthly magazine, which, according to the Foreign Broadcast Information Service [FBIS], has a "tendency to sensationalize").

4. The Communist Party of China Politburo laid out these essential principles after Jiang Zemin returned from Europe in early April 1999. See Yueh Shan, "Beijing Sets Forth New World War Theory," *Cheng Ming* (Hong Kong), 1 May 1999, in FBIS-CHI-1999-0516; on-line, Internet, 3 July 1999, available from http://199.221.15.211. Yueh is a reporter.

5. He Chong, "The U.S. Purpose in Instigating NATO to Attack Yugoslavia," *Zhongguo Tongxun She* (Hong Kong), 26 March 1999, in FBIS-CHI-1999-0326; Zhang Xiao, "The Essence of NATO's New Strategic Concept," *Guangming Ribao* (Beijing), 28 April 1998, in FBIS-CHI-1999-0507; Wang Naicheng, "Failure of the New Strategic Concept," *Jiefangjun Bao* (Beijing), 22 May 1999, in FBIS-CHI-1999-0601; and Yan Zheng, "What Are NATO's Motives in Bombing the Federal Republic of Yugoslavia?" *Renmin Luntan* (Beijing), 16 May 1999, in FBIS-CHI-1999-0516; all citations on-line, Internet, 3 July 1999, available from http://199.221.15.211. He, Yan, and Zhang are journalists. Wang is a researcher at the China Institute for International Strategic Studies.

6. Wei Wei, "Ulterior Motives in Military Intervention," *Jiefangjun Bao* (Beijing), 25 March 1999, in FBIS-CHI-1999-0331; on-line, Internet, 3 July 1999, available from http://199.221.15.211.

7. Li Yung-kang, "U.S. World Strategy Viewed in Kosovo Crisis," *Ta Kung Pao* (Hong Kong), 26 May 1999, in FBIS-CHI-1999-0619; on-line, Internet, 3 July 1999, available from http://199.221.15.211. Li's identity is unknown, but he is probably a journalist.

8. The best-known separatist issue in China concerns Tibet, but ethnic tension also exists in Inner Mongolia and Xinjiang. In Xinjiang, the westernmost portion of China, resides a large population of ethnically Turkic Sunni Muslims. Xinjiang has seen constant unrest since the 1980s, including terrorist bombings, assassination of government officials, riots, and street fighting. The territorial dispute in the South China Sea involves the Spratly Islands (claimed by China, Taiwan, Vietnam, Malaysia, the Philippines, and Brunei) and the Paracel Islands (claimed by China, Taiwan, and Vietnam). China expelled Vietnamese troops from the Paracels in 1974 and fought a naval battle with Vietnam over the Spratlys in 1988. See Andrew J. Nathan and Robert S. Ross, *The Great Wall and the Empty Fortress: China's Search for Security* (New York: W. W. Norton, 1997), 115–17 and 196–200.

9. Ma Ling, "Interview with Yao Youzhi: U.S. Strategy for the 21st Century," *Ta Kung Pao* (Hong Kong), 3 May 1999, in FBIS-CHI-1999-0515; on-line, Internet, 3 July 1999, available from http://199.221.15.211. Ma is a reporter.

10. Cheng Guangzhong, "The Kosovo War and the US Python Strategy," *Ta Kung Pao* (Hong Kong), 2 June 1999, in FBIS-CHI-1999-0625; on-line, Internet, 3 July 1999, available from http://199.221.15.211.

11. Ibid.

12. Stokes, 12–13. See also David Shambaugh and Richard H. Yang, eds., *China's Military in Transition* (Oxford: Clarendon Press, 1997), 192–94.

13. See, for example, Senior Col Shen Kuiguan in Pillsbury, 213–19.

14. Zhang Zhaozhong, in "Discussion of the Kosovo Crisis among Experts at the National Defense University," *Jiefangjun Bao* (Beijing), 13 April 1999, in FBIS-CHI-1999-0518; on-line, Internet, 3 July 1999, available from http://199.221.15.211.

15. Ibid.

16. Su Size, "Kosovo War and New Military Theory," *Jiefangjun Bao* (Beijing), 1 June 1999, in FBIS-CHI-1999-0701; on-line, Internet, 3 July 1999, available from http://199.221.15.211. Su's background is unclear.

17. Jia Weidong, "Future Warfare Trends Viewed from Kosovo," *Jiefangjun Bao* (Beijing), 17 April 1999, in FBIS-CHI-1999-0510; on-line, Internet, 3 July 1999, available from http://199.221.15.211. Jia is a researcher at the General Staff headquarters and an army senior colonel.

18. Ibid.

19. Zhu Wenquan and Zhao Taizhong, "High-Tech Learning in Light of the Kosovo War," *Jiefangjun Bao* (Beijing), 25 May 1999, in FBIS-CHI-1999-0625; on-line, Internet, 3 July 1999, available from http://199.221.15.211. Lt Gen Zhu Wenquan was recently promoted.

20. Ye Lu, "Strategic Thought on Weapons Development," *Keji Ribao* (Beijing), 20 May 1999, in FBIS-CHI-1999-0621; on-line, Internet, 3 July 1999, available from http://199.221.15.211. Ye's background is unclear.

21. Ibid.

22. Wang Baocun, "Information Warfare in the Kosovo Conflict," *Jiefangjun Bao* (Beijing), 25 May 1999, in FBIS-CHI-1999-0623; on-line, Internet, 3 July 1999, available from http://199.221.15.211. Senior Col Wang Baocun frequently writes about information warfare.

23. Ibid.

24. Ibid.

25. Yuan Bingzhong, "Why Is the United States Vague about a Ground War?" *Renmin Ribao* (Beijing), 25 May 1999, in FBIS-CHI-1999-0525; on-line, Internet, 3 July 1999, available from http://199.221.15.211. Yuan is a journalist.

26. Liang Jie, "Interview with Military Expert Quan An," *Guangming Ribao* (Beijing), 15 June 1999, in FBIS-CHI-1999-0627; on-line, Internet, 3 July 1999, available from http://199.221.15.211. Liang is a journalist, and Quan An "works for a military organ and has long been involved in the research on military theories."

27. "NATO Using Banned Weapons in FRY," 21 May 1999, in FBIS-CHI-1999-0521. See also Ma Shikun and Zhang Yong, "How Can the United States Extricate Itself from a Dilemma?" *Renmin Ribao* (Beijing), 24 May 1999, in FBIS-CHI-1999-0525. Ma and Zhang are US-based reporters. Wang Zhimin, "NATO in Dilemma in Yugoslav War," 26 April 1999, in FBIS-CHI-1999-0427. Wang is a reporter. Xie Wenqing and Liu Wanping, "International Observation," *Jiefangjun Bao* (Beijing), 23 May 1999, in FBIS-CHI-1999-0601; all citations on-line, Internet, 3 July 1999, available from http://199.221.15.211. Xie and Liu are reporters.

28. Wang Zudian, "The Offensive and Defensive of High-Technology Arms Equipment," *Xinhua* (Beijing), 24 May 1999, in FBIS-CHI-1999-0526; on-line, Internet, 3 July 1999, available from http://199.221.15.211. Wang is a researcher at the Space Technology Information Research Institute of China.

29. Guo Anhua, "Evaluation and Thoughts on Kosovo War Situation," *Jiefangjun Bao* (Beijing), 4 May 1999, in FBIS-CHI-1999-0520; on-line, Internet, 3 July 1999, available from http://199.221.15.211. Maj Gen Guo Anhua is superintendent of the Army Command College.

30. Ma Ling, "Interview with Renowned Military Commentator Zhang Zhaozhong," *Ta Kung Pao* (Hong Kong), 17 May 1999, in FBIS-CHI-1999-0518; on-line, Internet, 3 July 1999, available from http://199.221.15.211. Ma is a journalist.

31. Ibid.

32. Su Chin-lung and Hsueh Hsiang, "Embassy Bombing Premeditated," *Hsin-Tai Chun-Shih* (Hong Kong), 11 June 1999, in FBIS-CHI-1999-0626; on-line, Internet, 3 July 1999, available from http://199.221.15.211. The authors' backgrounds are unknown.

33. Jen Hui-wen, "China's Reaction to the Bombing of Its Yugoslav Embassy," *Hsin Pao* (Hong Kong), 14 May 1999, in FBIS-CHI-1999-0517; on-line, Internet, 3 July 1999, available from http://199.221.15.211. Jen is a reporter and columnist.

34. Li Tzu-ching, "The Chinese Military Clamors for War," *Cheng Ming* (Hong Kong), 1 June 1999, in FBIS-CHI-1999-0626; on-line, Internet, 3 July 1999, available from http://199.221.15.211. Li is a reporter.

35. Ibid.

36. Xiao Feng, "World Trends under U.S. Global Strategy," *Renmin Ribao* (Beijing), 31 May 1999, in FBIS-CHI-1999-0601; and Ma Shikun and Zhang Yong, "United States: Winner or Loser?" *Renmin Ribao* (Beijing), 11 June 1999, in FBIS-CHI-1999-0611; both citations on-line, Internet, 3 July 1999, available from http://199.221.15.211. Ma and Zhang are journalists. Xiao's background is unknown.

37. Guo Anhua.

38. Ibid.

39. Another author argued that "ethnic cohesiveness" and "lofty patriotism" enabled the Serbs to withstand the NATO air strikes: "Soft force formed from national morale and will has been the most important factor in defending against the foreign enemy. It has been a valuable treasure that is most worthy of learning from." Wang Yu in "Discussion of the Kosovo Crisis." Wang is a candidate for a master's degree at NDU.

40. Guo Anhua.

41. Ibid.

42. Su Enze in "Discussion of the Kosovo Crisis." Maj Gen Su Enze is a professor of the Air Force Command Academy.

43. Song Xinzhi, "Transform Air Defense Concepts," *Jiefangjun Bao* (Beijing), 27 April 1999, in FBIS-CHI-1999-0507; on-line, Internet, 3 July 1999, available from http://199.221.15.211. Song's background is unknown.

44. Ibid.

45. Huang Guanghan, "Countermeasures against Long-Range Air Attacks," *Jiefangjun Bao* (Beijing), 22 June 1999, in FBIS-CHI-1999-0710; on-line, Internet, 3 July 1999, available from http://199.221.15.211. Huang's background is unknown.

46. Ibid.

47. Ibid.

48. Yao Yunzhu in "Discussion of the Kosovo Crisis." Wan Fayang, of the Office of the 2d Artillery Headquarters, made essentially similar observations in the same article.

49. Duan Zhiming, Mei Lijin, Liu Jianmin, and Xiang Zihui, "Warning from the Flame of War in Kosovo," *Jiefangjun Bao* (Beijing), 20 April 1999, in FBIS-CHI-1999-502; on-line, Internet, 3 July 1999, available from http://199.221.15.211. The authors' backgrounds are unknown.

50. See, for example, John Pomfret, "China Ponders New Rules of Unrestricted War," *Washington Post*, 8 August 1999, A1; and David Harrison and Damien McElroy, "China's Military Plots 'Dirty War' against the West," *Electronic Telegraph*, 17 October 1999.

51. Sha Lin, "Two Senior Colonels on No-Limit Warfare," *Zhongguo Qingnian Bao* (Beijing), 28 June 1999, in FBIS-CHI-1999-728; and Ma Ling, "Interview with Qiao Liang," *Ta Kung Pao* (Hong Kong), 19 September 1999, in FBIS-CHI-1999-1005; both citations on-line, Internet, 18 October 1999, available from http://199.221.15.211.

The Bombing of Zurich

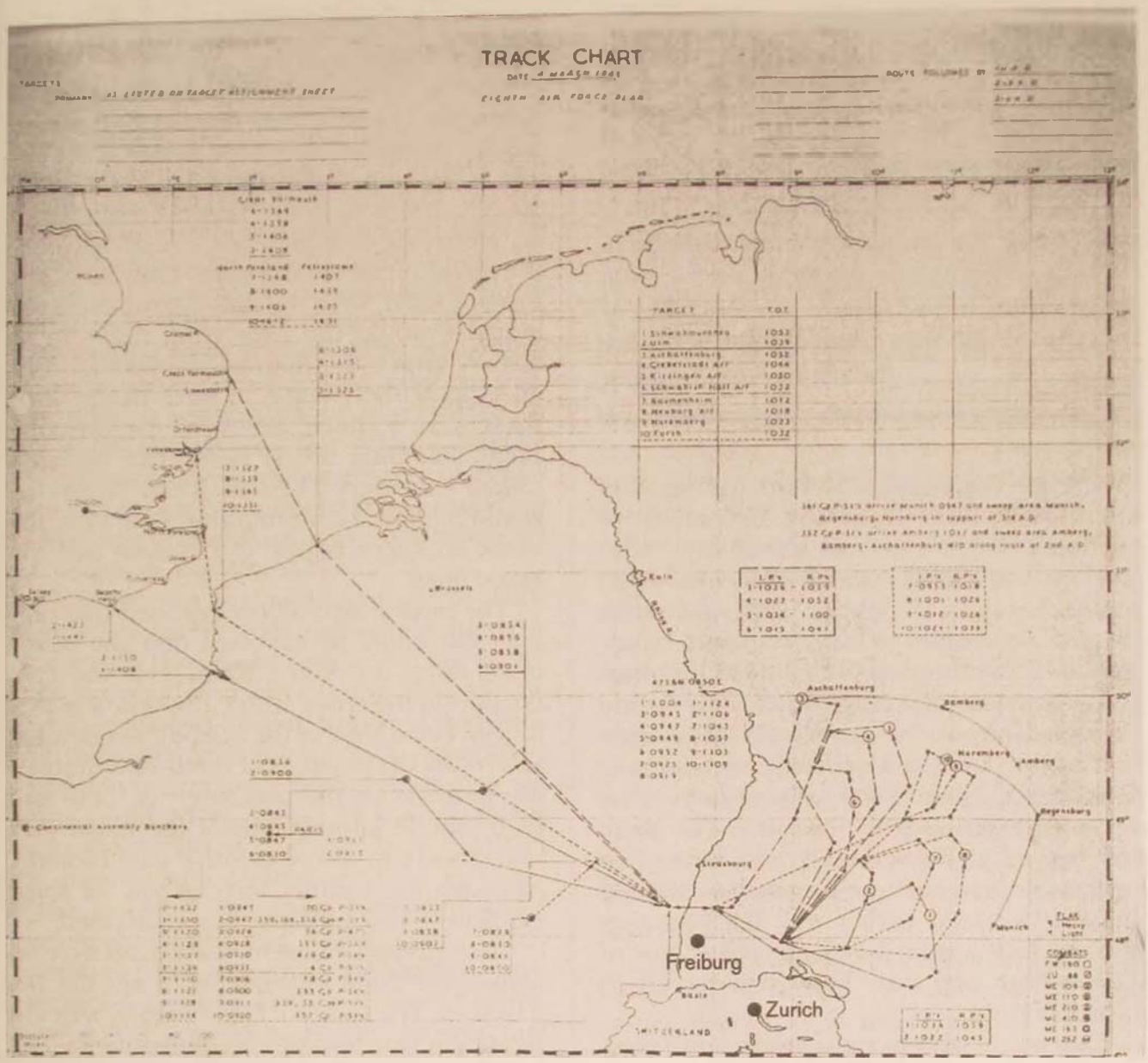
DR. JONATHAN E. HELMREICH

Editorial Abstract: Accidental bombings are not new, but court-martialing crews for such "fog-of-war" incidents is rare. On 4 March 1945, six B-24s dropped 12 tons of incendiaries and 12.5 tons of high-explosive bombs on Zurich, Switzerland—a neutral country. This is an account of how navigation errors, poor weather, and crew aggressiveness caused that to happen and how the officers of the lead B-24 fared when they were court-martialed. Interestingly, the presiding officer in the court-martial proceedings was Col James M. Stewart (of Hollywood fame). To more fully appreciate this study, we suggest you read Dr. Helmreich's earlier piece, "The Diplomacy of Apology: US Bombings of Switzerland during World War II," published in the May–June 1977 issue of Air University Review *and also available at http://www.airpower.maxwell.af.mil/airchronicles/apj/apj00/sum00/helmreich.html. There he provides a comprehensive account of World War II bombing of Switzerland, which began with a scattering of incidents in 1943 and eventually led to increasingly heavy attacks until the 4 March bombing of both Zurich and Basel. Both articles show how conflicts can arise between airmen and diplomats over issues of crew safety and mission accomplishment to win a war.*

> The primary target is the tank depot at Aschaffenburg, Germany, which has come into importance recently because of bombing attacks against targets of a similar nature in this area. As a consequence, P.R.U. (Photo-reconnaissance Unit) indicates at the moment about double the ordinary number of tanks in this depot for purposes of repair and reconditioning. . . . The target for this Group this morning will provide, it is hoped, a crippling blow to the German war machine. The target itself is approached on a heading of about 14° in a bomb run of approximately 40 miles. The I. P. is located. . . .[1]

SO BEGAN THE briefing for the 392d Bombardment Group under 2d Air Division Field Order 618 for 4 March 1945. The mission proved ill fated: it bombed a major city 15 miles within the territory of a neutral power with which the United States was striving to maintain good relations. Five Swiss civilians were killed. Following on previous bombings in border areas, the incident became a cause célèbre. It drew the attention of officers and diplomatic officials to the very top of the bureaucracy, caused an annoyed mission of apology by Gen Carl A. "Tooey" Spaatz, and the payment

of a multimillion-dollar indemnity by the United States to Switzerland.[2] It also provoked a court-martial, apparently the first criminal prosecution ever of US soldiers for acts of friendly fire. Another trial on similar friendly-fire charges would not occur again



Track chart for the Eighth Air Force, 4 March 1945, showing the routes, timing, and targets for all three air divisions. (Freiburg has been added to the chart.)

until decades and wars later,* triggered by an April 1994 downing of two US helicopters in Iraq. That tragedy and the 1999 bombing of the Chinese Embassy in Belgrade, Serbia, by US planes flying for the North Atlantic Treaty Organization, have provoked questions. How could such events happen? All too easily, as the story of the 1945 episode reveals.

On 4 March 1945, as the crews prepared to implement Field Order 618, it was still early, 0330 hours. The officers and crews had already been up for some time. Two hours before, Lt William R. Sincock had been wakened and told that prebriefing for officers of lead crews was at 0230, with the main briefing an hour later.

*Editor's Note: Interestingly enough, there was a little-known incident during the Korean War that bears some similarity to this one. In October 1950, two USAF F-80s mistakenly attacked an airfield near Sukhaya Rechka, USSR. The United States quickly apologized to the Soviet Union, and the pilots were court-martialed. (They were, however, acquitted, as the attack resulted from navigational error rather than criminal culpability.)

Lieutenant Sincock and his crew took the job of lead seriously. It was his 22d mission—all of them flown as first pilot—and his 16th as a lead. Commissioned into the infantry upon graduation from the University of Michigan in 1941, he had served as a radio and communications instructor at a variety of Army schools. In December 1942, six months after his promotion to first lieutenant, he applied for pilot training. He received his wings a year later and was assigned to four-engine transition school. In February 1944, he went to Westover Field in Massachusetts, where Lt Theodore Q. Balides was assigned to his crew as dead-reckoning (DR) navigator. The patriotic son of a Greek immigrant, Balides in civilian life had been an electrician. He had enlisted two years earlier with the intention of becoming a pilot but had washed out of pilot school and had been transferred to Westover Field.

Most of the briefing was devoted to a review of the points of visual identification recognizable on the bombing run. Low- and high-altitude photographs of the target area were shown to assure positive identification.

Changes in orders came faster and faster. The men were sent to Georgia, then to Langley Field, Virginia, and in July 1944 were given a plane to fly to Ireland. After training on radar equipment at the Eighth Air Force School at Clinto, they were assigned to the 392d Group, RAF Wendling.

Their records, for men of 25 and 23 years of age, respectively, were outstanding. One of Sincock's commanding officers termed him "superior." He also used the word *aggressive,* an adjective of which he and many other young pilots of the day were proud.

Field Order 618 directed approximately 275 B-24 bombers of the 2d Air Division of the Eighth Air Force to a variety of targets in southern Germany. The 2d, 20th, and 96th Combat Wings were to attack the jet airdromes at Giebelstadt, Schwabisch-Hall, and Kitzingen; the 14th Wing was assigned the extensive Aschaffenburg tank depot as its target. It was hoped that the wing could bomb visually. If this were not possible and Gee-H, an electronic bombing aid, could be used, the target remained the same. Only if H2X, a form of radar, were the only instrumental aid available would the 14th Wing resort to its tertiary target, the railroad marshaling yards at Aschaffenburg. Like all yards in the area, these were strained almost to the breaking point, handling nearly twenty-five hundred railway cars every 24 hours. Their disruption would hamper communications between the whole southern region of Germany and the battle lines.

The intelligence officer reported that only light flak could be expected over the battlefront along the Rhine River. This was cold comfort to the crews, whose response was prolonged boos. Most of the briefing was devoted to a review of the points of visual identification recognizable on the bombing run. Low- and high-altitude photographs of the target area were shown to assure positive identification. Although the weather forecast was for some cloudiness, visual sighting was anticipated.

Were clouds to close in, the aircraft were reliant upon three instruments to aid the DR navigator. The Gee and Gee-H equipment was located in that navigator's compartment. The H2X was in another compartment, operated by an officer especially trained to work with the tricky apparatus.

Gee was a prime radio navigational aid used by the Army Air Forces with considerable success since its introduction about June 1943. The aircraft's position could be determined by signals received from established ground stations displayed on a cathode-ray tube. Strong signals were a necessity. Unfortunately, ground stations could be established only as far forward as the front lines, which meant that Gee range was limited. More annoying was the skill with which the Germans had learned to jam the radio transmission

with artificial interference, making the scope unintelligible.

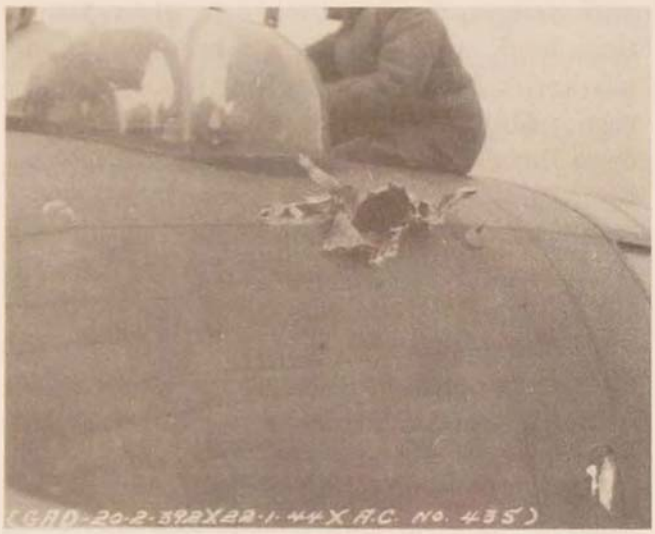
Gee-H was a refinement of the same system. Its main purpose was for bombing through an overcast. Unlike Gee, the newer equipment had a transmitter of its own that could trigger signals from ground stations. The high command was anxious that the Germans learn as little about Gee-H as possible; its use was restricted to determination of the initial point (IP) of bombing runs partly for this reason. Gee-H also was difficult and slow to use in determining a fixed position. Furthermore, it was subject to interference by other US aircraft, for the ground stations could handle only a limited number of signals at a time. Gee-H equipment was therefore placed only in lead ships, those that would set the course of a bombing run.

"Mickey" was the nickname of the H2X equipment, and its operators were doomed to fly through the war known as "Mickey men." H2X transmitted a radar pulse that was reflected by objects on the surface of the Earth and translated into a blip on a cathode-ray scope. Under good conditions, its spinner antenna could have a range of over 50 miles, and an experienced operator could interpret the pictures with a fair amount of accuracy. Water provided almost no reflection, while steel and concrete did much better. Cities, coastlines, and especially marshaling yards gave good pictures. Rolling hills and mountains could provide confusing returns that might baffle the most skilled operator. Though Mickey was especially useful in bombing runs and making landfalls, it could also provide position fixes in conjunction with the estimates of the DR navigator.

The pilots' briefing, which followed the main briefing, concentrated on the complex procedures necessary to put four combat wings in the air in protective formation. Numerous heavy bomber bases were crowded together in the English countryside of East Anglia, normally one bombardment group to a base. It took careful planning and timing to launch the many groups involved in the huge air raids and to arrange for their rendezvous first in wing formation, then in division formation, and eventually with their fighter escorts. Formation flying was a necessity. Until fighter bases could be established in forward position on the Continent, the bombers would fly great distances without fighter cover, having to depend upon their own limited armament for protection. Alone, a lumbering bomber had little chance to survive. The guns of an entire, tightly held formation might keep the German fighters at bay. Another reason for formation flying was the shortage of highly trained and experienced crews. The best and most experienced pilots and navigators were therefore given formation lead responsibilities and flew planes marked for easy identification; the responsibilities of other crews were to hold a tight formation, to obey orders, and to keep their eyes open.

Formation flying, if it provided some safety from enemy attack, also presented hazards. Collision was a possibility even in fair weather. Fog made the situation more dangerous. Should an engine in one aircraft malfunction or be destroyed by enemy gunfire, the plane might lurch out of the control of even the strongest pilot. Unless the pilot recovered quickly, collision with a wingman was more than likely.

Assembly was an especially trying process. Each squadron had to follow its planned course exactly, or it might miss rendezvous with its group and eventually with groups from other bases to form the combat wing. Because of the time required for takeoffs, the groups within a wing flew different paths that theoretically brought all the groups in a wing together at the same point and time. At rendezvous beacons, the groups would fly in identifiable holding patterns, such as the 392d's counterclockwise circle, until stragglers had been picked up and the wing could move on toward the division assembly line. Many pilots feared these holding patterns because for several minutes each time around they might be blinded by the rising sun. Collisions and near misses were not unusual.



(Photographs courtesy of the Air Force Historical Research Agency)

Three that made it back. The pictures above show damage incurred on previous missions flown by the 392d Bombardment Group's B-24s. By 1945, crew aggressiveness had proven itself an essential trait for completing difficult and dangerous missions.

The weather on 4 March was such that planners decided that formation should take place over the Continent. Wing assembly was to be at 14,000 feet over Buncher C-3, near Verdun, France, prior to 0811. The 44th Bombardment Group, which the 392d was to trail, would be at 13,000 feet, and the 491st would fly at 12,000 feet. Within his group, Sincock was to lead the 10 planes of the high right squadron following the lead squadron of the group command pilot. After additional circling and flying of some triangular courses, the wing was to rendezvous with the rest of the division, meet its fighter escort at 0921, and be 20,000 feet over Aschaffenburg at 1052.

The briefing over, Sincock dressed for high-altitude flying and walked to aircraft number 385. The rest of the officers and crew were assembling. The pilot and the engineer went over the checklist; the plane was in good shape. The armorer-gunner reported the guns appeared serviceable; the bombsight and the automatic pilot also checked out as serviceable. Balides, embarking on his 24th mission, was there with his track chart and flight plan. At 0555 their turn came, and the Liberator headed down runway 26.

As the Norfolk countryside fell away, the DR navigator climbed forward to the nose of the ship and checked the Gee receiver. The box worked well, but when he threw the Gee-H switch for the standard post takeoff test, the scope "crumpled." He turned it off quickly and discovered that even the regular Gee reception was no longer coming in.

News of this failure was decisive for the pilot. There was no reason to continue the flight. The Mickey operator had already called in that the H2X was not functioning. Bombing was to be done either by Gee-H or H2X if visual sightings were not possible. Without operative equipment, they were useless as a lead crew; and because they were a lead, the ship was not carrying a full complement of bombs and would make only an insignificant contribution in a tagalong role.

No member of the crew wanted to abort. Some of the worst parts of the mission were

now over—the tense waiting in the briefing room and the cold, dark, and endless minutes before takeoff. Scrubbing would mean that no one would receive a mission credit and the group's bombing effort would be hindered. Just a few ships had Gee-H, and out of the entire 2d Air Division only some 26 bombers carried H2X radar. One spare lead ship had been left at the field, however. Its Mickey was not in the best of condition, but obviously the rest of its equipment would be better than nothing at all. Lieutenant Sincock radioed Major Keilman, the command pilot in the lead squadron, for permission to return to the base and change planes. It was granted, but no landings were possible until all the other Liberators were off the ground.

It took only 32 minutes to transfer equipment and check out aircraft number 577. Takeoff at 0702 still put the crew 27 minutes behind the last feasible time for mission takeoff. The minutes had to be made up somehow, so rather than make a detour by way of Buncher 24, as called for by the flight plan, the navigator headed the plane at the pilot's request directly toward the briefed route to the Continent, climbing on the way.

At Buncher C-3, matters were not going well. The chief of staff of the 96th Combat Wing was then acting as 2d Air Division observer. It was his task to assist, correct, and maintain the formation of the division as it penetrated Germany. Upon takeoff, he wondered why the meteorologists had suggested that assembly occur over the Continent rather than closer to the bases, as was the normal procedure. When he reached the Continent, his puzzlement increased, for he found a cloud layer from 12,000 to 17,000 feet. No units were visible, although his pilotage reckoning showed that he was in the identical location from which the lead pilot of the 96th Combat Wing claimed to be reporting:

> I went beneath the layer and searched, then above, and below and above again. It did not dawn on me that any formation could possibly be flying within these clouds. However, while climbing through, I by chance passed a Group and discovered that the entire Wing formation was doing the impossible. . . .The weather as it appeared to the weather scouts was not insurmountable but . . . the contrails created by the First and Third Divisions plus the initial units of the Second Division created a cloud layer which units could not climb over nor descend below, for they created their own weather. It is unbelievable that so many units could fly so long in such conditions, turn around and withdraw without heavy losses from collision.

The 2d Combat Wing was meanwhile having a problem all its own. Its assembly beacon, A-69, had not been turned on until 0730, barely 40 minutes before wing assembly was to be completed. Moreover, the beacon was situated 15 miles northeast of its briefed position. A cog had slipped in the communications between the Eighth Air Force and the Ninth Air Force, which controlled the beacon. This difficulty, as well as the clouds proved too much. The 2d Combat Wing never did assemble that day. Giebelstadt was spared, as 59 aircraft abandoned the mission and five crews elected to bomb with other wings.[3]

While the various wings of the 2d Air Division were trying to pull themselves together, B-24H number 577 climbed across the English Channel. As soon as a course had been established, the engineer and the DR navigator hastened to the nose of the ship, where they repaired a gas leak in a heater. By the time the plane and its crew reached the European coast, they had adjusted course to compensate for a 15-mile drift to the right. Meanwhile, wing assembly had been raised to 18,000, then 20,000, and finally to 23,000 feet, an altitude at which the Liberators began to handle sluggishly and formation flying became all the more difficult. The thick, twisting contrails still prevented any visual sightings. It was too late to make either group or wing assembly; the only chance was to intercept the wing at the division assembly line. Lieutenant Balides prescribed a course parallel to that line, and as they emerged from the clouds of the assembly area, they spotted the 44th Bombardment Group approximately 30 miles past Metz, France.

Lieutenant Sincock was relieved. The 392d was to fly in the trail of the 44th, so he knew he would spot his mates soon. He did, but the formation was a mess. The lead squadron had seven ships, but his own high squadron had only two. Sincock notified the deputy lead that he was taking over and learned that the latter had been unable to attract other ships of the squadron because the deputy's flare equipment was not operating properly. Upon assuming the lead, Sincock ordered his engineer to fire the red-yellow flares, which were the attraction signal for the 392d Group. Enough planes were circling about aimlessly that there was a good chance that some more members of the squadron or of other groups might join them. No craft from the 392d appeared, but one from the 445th did. It was one of the five planes from the 2d Combat Wing that had not given up the mission. Two planes from the 491st Group of the 14th Wing also joined the squadron, one of them being a Mickey ship. The extra navigational aid would have been welcome, but it served no purpose as only three of the six planes in the makeshift squadron could communicate with each other. Each group had its own radio frequency and had no knowledge of the frequencies used by the others.

It was not unusual for formations to become scrambled in bad weather, making the role of the lead ship more important. Matters began to straighten out. Lieutenant Balides had good Gee fixes and knew exactly where he was. Now that the formation had been found, it was time he and the bombardier helped each other don flak suits. No one liked wearing them any longer than necessary, but the crew made sure to have them on by the time they crossed the front lines.

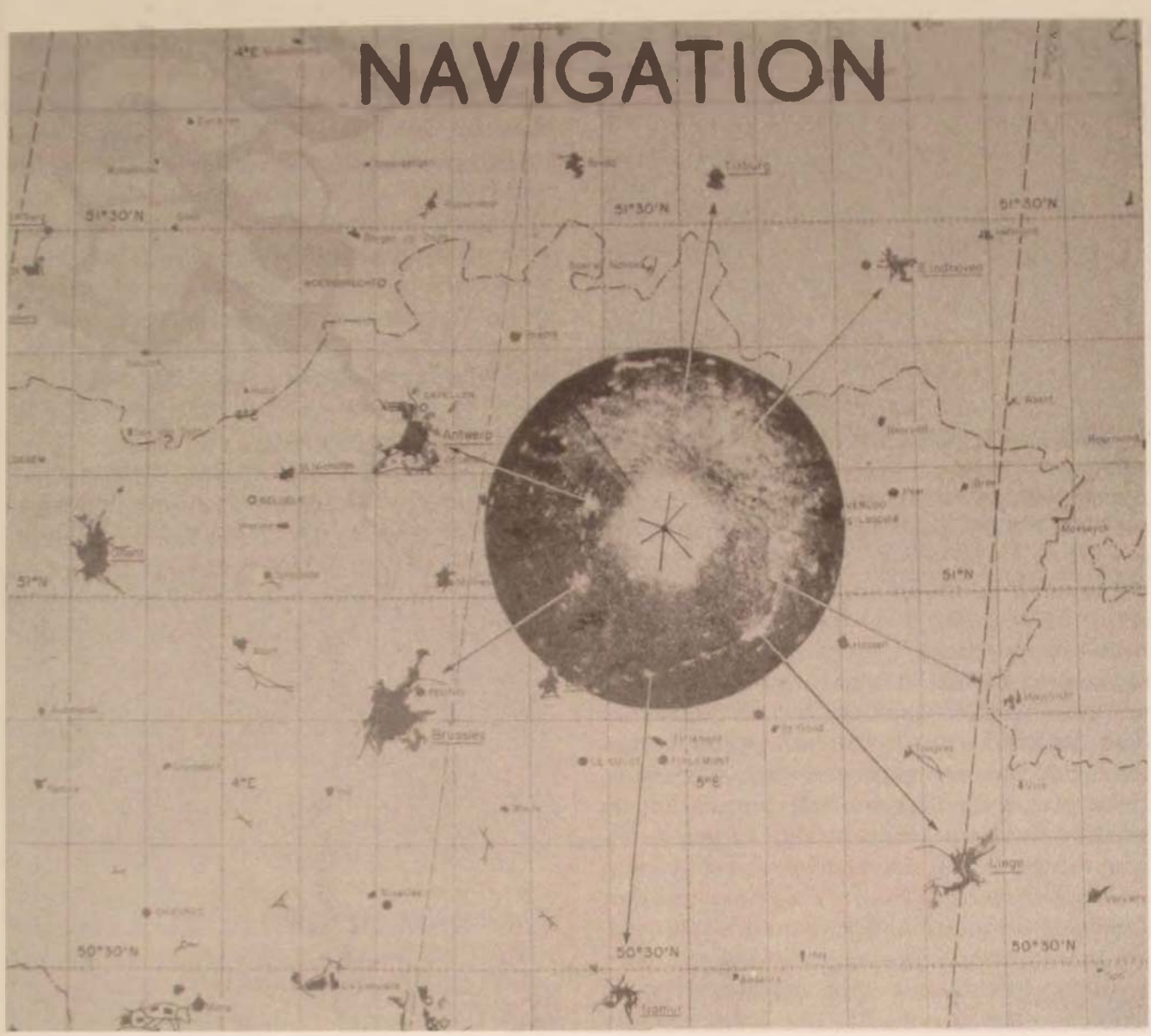
At 0923 the wing swung on the leg of its course that would take it over the Rhine. The Mickey operator began relaying fixes that coincided precisely with Balides's DR navigation, which in turn was corroborated by the good Gee reception still being received. At the briefed point on the southernmost part of their route, they turned left toward the initial point of the bomb run. The 44th Group was leading the 14th Wing and the entire 2d Air Division. Both Lieutenant Sincock and Major Keilman struggled to keep in contact with that lead as the continuing contrails and increasing cloud coverage reduced visibility. As the murk grew, word was received by VHF radio channel from the wing command pilot that the briefed target would be abandoned; the groups should attack targets of opportunity.

Suddenly the 44th, in an attempt to find a hole in the weather, made a number of unbriefed turns. Major Keilman and Lieutenant Sincock followed.

> I notified the Navigator at that time that we were making a 360°-turn, assuming that the lead squadron had decided to make a 360°-turn in the attempt to find a hole. I, perhaps, should have at this point said "Follow the pilot," rather than "We are making a 360°-turn." We made a number of turns at this point, the extent of which I do not know. I was attempting to maintain visual contact with the lead squadron and did not observe my instruments to any degree at that point. We may have made 360's and 180's, I don't know. It must have been very difficult for the Navigator to keep track of those turns at that point. During the second turn . . . I lost sight of the lead squadron, which already had become separated from the 44th Bomb Group.

It was indeed difficult for the navigator to track his position. Dead reckoning can cope with a sharp turn, and possibly with one or two sweeping formation-type turns in succession, but a series of such turns to both left and right is out of the question. Possibly with an air position indicator it could have been done, but number 577 did not have such an instrument. Lack of a wind reading for the current altitude made matters worse. The Mickey operator was getting some fixes, however, and the DR navigator plotted them on his track chart. They all seemed to indicate that the squadron was about 40 miles south of Stuttgart, Germany.

The H2X operator had less faith in his fixes than did Lieutenant Balides, for he had been having trouble with his equipment ever since he lowered the spinner antenna after

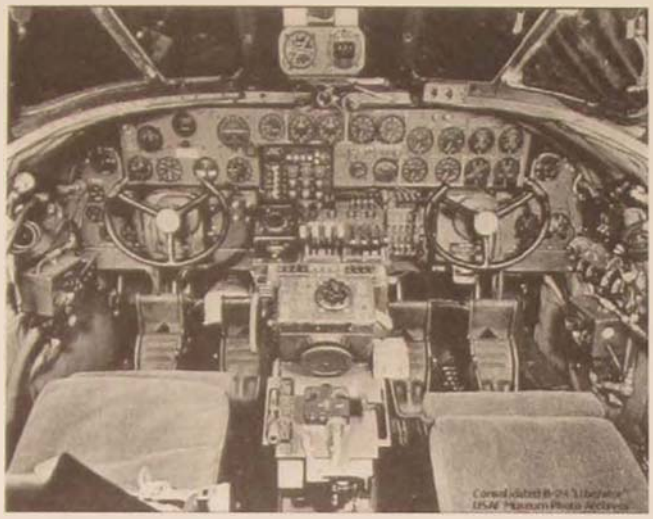


H2X was a self-contained radar device whose beam scanned the ground below the aircraft within a radius of up to 50 miles and provided a radar map of the terrain on its cathode-ray scope. The center of the scope represented the position of the aircraft, and the bright spots were presumed to be cities or landmarks.

takeoff. RAF Wendling was located near the Wash; the contrast between land and water should have been noticeable, yet definition was nil. Nor could he pick up the coast upon crossing the Channel. A tube was working poorly; when he asked the gunners to check the pressure pump, they told him it was not operating.

The Mickey operator had reported the malfunction to his pilot over the base area; they decided that, as only the tertiary target was to be bombed by H2X and as the Gee-H was working, the mission could continue. More fiddling with the H2X showed it could still pick up bright spots that might be presumed to be cities, although their outlines would not register. Over Brussels and Verdun, the Mickey man had made some fixes that he checked against the DR navigator's Gee fix with success. But then, for sizeable stretches of time, he could see no blips; the Mickey's range was down to 10 or 15 miles.

In search of the rest of his formation, Sincock kept turning in the clouds. Finally, a



The B-24's cockpit. Although mechanically complex, bomber cockpits showed few signs of the increasing electronic instrumentation supporting the mission. This included radar, radio navigation and bombing aids, and electronic countermeasures.

break appeared, and he spied the wing lead once more—with his bomb bay open. There was no trace of Major Keilman's squadron. The copilot succeeded in calling the group leader to inquire what the 44th was up to (lead planes did have limited information regarding the frequencies used by other leads). The reply was that the 44th was making a run on Fighter Control Point "O," which for that day was Stuttgart. Sincock's squadron was welcome to drop on their smoke markers.

Meanwhile, the navigator asked for an H2X fix—any kind of fix. The Mickey operator heard on the interphone at that instant that the 44th Group was making a run on Stuttgart:

> So I assumed that we were in the general area of Stuttgart, and if anything would give me a return, Stuttgart certainly would. I picked up a bright spot and took a fix from that and called the DR Navigator and told him the conditions under which I had taken the fix and then told him that due to the conditions, the fix was not reliable.

The H2X operator did give Balides the quadrants of his fix and said that if the town he was picking up was indeed Stuttgart, then that was their position; but he had no way of determining whether it was Stuttgart. The navigator wrote down the numbers of the quadrants, read them back, and then got out of the way so the bombardier could set up his racks for the bomb run.

For several minutes, the 44th's run was like any normal H2X run. There were few changes of course, and those were only five- or 10- degree variations. Then, with bomb bay doors still open, the leaders turned sharply right. Caught unaware, Sincock followed as quickly as he could. Such a turn would have been difficult at best to copy in clear weather; in the clouds, the pilot lost the leader after 30 or 40 degrees of turn.

Disgusted, Sincock decided that further maneuvering was useless and dangerous. Calls to Major Keilman did not bring a response, and while other groups could not be spotted, squadrons and occasional single craft would appear unexpectedly out of the mist in the most haphazard manner. The pilot therefore asked his navigator to give him a heading that would take the Liberator onto the briefed withdrawal route. This Balides promptly did without noticing that in entering the quadrants of the Mickey fix on his track chart, he transposed the minutes. The position was plotted as 48°50' North by 8°32' East instead of 48°32' North by 8°50' East. The error resulted in the officers believing they were flying some 25 miles farther north than they actually were. The fix was obtained at 1009; the navigator now estimated that after heading south for about 10 minutes to reach the flak gap, they would rejoin their planned withdrawal route.

Sincock and his crew had long been told that any bomb dropped on Germany was a good bomb and that there was not much sense to flying bombs across the Rhine and then flying them back. The pilot told his men to be alert for targets of opportunity on the withdrawal route. At about 1017, Balides started the formation on its turn onto the briefed withdrawal route. They had just begun to roll out on their new course when the H2X operator called that his scope showed a town coming up on their present

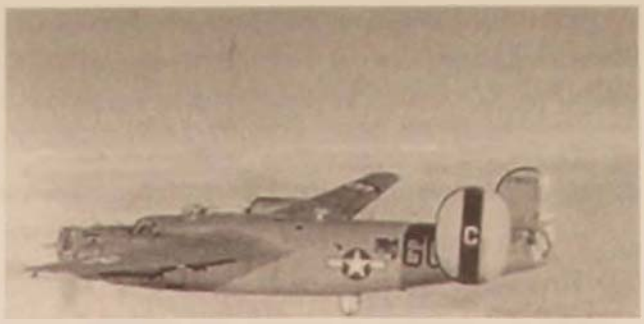
heading but that he needed help in identifying it.

For the first 10 minutes of the withdrawal, the copilot of 577 had been vainly trying to contact the ship from the 491st Group flying the number five position in the squadron. Its spinner was "down," implying that its H2X was operating.* Three or four times he tried the group and squadron call numbers; he received no response, for the other craft was not operating on those frequencies. He had earlier been able to contact the leader of the 44th Group, but he did not talk with him after the abrupt turn away from Stuttgart. The weather was starting to clear, and for the first time in an hour the crew could see the ground; forward visibility was still limited.

The crew was well aware of the standing order that a target of opportunity could be considered anything that gave a return on the Mickey screen as long as it was in Germany. It was regular operating procedure for the group, but the pilot wanted more positive identification. To this day, no one is sure who first suggested that the town might be Freiburg, Germany. It was the logical assumption, for the charts showed Freiburg as the only city of any size within 30 miles lying on their present heading.

Sincock told the Mickey man to take them in over the town and then asked the pilotage navigator to watch for breaks in the clouds that would allow positive identification. Sincock would not rely on the faulty H2X equipment for actual bombing; he insisted on visual identification. The matter was up to the pilotage navigator.

Like the other officers on the ship, the pilotage navigator had experience: 19 missions, including six leads. Located in the nose turret, with by far the best visibility of any crew member, he was to make visual identifications and under visual conditions to guide the aircraft on the bomb run from its IP to the point where the bombardier picked up the target in his sight. Evasive action after the bombing



B-24 of the 2d Air Division operating during December 1944. Note that the radome for the H2X radar can be seen deployed below the aircraft.

was also under the pilotage navigator's direction.

By this time, the H2X operator and the DR navigator had reached agreement that they were in the Freiburg area. Balides had left his seat to make room for the bombardier and had taken his post at the salvo handle. The plane was now at 19,500 feet, and as the pilotage navigator peered down, he could see a large town, or about half of it, as the rest was obscured by ground haze. With him was the 1:500,000 Strasbourg map he had been briefed to bring, and he examined it closely for features that would help to identify Freiburg as they approached it on their 210° heading. He thought out loud over the interphone as he picked out terrain features identifiable as those of the German city. There was the patch of woods, and there the railroad and marshaling yards dividing the town in half on a north-south axis, with the small stream paralleling the marshaling yards and the railroad north of town. The woods were coming up at about the expected angle of 110°, and the plane would pass over a small neck of the patch. The marshaling yards, which could be the target if they bombed, were making their appearance fairly close to the 90° angle he expected from the map.

While the pilotage navigator was going over his check points, Balides interrupted. Freiburg was close to the front lines. They should be very sure they had not crossed the Rhine for fear of bombing their own troops.

*H2X's rotating spinner was enclosed in a radome which could be retracted into the bottom of the aircraft when the radar was not in use.

"We definitely have not crossed the Rhine River. I can see it on the other side of the town."

Six American B-24H bombers had dropped 12 tons of incendiary bombs and 12.5 tons of heavy explosives. . . . The gist of the specifications against Sincock was that he had "wrongfully and negligently caused bombs to be dropped in friendly territory."

The pilotage navigator continued with his checks. He was convinced: "That town is Freiburg."

The bombardier queried, "Are you sure it is Freiburg?"

"I am positive that is Freiburg."

Satisfied that his three navigators were in agreement, the pilot ordered the bombardier to pick out a mean point of impact (MPI), synchronize, and drop the bombs. The bombardier took over the ship. The downward visibility was no more than six miles.

> I chose as close to what I thought to be the center of the Marshaling Yard as possible. We had a very intense crosswind on this particular heading, and by the time I had fully engaged the bombsight, and had rolled up the indice to a point where I could see the ground, we had drifted considerably south of my chosen MPI.

Principally because of the poor weather, the visual run lasted just 60 seconds. Bombs away—code name "Peanut Butter"—was at 1019. Flak was drifting up, and the navigator urged the pilot to take evasive action. While they were doing so, the bombardier looked back to see that the bombs had landed for the most part in a wooded area and along a roadway. It was not a good strike, but the rest of the squadron might do better.

In dodging the antiaircraft fire, Sincock kept favoring the southwest. Four minutes after bombs away, they passed over a large, crooked river that the pilotage navigator readily identified as the Rhine. Visibility was improving, and soon the Gee box became free of German jamming. At 1032 Balides got a fix. It showed him to be 30 to 40 miles south of where he thought he was. The lattice lines of the Gee scope were difficult to read for that area, so he decided to wait a few minutes and try another fix. Ten minutes later, the Gee box again told him he was too far to the south.

> I saw we must be in this little tip of Switzerland, so I gave the Pilot a heading out. Once we got to this 1053 [Gee] fix, the cut there of the [Gee] lattice lines was perfect. There was no doubt at all where I was, so I gave the Pilot the proper heading back to the withdrawal route.

The crew was elated that the mission had been salvaged; they downed a few drinks in celebration when they got back to the base. Even the CO was pleased and told Sincock so. It was some hours later, when films were developed and telegrams began coming in, that Operations became worried. The young pilot did not understand at first why he was called back from the barracks to the Operations room. But as soon as he walked in and saw all the brass standing there, he knew something was wrong. "They looked like death warmed over. Then they told me, very softly, 'That wasn't Freiburg you bombed; it was Zurich.'"[4]

In total, six American B-24H bombers had dropped 12 tons of incendiary bombs and 12.5 tons of heavy explosives. The bombs were well clustered in a narrow strip. Twenty-three exploded in an open field. But "In der Hub," a locality at the very end of the bomb corridor, did suffer. Five persons were killed, around 22 were rendered homeless, and several houses were destroyed.[5]

The court-martial was held 1 June at the headquarters of the 2d Air Division, Eighth Air Force, Horsham St. Faith, England. Col James M. Stewart, known more for his acting than his excellent war record, was the presiding officer. The charges were that Lt William Sincock and Lt Theodore Balides had violated the 96th Article of War. The gist of the

specifications against Sincock was that he had "wrongfully and negligently caused bombs to be dropped in friendly territory." The specifications regarding Balides's violation were that he had failed to maintain a complete and accurate log and chart, negligently and incorrectly determined the location of the aircraft, and conveyed the incorrect information to the commanding officer of the craft, thus causing him to drop bombs on friendly territory. Maximum punishments if verdicts of guilty were reached could be dismissal from the service, forfeiture of pay and other rights and privileges, and confinement at hard labor for life. Although the officers were tried together, each faced separate charges. Their defense was prepared by a captain with considerable previous experience as a civilian attorney and by two assistant defense counsels. The trial judge advocate (TJA) prosecuted the case with the aid of one assistant. Both defendants pleaded not guilty.

The trial opened with extensive statements by the prosecution and the defense. The TJA and the defense counsel were in agreement regarding the basic facts, including the course of the aircraft, the tracking chart error made by the navigator, and the erroneous bombing. The main issue was whether the defendants were guilty of culpable negligence. Was there a degree of negligence that would be universally recognized as gross and as such a departure from the conduct of a reasonable and prudent man in the same circumstances as to warrant inference of indifference to the consequences of what was done?

Defense counsel took great pains to point out the difference between civil and criminal law regarding negligence. A tort in civil law involves the right of redress for damages against an individual who has not taken ordinary care in his actions. But criminal negligence, the issue at point in the trial, requires a state of moral turpitude and a state of mind of criminal intent. Simple negligence cannot result in criminal conviction; rather, the negligence has to be so great as to infer intent to do harm. For the court to convict the pilot or the DR navigator, the TJA would have to prove more than failure to follow Air Force procedures or an error in navigational calculations; he would have to prove willful negligence such as to infer criminal intent.

The main issue was whether the defendants were guilty of culpable negligence.

The defense argued that, regardless of how tragic the attack was,

> it was the unhappy, but nevertheless normal, consequence of a combination of circumstances consisting of the adverse weather encountered on that day, the very severe maneuvering that this crew, as well as others, had to engage in for survival, the stress and strain of an operational mission, the malfunctioning of [the] equipment at their command, and lastly, an aggressive attitude on the part of this crew to salvage something from an apparent mission failure.

The prosecution's presentation was thorough. The officers who had given the early morning briefings to the squadron and group were called upon to reconstruct their statements of 4 March. The intelligence officer eventually admitted that at no time had he mentioned that the scheduled course would take the group within 14.5 miles of Switzerland. Nor was that information explicit in the field order; only if the navigator plotted the route ahead of time and compared it with the border of Switzerland would it be evident.

The responsibility of the DR navigator in the high right squadron became more clouded when the major who was group navigator for the 392d testified that "as far as the navigation of a mission is concerned the primary duty of navigation rests upon the navigator of the lead ship in the lead squadron of the group." Sworn statements from each of the officers of Sincock's plane had been obtained ahead of time; in addition, the copilot, the Mickey operator, and the pilotage navigator

took the stand. Each told his story, and each corroborated the testimony of the others. No one asked the copilot why he had not tried to radio the 44th after it so abruptly broke off its bomb run on what was supposed to be Stuttgart. Spirited discussion did arise, however, as to who first suggested that the next city approached was Freiburg. Though the matter was never settled and the H2X officer firmly indicated that he had warned the DR navigator that his own identification was not reliable, assistant defense counsel managed effectively to raise the possibility that it was the Mickey man, not Balides, who made the initial error.

The interrogation of the pilotage navigator involved a complex series of photographs of the bomb drop and maps of both Zurich and Freiburg. At first, the idea appeared incredible, yet defense counsel showed how the two cities could be confused if Zurich were approached from the angle it was and clouds obliterated any view of the lake. The river seen to the west of the city and mistaken for the Rhine was the Limmat. Again and again the defense brought forth that the commanding officer of the ship himself had no view of the target and had to rely upon his navigators.

For a thorough analysis of the DR navigator's log and track chart, the TJA called upon the assistant to the director of intelligence of the Eighth Air Force. An expert navigator who had analyzed over a thousand logs, he gave Balides an average rating. He pointed out that the navigator was operating under some real handicaps:

> In missions of this kind under these weather conditions errors like this have crept in. Very often the Eighth Air Force—in some instances where international boundaries haven't necessarily been involved—we have had occasions not only of squadron lead, but of division lead navigators bombing targets 50 to a thousand miles from the briefed target and not knowing what they had bombed.

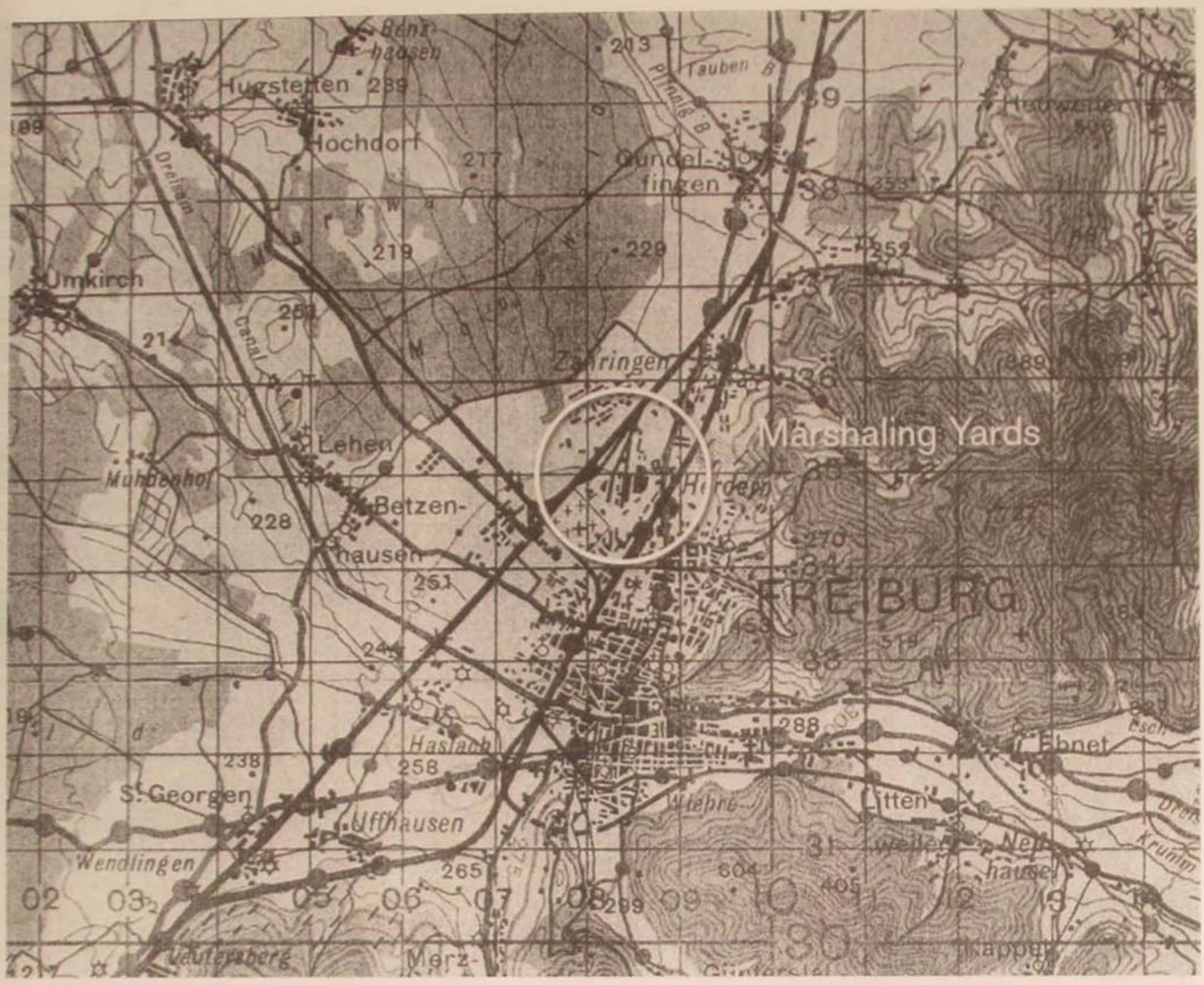
Then, too, there were the Germans. "He [Balides] had a [Gee] box, but in March 1945 the Germans were probably engaged in their most severe counter-measure program and east of the Rhine River 'jamming' was evident."

Much time was spent discussing the transposition of the minutes of the Mickey fix taken near Stuttgart. When pressed, the captain admitted that reversal of minutes was a common error. How easy it was the court recorder inadvertently demonstrated, as in one section of the transcript the minutes were jumbled, reversed in a manner similar to, but different from, the navigator's mistake.

Testimony was rapidly building to the effect that navigational problems were immense on 4 March and that Balides had not been remiss in his duties. But the assistant to the director of intelligence let drop one fact that revealed that it was possible for the navigator to have done a better job than he actually did. While investigating the course of the squadron, the intelligence officer checked the log of the deputy squadron leader who flew on Sincock's right wing. That log showed the deputy navigator's estimates never to be more than five to 10 miles from the actual course flown. He should have realized the squadron was over Switzerland and called his lead. No one asked why he did not, but the answer seems clear. The deputy lead had less confidence in his own navigation, which happened to be correct, than he did in that of the squadron lead. There could be no better testimony to the confusion that reigned that day.

The court adjourned at 2140 and met again the following morning. Only a few more witnesses remained to be heard, including Lt Col Carl C. Barthal, one of the officers charged with investigating the incident and how to prevent its recurrence. He was an expert on radar navigation and had earlier testified regarding the equipment aboard B-24H number 577. Now he stated that having gone over all the reports, he did not know whether the crucial, and transposed, fix was actually taken on Stuttgart. The transposition error accounted for only 25 miles, but 25 miles from where?

> It seems to be a collection of a series of errors, which, normally, negate each other, and in this

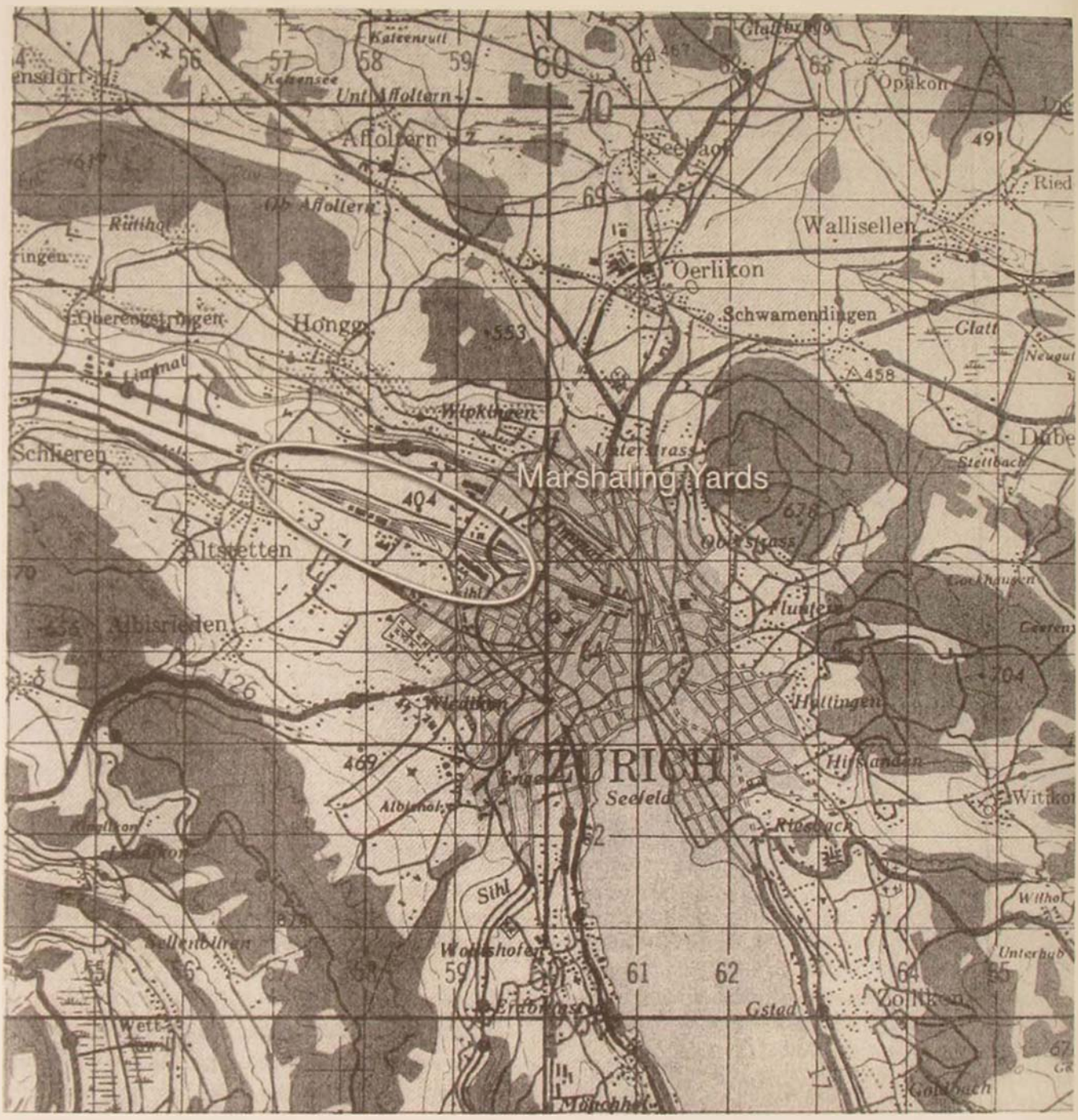


Sections from two World War II–era charts comparing Freiburg, Germany (above), *with Zurich, Switzerland* (see next page). *The marshaling yards are more obvious on the Zurich map, but in both cases they were located in the northwest quadrant of the city. The Rhine is just off the west (left) side of the Freiburg map.*

> case, they just backed each other up. After this fix at Stuttgart, which was not picked up at the time it was plotted, from there on out each error tended to build itself up, rather than to take away. . . . I personally think that they—from just what experience I have had—it is just a matter of time and fatigue, strain, things like that. About the transposition of figures—that is purely a matter of taking figures from the chart and going on to the map with them. Now he felt, I am sure, that he was in that area somewhere and the fix fell in the general area.

After a coffee break, the testimony of Col Irvine A. Rendle, the 2d Air Division observer that March day, was read into the record. It was his opinion that the primary cause of the incorrect bombing was the crew's effort to achieve something that, because of complications, was beyond their capabilities. "No matter how thorough the training and efficient the planning, if a unit is pushed far enough, there has to be someone who will break first, even if he is good."

The next testimony heard was a portion of the official report of Brig Gen Leon W. Johnson, commander of the 14th Combat Wing, to the commanding general of the Eighth Air Force, Lt Gen James H. Doolittle. It is worth noting that in August 1943 Johnson had won a rare Medal of Honor in carrying out a dan-



gerous bombing run on Ploesti, Rumania. His conclusion was significant:

> This crew was aware of the fact that our units have repeatedly been dispatched on missions for the disruption of the enemy's communications. They were aware that some recent targets of opportunity bombed have been effective in that direction. The Wing and Group Commanders have repeatedly stressed that a bomb on Germany is a good bomb and that if proper targets can be located they should be bombed rather than returning bombs to base. I believe the aggressiveness displayed by the crew was commendable, as they could have returned with their bomb load, under the weather conditions encountered, and not been criticized.

Neither Sincock nor Balides was required to testify, but both did. The pilot described how his crew came to be over what they thought was Freiburg and how, after that

identification was made, "I told the Bombardier to pick out an M. P. I. and drop his bombs. He did so. We continued on withdrawal course back to our base, reporting on arrival that we had bombed Freiburg, Germany, visually as a target of opportunity."

The defense then put some leading questions.

"Lieutenant, were you reasonably certain when you gave the order for bombs away from the information which had been transmitted to you, that you were over a legitimate target of opportunity?"

"Yes, sir."

"Had you known, Lieutenant, that these bombs were dropping, in fact, over the town of Zurich, rather than the town of Freiburg, would you have given that order?"

"No, sir. Certainly not."

The cross-examination focused on the division of responsibility between the pilot and the crew and on the recognition of key locations. After Stuttgart was presumably identified, did Sincock follow the navigation himself or rely on his navigator?

"I do not navigate the airplane."

"And you were relying entirely on your Navigator?"

"On the three navigators I have aboard. Yes, sir."

"And in that instance, do you rely more on one particular navigator than the other?"

"No, sir. It is the opinion of all the navigators, with the equipment and the facilities they have available to them. When they arrive at a common decision, that decision is the one which I take."

The prosecution then wanted to know if the pilot had a map that showed the terrain features of Freiburg. He did not.

"And when the Mickey Navigator first informed you that a town was coming up as shown on his scope, did he give you any indication of what sort of a place it was, a large town or a small one?"

"He was unable to identify the town through its appearance on the scope, sir. However, he was aware and I was aware that he was picking up only strong returns on his scope, and the town which he picked up as a bright spot would have to be a fairly large town."

"Were you looking for any certain place or did you expect to pick up any town at that point?"

"No, sir. I was particularly anxious to get any target of opportunity. Our Group has heard and I believe it came down from higher headquarters that any objective which gives a return on the Mickeyscope is a good target of opportunity. Since we were getting a return on the Mickeyscope, I decided that it could be used as a target of opportunity, as it had been identified as being inside Germany."

The verdict rendered the afternoon of 2 June by the jury of 12 officers was "not guilty" for each of the defendants. Criminal negligence or intent to do harm to Switzerland had not been established, and even guilt at the level of civil tort had scarcely been shown, save for the error in transposition.

On 30 July, Maj Jack R. Vollertsen, reviewing the case for the adjutant general's office, wrote that

> apparently [the] case was tried in order that record might be available to State Dept. in any future negiations [*sic*] over the incident. Evidence did not disclose such carelessness or negligence on part of accused as would have sustained a conviction and court properly rendered an acquittal.[6]

Some of the previous border bombing incidents may not have seemed to Swiss critics as entirely accidental, but the unintentional errors and navigational mishaps associated with Sincock's and Balides's mission could be, and were, clearly demonstrated in the court-martial.

Though acquitted of charges of willful negligence, Sincock did pay a penalty. He was no longer allowed to hold a lead position, a demotion for which he felt disappointment the rest of his life. Though Sincock's crew was grounded for a period of time, Balides was handpicked for another mission that was so successful the pilot and bombardier were awarded Distinguished Flying Crosses. How-

ever, Balides was denied the medal because of the previous incident.[7]

In a sense, the men's errors stemmed from the very quality that had won them praise and promotion, a quality that the United States highly valued in its fighting men: aggressiveness. Nor had that aggression failed to be linked with an effort to exercise judgment. What confounded the latter were both organizational miscues, such as lack of better information about radio frequencies, and equipment failures. Technology was supposed to give crews the edge to win the air war. Overall, perhaps it did. But at times, too much burden was placed on the capacity of the technology. Initially, human will and skill overcame the problems and enabled the crew to find its group and wing. But when the burden of continuing technological deficiencies coincided with the challenges of bad weather, crew strain, and zealousness to achieve, disaster was the result. Today these factors still apply, despite technological advances such as global-position-indication systems. □

Notes

1. Unless otherwise indicated, all quotations are drawn from the record of trial of Lt William R. Sincock by general court-martial, Horsham St. Faith, England, 1 June 1945. This record is on file at the Washington National Records Center, Suitland, Maryland. Although a matter of public record, it omits the names of all but one of the officers in Lieutenant Sincock's crew in order to protect the privacy of those still living. I am indebted to the late Dr. Sincock for suggesting this topic to me and for providing much information. Allegheny College and the Ford Foundation provided appreciated grants to facilitate this research.

2. See Jonathan E. Helmreich, "The Diplomacy of Apology: United States Bombings of Switzerland during the Second World War," *Air University Review* 28, no. 4 (May–June 1977):19–37.

3. Brig Gen Francis H. Griswold's tactical analysis of the mission of 4 March 1945, Washington National Records Center, Suitland, Maryland, Record Group 18.

4. Author's conversation with Dr. William R. Sincock, 14 November 1969.

5. National Archives, Department of State Records, 411.54 Bombing, Jck. 2, 740.0011 European War 1939/3-745, Lehrs to Grew, 7 March 1945.

6. A copy of this review is included with Sincock's trial file.

7. Michael Ollove, "Wartime Mistake Still Echoes," *Baltimore Sun*, 6 November 1994.

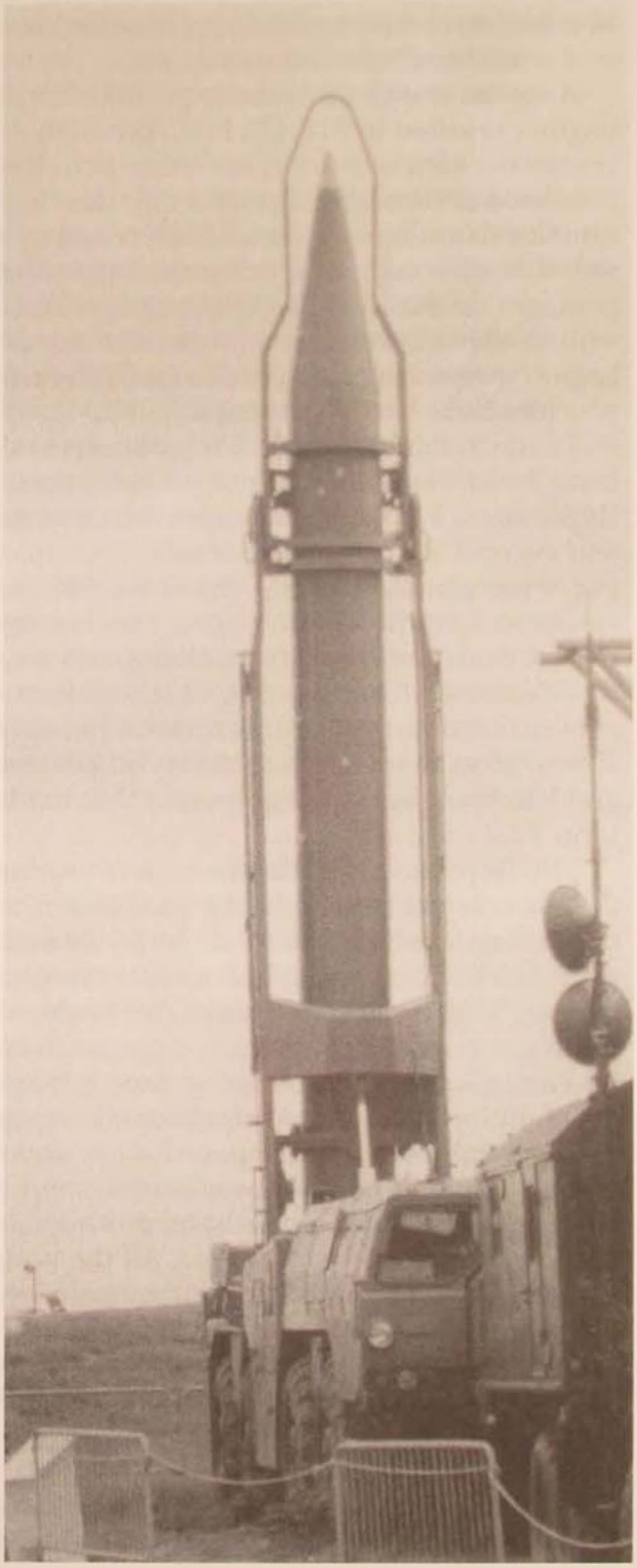
It must be a rare occurrence if a battle is fought without many errors.

—Jefferson Davis

Survey of Web-Based Data on Missile Proliferation

CAPT GILLES VAN NEDERVEEN, USAF*

Editor's Note: PIREP *is aviation shorthand for* pilot report. *It's a means for one pilot to pass on current, potentially useful information to other pilots (for example, letting others know that the weather along a given route is better or worse than the forecast). In the same fashion, we intend to use this department to let readers know about aerospace-power items of interest. We intend to keep it flexible, so sometimes it may just call your attention to a recently published article in another journal; other times, we may provide in-depth coverage of a particular topic. Like its namesake, the reporting system works best when everybody contributes, so if you come across something other readers want to know about—give us a PIREP!*



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MISSILE PROLIFERATION HAS been a national security topic since the 1980s. In spite of attempts to limit the spread of this technology, missiles—especially when combined with weapons of mass destruction (e.g., nuclear, biological, or chemical warheads)—offer a military advantage some states find irresistible. As a result, more than a dozen countries are currently developing ballistic and cruise missiles with ranges between three hundred and six hundred kilometers. Development of longer-ranged missiles and cruise missiles continues as well.

A recent search for "missile proliferation" on the World Wide Web, using AltaVista's search engine, resulted in 318,475 hits. Although AltaVista provided the longest list of sites, a researcher can, of course, use other search engines. Even though many sites can be quickly dismissed as having marginal utility, the challenge of examining so many possible sources remains daunting to someone interested in this topic. For that reason, this survey identifies web sites offering useful or interesting information on missile proliferation. It compares and contrasts unclassified English-language sites and summarizes the available data. Readers who wish to explore these sites further should visit the on-line version of this article at **http://www.airpower.maxwell.af.mil/airchronicles/apj/apj00/sum00/phisum00.html**, which provides links to each site mentioned.

I first examined various US government sites. Collectively, these provide everything from broadly worded statements of policy down to detailed technical information. The State Department's Bureau of Nonproliferation makes available treaty texts, recent meeting notes, and current US policy. The Missile Technology Control Regime, covered at **http://www.state.gov/www/global/arms/np/mtcr/mtcr99.html**, has useful fact sheets on this international agreement but little information concerning actual or suspected violations. Another page at the bureau's site, **http://www.state.gov/www/global/arms/np/mtcr/wassenaar.html**, features the Wassenaar Arrangement, which limits the exports of so-called dual-use technologies for conventional arms. The information here comes from a combination of chronologies and fact sheets. Most states running covert missile-development programs obtain technical know-how and hardware by using equipment that has both commercial and military uses, hence the term *dual use.*

The Department of Defense offers two important sites. The Defense Technical Information Center at **http://www.dtic.mil/mctl** lists critical technologies subject to export control, and the Pentagon's DefenseLink at **http://www.defenselink.mil** has graphics, official reports, and press briefings on a variety of military subjects, including missile proliferation. National Defense University's site (**http://www.ndu.edu**) offers concise background material on proliferation and on countries engaged in acquiring missile technology. The Congressional Research Service, another good source for policy and legislative papers dealing with proliferation, has sites at **http://www.house.gov** and **http://www.loc.gov**.

Although authoritative government sites are, by necessity, circumspect regarding sensitive information and delicate conclusions, some sites run by specialist groups are more provocative (keep in mind that they also likely reflect the strengths, weaknesses, and ideology of the sponsoring organization). All the nongovernmental sites have links to other sites, allowing a researcher to gather data on every aspect of missile proliferation, from political policy to in-depth technical-design parameters. Foremost among these is the Federation of American Scientists at **http://www.fas.org/nuke/control/mtcr/index.html** and **http://www.fas.org/nuke/control/wassenaar/index.html**. These web pages provide a host of information on the provisions, status, chronology, texts, documents, and news concerning missile proliferation. In addition, they provide a list of related sites that allow "surfers" to gather even more in-depth data. The federation also manages a missile-proliferation site, **http://www.fas.org/irp/threat/missile/index.html**, boasting one of the most comprehensive

overviews of systems, charts, maps, and pictures of missiles on the web. The country-by-country breakdown clearly shows how widespread missile proliferation has become. For example, see **http://www.fas.org/nuke/guide/dprk/facility/nodong.htm** for one-meter-resolution space-based imagery on North Korean missile developments.

The Center for Non-Proliferation Studies at the Monterey Institute of International Studies also maintains detailed databases. At **http://www.cns.miis.edu**, researchers can download a 33-page-long paper by Joseph S. Bermudez that tracks the entire history of ballistic missile development in North Korea. The center also features links to over a hundred more sites with missile-proliferation data.

Other sites focus more on issues involving ballistic missile defense. The Stimson Center (**http://208.240.90.149/index.html**), one of many US think tanks and policy-research institutions, offers in-depth policy analysis on the quest for a US-based anti-ballistic-missile defense/national missile defense system, which is directly tied to the threat the United States might face from ballistic missiles. Similarly, the Cato Institute examines all forms of proliferation, making available policy papers, foreign-affairs analysis, and downloadable reports at **http://www.cato.org**. As its name implies, the Arms Control Association (**http://www.armscontrol.org**) focuses on the political-diplomatic approaches to limiting proliferation, and its site contains treaty texts, press reporting, and a search engine that allows researchers to comb through thousands of data points. One of the site's background pieces on tracking the proliferation of ballistic missiles includes 55 articles and features that examine all aspects of worldwide missile proliferation.

Other notable US sites include those maintained by RAND at **http://info.rand.org**, featuring policy papers; think tanks at Harvard University (**http://hdc-www.harvard.edu/cfia/olin/homepage.htm**) that offer numerous sites on international security; and the Arms Trade Resource Center at **http://worldpolicy.org/projects/arms/reports.html**, which has reports on arms transfers—including missile proliferation. These three sites explore the policy implications of proliferation, focus on ways to monitor proliferation, and consider regional and international implications of the acquisition of missile technology. The Carnegie Endowment for International Peace posts reports on proliferation roundtables at **http://ceip.org/programs/npp/index.html**. These roundtables feature top domestic- and foreign-policy experts and academics, who provide in-depth insights and analyses into all current forms of missile-proliferation challenges and problems. Stanford University's Center for International Security and Cooperation (**http://www.stanford.edu/group/CISAC**), which focused on the Asia-Pacific region and Russian developments during 1999, produces downloadable reports on a wide range of missile-proliferation issues. Washington-based think tanks such as the Center for Strategic and International Studies (**http://www.csis.org**) and the Institute for Science and International Security (**http://www.isis-online.org**) have publications, background papers, and up-to-the-minute briefings on current missile-proliferation issues. The Institute for Science and International Security also posts a country listing and a large collection of commercial satellite photographs on proliferation. All of these sites update important issues hourly.

The *Bulletin of the Atomic Scientists* at **http://www.bullatomsci.org** offers older articles in its special collection, but this site places greater emphasis on weapons of mass destruction than the proliferation of ballistic missiles. The University of California at Berkeley runs the Nautilus Institute, **http://www.nautilus.org**, which covers both North and South Asian proliferation issues in depth, providing a great deal of information on Korea, China, India, and Pakistan in the form of pictures, graphs, and downloadable reports.

Of course, many foreign think tanks and academic research centers have data on missile proliferation. Depending on the region of interest, some are quite good while others are very

politicized. The United Kingdom's Centre for Defence and International Security Studies at **http://www.cdiss.org** offers a comprehensive package that provides very detailed analysis dating back to World War II, which marked the beginning of ballistic missile usage. This is also one of the few sites that breaks down missile proliferation into ballistic and cruise missile threats, giving a more in-depth approach to both weapons. Other international sites that usually carry good regional data include the Jaffee Center for Strategic Studies (Israel) at **http://www.tau.ac.il/jcss**, the Taiwan Security Research Group (Nationalist China) at **http://www.taiwansecurity.org**, and the European Institute for Research and Information on Peace and Security (Belgium) at **http://www.ib.be/grip**. The Stockholm International Peace Research Institute (**http://www.sipri.se**), especially good for its long-term studies, tracks most of the technology exported around the globe. It documents missile proliferation and the closely related dual-use technology exports, giving a comprehensive picture of the amount of trade on a global scale. The London-based Verification Technology Information Center at **http://www.fhit.org/vertic** devotes itself to verification technology and the application of monitoring to missile proliferation.

The Heritage Foundation (**http://www.heritage.org**) provides policy papers and reports on missile proliferation. It also publishes one of the best handbooks currently available—Jack Spencer's *The Ballistic Missile Threat Handbook*, which includes a historical overview of missile proliferation and an examination of each country's arsenal of ballistic missiles. Illustrated with maps and drawings of individual missiles, the book also shows the extent of proliferation and identifies main exporters of the technology. Using the Soviet-designed and -built Scud B as a starting point, the text documents how proliferation, reverse engineering, and improvements occur as various countries become proficient in rocket manufacturing and design work. This handbook is also one of the few texts that lists the various designations assigned to each missile system—very helpful for researching missiles in countries such as China, whose systems have up to three designations each. Well researched with an extensive bibliography, Spencer's book is useful to anyone interested in ballistic missile proliferation.

If you find this survey useful, please let us know. Manpower permitting, we will update and continue to provide this information on our web site (**http://www.airpower.maxwell.af.mil/**), but we need your help! As you find new information on this subject, please share it with us. □

Maxwell AFB, Alabama

Arms Control Association
http://www.armscontrol.org

Arms Trade Resource Center
http://worldpolicy.org

Bulletin of the Atomic Scientists
http://www.bullatomsci.org

Carnegie Endowment for International Peace
http://ceip.org/programs/npp/index.html

Cato Institute
http://www.cato.org

Center for Strategic and International Studies
http://www.csis.org

Centre for Defence and International Security Studies
http://www.cdiss.org

Department of Defense
Defense Technical Information Center
http://www.dtic.mil/mctl

Department of Defense
Pentagon's DefenseLink
http://www.defenselink.mil

European Institute for Research and Information on Peace and Security (Belgium)
http://www.ib.be/grip

Federation of American Scientists
Missile Proliferation Page
http://www.fas.org/irp/threat/missile/index.html

Federation of American Scientists
Missile Technology Control Regime
http://www.fas.org/nuke/control/mtcr/index.html

Federation of American Scientists
Wassenaar Arrangement
http://www.fas.org/nuke/control/wassenaar/index.html

Harvard University (numerous sites)
http://hdc-www.harvard.edu/cfia/olin/homepage.htm

Heritage Foundation
http://www.heritage.org

Institute for Science and International Security
http://www.isis-online.org

Jaffee Center for Strategic Studies (Israel)
http://www.tau.ac.il/jcss

Monterey Institute of International Studies
Center for Non-Proliferation Studies
http://www.cns.miis.edu

National Defense University
http://www.ndu.edu

RAND
http://info.rand.org

Stanford University Center for International Security and Cooperation
http://www.stanford.edu

Stimson Center
http://208.240.90.149/index.html

Taiwan Security Research Group (Nationalist China)
http://www.taiwansecurity.org

University of California at Berkeley
Nautilus Institute
http://www.nautilus.org

US Congress
Congressional Research Service
http://www.house.gov
http://www.loc.gov

US State Department
Bureau of Nonproliferation
Wassenaar Arrangement
http://www.state.gov/www/global/arms/np/mtcr/wassenaar. html

US State Department
Missile Technology Control Regime
http://www.state.gov/www/global/arms/np/mtcr/mtcr99.html

Go tell the Spartans, thou that passeth bye
That here obedient to the laws, we lie.

—Simonides of Ceos

A battle is lost less through the loss of men than by discouragement.

—Frederick the Great

An Ethos of Casualty Sensitivity

Dr. Daniel R. Mortensen*

ONE OF THE greatest battles of World War II, one occasionally considered a failure, is the escape of German army remnants through the Falaise gap in Normandy. The usual argument claims that Gen Bernard Montgomery, the British army commander, and Gen Omar Bradley, the American Army commander, failed to bring their forces together, closing the gap to trap the German army. Part of the German army escaped to prolong the war into 1945. When questioned later, Bradley claimed that he "preferred a solid shoulder at Argentan to the possibility of a broken neck at Falaise."[1] Bradley believed that German forces were being ground to oblivion by air attack and artillery firing from the shoulders. Why chance a decimating struggle between his soldiers and German remnants in the Falaise gap desperately seeking to escape to their home country?

My reading of history suggests a counterview to the essence of Dr. Jeffrey Record's essay on "Force-Protection Fetishism" (this issue). Americans have a long-standing cultural characteristic—sensitivity to casualties—and, if not horrified during the heat of the moment, afterwards reflect with revulsion on the human costs of some terrible battles. One can see this in the aftermath of both the American Civil War and the western front in World War I. Coincidentally, one finds a consistent theme in American military history of employing technology—airpower particularly—in exchange for casualties, even when airpower itself precipitates heavy casualties, as it did in World War II. The decision to drop the atomic bomb at Hiroshima fits into this category. There is also a persistent theme of using artillery in place of deadly tactical infantry fighting along the fronts. During the war, the American Army was famous

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for its profligate employment of guns to "soften" the enemy, preparatory to infantry attack. In short, American casualty sensitivity long predates Vietnam.

Dr. Record is accurate on the point that the air war over Serbia projected dangerous suggestions of American paralysis about combat casualties. This issue needs serious attention if the United States is to be militarily effective in twenty-first-century battles, and, indeed, much has already been written in the press and elsewhere on the subject (including the article by Maj Charles Hyde in this issue). But to consider this fear of casualties a recent fetish is more hype than reality. Take a further look at casualty sensitivity in World War II.

Max Hastings's study of the Normandy invasion, June–August 1944, captured another sense of America's traditional casualty-aversion ethos: "The attitude of most Allied soldiers was much influenced by the belief, conscious or unconscious, that they possessed the means to dispense with anything resembling personal fanaticism on the battlefield: their huge weight of fire-power. . . . Artillery and air power accomplished much of the killing of Germans that had to be done sooner or later to make a breakthrough possible."[2] Hastings argues persuasively that even in 1944 "an ethos, a mood pervades all armies at all times about what is and is not acceptable, what is expected."[3] Although it is true that the German army, its back to a Russian wall, had to fight with great verve, the Allies at that point were not fearful of losing the war. Their purpose was based on a more ethereal concept—doing a necessary job for the sake of democracy and decency. This did not engender as many fiercely focused combat soldiers. Nonetheless, many American forces learned to fight well in Normandy; many units were unpurposefully weak. As Hastings points out, Montgomery and Bradley understood that they were not there to demonstrate the superiority of their fighting men "but to win the war at tolerable cost."[4]

Another important World War II example that demonstrates casualty sensitivity was Gen Dwight Eisenhower's decision to stop Allied forces on the Elbe, short of the important political centers of Berlin and Prague. Ike was critiqued later for not taking into account the Russian menace, political considerations, and acquisition of additional central European territory. As Forrest Pogue put it, "From the purely military viewpoint of the quickest way to end the war in Germany with the fewest number of casualties to our troops . . . his decision was certainly the proper one."[5]

A couple of other points in Record's article caught my attention. One is the suggestion that ethnic cleansing accelerated because airpower remained at high altitudes and ground options were denied. The cleansing would have continued regardless of what air did, high or low. And it certainly would not have served a purpose to threaten injection of ground forces. Just how long would it take to get ground forces to the slaughter site? Nothing could have stopped the horrible ethnic killings in

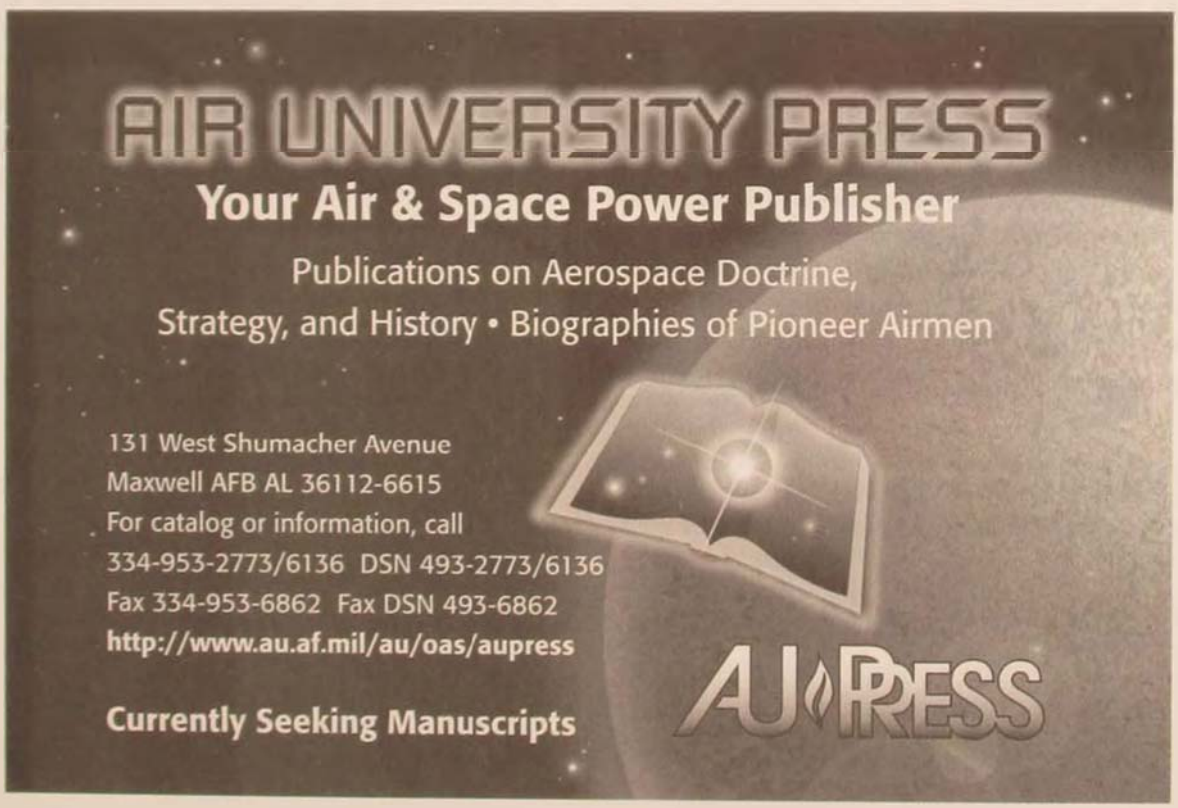
short order. The alternative to using airpower was to do nothing, given NATO's political realities—and that is another issue.

Record is correct about casualty sensitivity, but I disagree that "protection of one's own troops is top priority." I doubt that the National Command Authorities or national defense leaders put troop protection before operational effectiveness. And I certainly think Record is extreme in suggesting that we confine our enemies to those incapable of shooting in the air. Nor do I think it sensible to suggest (even if this is tongue-in-cheek) that we do away with casualty-prone ground forces. Even the most rabid airpower advocate does not think the Air Force should take over the Army's funding, except for "homeland defense tasks and burials at Arlington Cemetery!" Record's article is stimulating but full of dangerous nonsense that detracts from its inherent instructive value. □

Maxwell AFB, Alabama

Notes

1. Omar Nelson Bradley, *A Soldier's Story* (New York: Holt, 1951), 377.
2. Max Hastings, *Overlord: D-Day and the Battle for Normandy, 1944* (New York: Simon and Schuster, 1984), 317.
3. Ibid.
4. Ibid.
5. Forrest Pogue, "The Decision to Halt at the Elbe," in *Command Decisions* (Washington, D.C.: Center of Military History, US Army, 1990), 492.



Ricochets and Replies
Continued from page 3

will find targets that attack an enemy's COGs, or defend friendly ones. For example, in the Battle of Britain, RAF Fighter Command was a COG, not the early-warning radars, according to Dr. Strange. Those radars were components of a critical requirement (i.e., to provide warning on the "timing, strength, and location of" attacks) feeding a critical capability (i.e., "to meet the Luftwaffe attacks in a timely manner"). In modern terms, a JFACC [joint force air component commander] is a COG, but his JAOC [joint air operation center] is not, unless he's in it.

Airmen should not let the origin of the book scare them off. It provides a nonparochial discussion on the concept of the center of gravity and is well worth reading.

Lt Col Ed Weber, USAF
Naples, Italy

RMA

I have been reading your articles, and some things strike me as being unanswered. The first concerns the RMA (revolution in military affairs) versus cost. My own country (New Zealand) finds it hard to buy secondhand F-16s and refit our army, yet we feel obliged to perform militarily on the world stage in peacekeeping and the like. We may be forced out of this by the cost of equipment and the deployments themselves. I believe this factor will also reduce the extent to which other nations will be willing to contribute to security missions, leaving the burden to the United States.

The second factor is this: Can the United States take casualties in a war and continue that war? It seems to me that the United States is very unwilling to engage in any operation that has the possibility of casualties; even humanitarian operations seem to be unpopular (witness Rwanda and Somalia, where possibly millions were killed and the United States did nothing of significance). Given this, how can the world expect the problems on this planet to be sorted out if the only nation with significant power-projection abilities is reluctant to help those who cannot help themselves? The United States risks losing the ability to do well for itself and others, not because it lacks the ability but because it will have made itself irrelevant.

Stuart Mackey
Christchurch, New Zealand

KUDOS TO MAJOR HUSS

Maj Jon Huss's article "Exploiting the Psychological Effects of Airpower: A Guide for the Operational Commander," [Winter 1999] is outstanding and compelling. Please forward my gratitude to him for a job well done. He well serves the US Air Force.

Tom Launder
Escondido, California

The immediate object of fighting is to kill and go on killing, until there is nothing left to kill.

—French officer, 1914

Benjamin O. Davis, Jr., American: An Autobiography by Benjamin O. Davis Jr. Smithsonian Institution Press (http://www.si.edu/organiza/offices/sipress/start.htm), 470 L'Enfant Plaza, Suite 7100, Washington, D.C. 20560, 2000 (paper reissue of 1991 hardcover), 442 pages.

Were life equitable, Benjamin O. Davis Jr. would be known as an extremely capable military officer who had a distinguished 34-year career characterized by dignity, professionalism, and service. After graduating 35th in the US Military Academy class of 1936, he led men in combat; won a Silver Star, croix de guerre, and other medals; and attained the rank of lieutenant general. But Davis is black. There has to be much frustration in having an irrelevant physical characteristic overshadow everything one has accomplished. As Davis says, "I do not find it complimentary to me or to the nation to be called 'the first black West Point graduate in this century'" (p. 423). However, he is the first black airman to earn his wings, the first black Air Force general, and the son of the first black general. Until the world becomes colorblind, that is how history will record him.

This autobiography is thorough. Initially, there's a spark—almost of bitterness—in the narrative. Davis records the racism that faced him at West Point, at Tuskegee in hostile white Alabama, and everywhere he went in the segregated South. As did his father, he preferred overseas assignments. There is still an undercurrent of anger in his writing about events of half a century before, such as the racism that silenced him at West Point and that assigned him to segregated units, including the Tuskegee Airmen, which he led into combat during World War II. His tone mellows, however, as he describes how he rose through the ranks and how society became officially less segregated.

Davis, a man of much dignity and reserve, has not written a kiss-and-tell book. He provides personal experience with discretion; there is a level below which he does not go. In some respects, he comes across as apolitical. For example, he dismisses Watergate, which occurred while he was an undersecretary in Richard Nixon's Department of Transportation, in a paragraph. And he discusses the Vietnam War only as it affected his support mission as commander of Thirteenth Air Force at Clark Air Base in the Philippines.

Writing an autobiography is difficult because of the built-in conflict between being complete and being accurate. Not everything in a life matters beyond the moment, and an accurate reading of a life requires the writer to emphasize some things and deemphasize others. If Davis has a problem, it is that in his pursuit of completeness, he loses sight of truly significant events. His father told him early on that he should keep a record of his life; clearly, the young man took that advice. Indeed, the autobiography sometimes seems to be no more than an expanded diary filled with names and places.

A more elaborate context could have made this a really excellent man-and-his-times work. Autobiographers routinely supplement their memories and records with secondary material. For the most part, Davis does not. Only for an episode that he could have written in his sleep does he turn to an outside expert. In talking of the demise of segregation, he relies on Alan Gropman's *The Air Force Integrates* rather than his personal knowledge. There just might be too much reserve in this American general.

Although not perfect, this book is still a solid autobiography. The career of Benjamin O. Davis Jr. shows the gradual transition from a segregated to an integrated military. The Smithsonian Institution Press has done a good job of reissuing the work in paper.

John H. Barnhill
Tinker AFB, Oklahoma

Modern Commercial Aircraft by Gunther Endres et al. Salamander Books Limited (http://www.combinedpublishing.com/1999salam.html), Combined Publishing, Inc., 476 West Elm

Street, P.O. Box 307, Conshohocken, Pennsylvania 19428, 1998, 216 pages, $35.00.

Modern Commercial Aircraft is a well-illustrated, easy-to-read survey of commercial aircraft, airline operations, and modern aircraft construction. It covers most major airliners in service today and lists future projects under development at Airbus and Boeing. The book also deals with the huge market of airfreight operations. The final chapter provides an overview of airlines and their fleets in 1998, a helpful reference in determining who has the most modern fleet in the business.

The cornerstone of any Salamander book, however, is the illustrations—both the pictures of aircraft types and the excellent cutaway drawings. Non-British readers will discover through detailed discussion and drawings how aircraft that land at the two London airports—Heathrow and Gatwick—are stacked by air traffic control to ensure maximum usage of available airspace. A chapter entitled "Minor Aircraft" also allows the reader to track aircraft that have been retired from regular airline service but continue to haul freight around the world.

The book has a few minor typos that could have been avoided with careful editing, but they are not severe enough to detract from an otherwise excellent book. Mistakes in labeling aircraft depicted in photographs are more troubling, however. An Icelandair DC-8 is identified as a Boeing 757-200. Lumping the An-24/26/30/32 into one data block does no justice to this large fleet of cargo and passenger haulers in the former Soviet Union. Finally, the authors could have supplied a photo of the An-225 Mriya to show readers its enormous size, as they did for both the Super Guppy and Beluga airframes in service with Airbus.

Capt Gilles Van Nederveen, USAF
Maxwell AFB, Alabama

The War Journal of Major Damon "Rocky" Gause by Damon Gause. Hyperion Books (http://hyperionbooks.go.com), 77 West 66th Street, 11th Floor, New York, New York 10023, 1999, 183 pages, $21.95.

Trained as a dive-bomber pilot, Lt Rocky Gause commanded a mobile communications unit after the Japanese attacked the Philippines on 8 December 1941. Taken prisoner, he wasn't long on the Bataan death march before he recognized that it could be detrimental to his well-being. So he escaped and swam three miles through shark-infested waters to Corregidor, whence he fled after Gen Jonathan "Skinny" Wainwright surrendered the island's troops. At that point, he decided to head to Australia. On the run and nearly worn out by hunger, thirst, and exposure, he still managed to put together what someone subtitled "The Firsthand Account of One of the Greatest Escapes of World War II." The trip covered more than three thousand miles through storms, sharks, and the Japanese. It took luck, pluck, and many friends.

Over the months, he and Capt Lloyd Osborne sailed their battered and often-repaired wooden outrigger boat on a thirty-two-hundred-mile trek, mostly island-hopping but with a final six-hundred-mile stretch of open water controlled by the Japanese, who at the time were trying to take Australia out of the war. Gause and Osborne were luckier than the several people who died along the way: the Filipino lieutenant Alberto Arranzaso, the sergeant who drowned or fell prey to a shark in the initial stages of the escape, and those whose fate was unknown but presumed worse than death. Among these were the nurses he left behind on Corregidor: Millie Dalton and Miss Kennedy from Philadelphia, Mississippi. Gause recognized that many times he was extremely lucky to find help just in time. It seemed that every island in the Philippines had at least a couple of Americans, and the Filipinos were always eager to help.

The foreword by Stephen Ambrose is one page in length, fairly innocuous, and probably unnecessary. As a rule, forewords should add something of value—not just a name on the cover. The introduction and epilogue by Damon L. Gause, the lieutenant's son, however, are essential to the narrative. They provide the family background, give the tale a context, and take it to conclusion. From Damon we learn how Lieutenant Gause ended up in the Philippines and that he arrived in Australia, where he was promptly awarded a medal, promoted, and shipped home to sell bonds. We also learn that he was by no means through with war. Not wanting the comfortable stateside billet, he pulled strings to get an assignment to the European theater. On his final day, he tested a P-47 converted for use on D day as a low-altitude fighter with dive-bombing capability. He never pulled out of the dive.

I could easily find this book offensive—or at least annoying. It is unquestionably macho, racist, and sexist. Certainly, that's not acceptable today. Still, I am not overly perturbed. I try not to impose my values on the past. So how do I feel about this

book? I like it both for the story it tells and for the way it captures, for good or ill, the ambience of a lost time. Rocky Gause and his story come from a simpler time, a simpler world when war was black and white—and when courage, patriotism, and duty meant more than retirement benefits; "don't ask, don't tell"; or career advancement. On the other hand, here you will find a lot of "Japs" and occasionally a simpleminded or nappy-headed native, but that's part of Gause's world also.

John H. Barnhill
Tinker AFB, Oklahoma

Towards Mach 2: The Douglas D-558 Program edited by J. D. Henley. NASA History Office (http://www.hq.nasa.gov/office/pao/History/history.html), Code ZH, Washington, D.C. 20546, 1999, 161 pages.

Towards Mach 2 is based on transcripts from a symposium held on the history of the D-558 program at NASA's Dryden Flight Research Center. The editor combines the formal symposium presentation, held on the 50th anniversary of the aircraft's first flight, with the round-robin discussion from the night before. Symposium participants included four of the original research pilots—Stanley P. Butchart; Robert A. Champine; A. Scott Crossfield, the first person to fly faster than Mach 2; and John Griffith—talking about their experiences with the D-558 and its launch aircraft, a naval version of the B-29. Dr. Richard P. Hallion, the Air Force historian, also spoke about the program. To ensure accuracy, the editor submitted his draft to the participants for review.

During the late 1930s and early 1940s, when aircraft approached Mach 1, accidents happened due to compressibility—the increased density and disturbed airflow that occurs near the speed of sound. Obviously, the transsonic gap (between Mach .75 and Mach 1.3) needed further research. Since aerodynamicists did not have wind tunnels, used for studying airflow at those speeds, they would have to use supersonic-capable aircraft. The Army Air Forces favored a rocket-powered airplane—the famous Bell X-1, ably piloted by Chuck Yeager and other test pilots. The Navy, however, wanted a longer-duration turbojet-powered aircraft that could fly in the transsonic regime on missions lasting up to 20 minutes and that could collect data. The Navy gave a proposal for the test jet to a Douglas engineer, who took it back to his company.

Since the *X* designation—used in the X-2, a swept-wing, rocket-powered test aircraft, and the X-1—was an Air Force–only designation, the Navy plane received the designation *D-558,* Douglas's number for the project. The D-558 contract specified six airplanes for a total of almost $7 million, a bargain price for what the American public got. The first three aircraft, D-558-1s, were comparable to the Bell X-1 in that they allowed engineers to study transsonic speeds and compressibility problems. Unlike the Bell X-1, the D-558-1 could loiter in the transsonic region and bring back much more data, which showed that in that region, lateral stability deteriorated, wing dropping occurred, and trim was affected. The D-558-1 program led to the use of vortex generators to enhance stability, an improvement for which anyone who flies commercially today should be thankful.

Initially, the D-558-2 was a rocket- and jet-powered, swept-wing aircraft comparable to the Air Force's X-2. The second aircraft in the D-558-2 series—tail-number NACA 144, the aircraft in which Scott Crossfield reached Mach 2 on 20 November 1953 and now displayed in the Smithsonian—was all rocket-powered. In his portion of the proceedings, Crossfield mentions a problem with radio discipline on the D-558-2 program flights, which led him to realize that only one person, preferably a pilot, should be in radio contact with the pilot of the aircraft. This practice would carry on through the Apollo, Mercury, and Gemini space programs.

At the end of the book, Henley gives a short description of the aircraft and notes the location of the other two D-558-2s. Tail-number NACA 143 is in storage in the Planes of Fame Museum, Ontario, California, and tail-number 145 is on display in front of Antelope Valley College in Lancaster, California.

For those who remember *The Right Stuff,* the book about Chuck Yeager and the Mercury program, this book provides an interesting view of the Navy's parallel program. Although the X-1 proved that the sound barrier could be broken, the D-558 brought home the hard data that allowed humans to fly safely at Mach 1. A well-written, amply illustrated, easy-to-read book with much documentation, *Towards Mach 2* is a must for anyone interested in the aviation test programs of the 1950s.

Capt Sheila-Llyn K. Van Nederveen, USAFR
Maxwell AFB, Alabama

Desert Storm: A Forgotten War by Alberto Bin, Richard Hill, and Archer Jones. Praeger Publishers (http://www.greenwood.com/praeger.htm), 88 Post Road West, P. O. Box 5007, Westport, Connecticut 06881-5007, 1998, 282 pages, $22.95 (paper).

If not forgotten, Desert Storm has certainly been misunderstood. Despite an unprecedented amount of real-time information made available through the media, most of the military personnel who participated in Operations Desert Shield and Desert Storm had a very limited view of the Gulf War. As part of Task Force Ripper, I had a fair understanding of the "big picture," but like most Gulf War veterans, I was focused on small-unit leadership and problems at the tactical level. Conversely, those focused on the CNN analysis and daily CINC briefings did not have the same appreciation for the details and issues of the executors. Another factor impacting the understanding of this war is the neat division that so many have used to separate the war exclusively into either the air campaign or the ground campaign. Finally, there has been an enormous amount of postwar analysis of specific areas in isolation. These analyses often fail to consider the issues that brought on the conflict; the information known at the time; the strategic, operational, and tactical levels of war; and the political and economic factors of this conflict.

Desert Storm: A Forgotten War incorporates these forgotten factors in order to provide a comprehensive account of the military achievements of the coalition forces during the Gulf War. The book develops a complete understanding of the cause, buildup, conduct, and results of the Gulf War. Because of this, it is just as valuable to those who fought in the gulf—regardless of whether they fought in the air, on land, or at sea—as it is to those who supported our troops from the United States.

The major theme of the book is that the coalition forces achieved their political and military objectives. The military success was a result of a combined-arms campaign using air, naval, and ground forces that was coordinated with deception, psychological operations, and surprise and that took advantage of the superior training of the US forces. The book dispels popular myths about the war by concluding that smart bombs did not win the war and have been overestimated, that the coalition should not have and could not have overrun Baghdad, and that Iraq did not escape with relatively few casualties and probably suffered 50,000 soldiers killed during the war.

Extensive maps and charts help the reader follow the developing situation. The authors put their research in context by including countless summary narratives that provide firsthand accounts with viewpoints ranging from top-level generals to frontline fighters, both in the air and on the ground. While there are some subject areas that could be covered in more detail, such as POWs, women in combat, and breaching operations; the strength of the book is that it is a brief but comprehensive, stimulating but factual, overview of the Gulf War. To those who read this book, Desert Storm will be remembered, not forgotten—but more importantly, it will be better understood.

Lt Col Drew Bennett, USMC
Twentynine Palms, California

The Deadly Brotherhood: The American Combat Soldier in World War II by John C. McManus. Presidio Press (http://www.presidiopress.com), 505B San Marin Drive, Suite 300, Novato, California 94945-1340, 1998, 353 pages, $28.95.

In contrast to a "stolid examination of military doctrine, strategy, or generalship," John McManus offers a clear vision of combat witnessed through the eyes of frontline soldiers and marines. Skillfully weaving a diverse collection of firsthand accounts, he transports the reader to the grim scene of war's most violent visage. As a father writes to his son, "War is a more terrible thing than all the words of man can say; more terrible than a man's mind can comprehend. It is the corpse of a friend, one moment ago a living human being with thoughts, hope and a future just exactly like yourself."

The current climate, as revealed by the success of such movies as *Saving Private Ryan* and *The Thin Red Line*, suggests that McManus's intimate look at the life of the combat soldier will be favorably received—as well it should. The book's two sections examine both the world and soul of the combat soldier. The former discusses the identity of the soldier as well as the food, equipment, and weapons upon which he depended. Conditions in the European and Pacific theaters are treated separately. The subjects of actual combat and becoming a casualty complete the first half of the book. As one soldier wrote, "Sgt Glisch came walking by me, heading rearward. There was a hole in his helmet and blood running down his face—a face covered with a boyish grin. That million dollar

wound! I felt left out, and wished I had a bullet through an arm or a leg." Understanding both the earnest desire to be wounded and to find reprieve from the ever-present specter of combat provides a glimpse into the combat veteran's mind.

The section addressing the soul of the soldier analyzes the differing views of American troops toward their German and Japanese enemies. Ethnic and cultural distinctions made it difficult for most Americans to relate to their adversaries in the Pacific, but the ruthless nature of war in that theater had the most influence on the troops. Don Zobel, while on an independent patrol, found a body: "There he is . . . a fellow Marine. His face is not recognized; perhaps I have never met him. None of this seems to matter now. He is my brother. How many times had my fellow Marine felt the slicing and piercing of the Japanese bayonet? There must be at least 30 bayonet wounds. His penis is cut off and shoved into his mouth in the Japanese way of the ultimate insult. His once handsome features and dark complexion are now obscured by ants." Powerful quotations such as this convey the reader directly to terrible scenes in distant jungles and forests. Upon emerging from these dark places, we find that we have gained a new respect for the veterans who survived these horrors to resume normal lives in a civilized society.

The chapter on leadership will be of particular value to military officers. Since the competence of the commander often provided the measure between life and death, soldiers took great interest in their superiors. This was especially true of "junior officers (platoon leaders, company commanders and so forth) [who] were far more relevant than those who occupied high command." McManus states that these junior commanders "had the most difficult role in the meat grinder of World War II," admitting that some of them failed to muster the courage and character needed to lead their men successfully. Fortunately, in the words of William McLaughlin of the Americal Division, "the closer you got to the front, the better the caliber of officers."

If the volume has a flaw, it is the sense one gets that veterans who did not face the jaws of the front lines are somehow "less" than their peers who lived day in and day out under the threat of death. Although I am certain the author did not intend to communicate such a slight, it runs as a very subtle undercurrent through various portions of the book. For example, in justifying his decision to exclude artillerymen other than forward observers from the text, McManus points out that "infantry soldiers suffered an average of 92 percent of a typical division's battle casualties, as opposed to 4 percent for the artillery." This statistic raises the question of the ratio of casualties to the number of personnel assigned. If actual casualty rates are the criteria for determining who truly "fought" the war, how might these compare with those for crews of particular aircraft or naval vessels such as submarines? Still, this reservation about *Deadly Brotherhood* is a minor one and does not diminish the value of the book.

In one sense, the distinction highlights the element that knits combat soldiers into a tight brotherhood. Frank Nisi, of the 3d Infantry Division, sums up the difference quite well: "I would venture to say that only a very small percentage really know what war is all about. . . . It gets down to the man with the rifle who has to live in the ground . . . then go without sleep for several days and get up and fight, hike, run, creep, or crawl 25 miles or so. During this time the echelons in rear of him move up in vehicles, get their night's sleep and wait for him to advance again." Such shared hardships and danger on the front lines could surely forge a devoted fraternity.

The book is not an unremitting litany of the horrors of war ("You did not smell the dead; you tasted them far up the nose and back in the throat"). Without shying away from the violence and fear, the author includes reminiscences of humorous and hopeful experiences, the likes of which allowed most combat soldiers to maintain their sanity ("God bless the USA toilet paper industry"). Despite the fact that the focus remains on the microcosm of battle, the book also discusses issues with broader implications, such as the Geneva Convention protocols.

A constant underlying theme, echoed in recent films about the era, is that these combat soldiers did not fight and die for abstract concepts such as democracy and patriotism. Although such things may have motivated their enlistment, when they faced the jagged edge of unrelenting battle, something more kept them from fleeing to save themselves. This, of course, was the "brotherhood." They relied on each other and in many cases sacrificed their lives for one another. A rifleman from the 32d Infantry Division wrote that "survival for one's self was the first priority by far. The second priority was survival for the man next to you and the man next to him. So, right or wrong, love of country and pride in the unit . . . was a good bit behind."

Were this simply a collection of veterans' reflections, *Deadly Brotherhood* would be worthy of purchase—but it is far more. McManus achieves his goal of providing a comprehensive portrayal of the combat soldier in World War II, and his adept writing and editing have provided a great service to members of the US armed forces.

Chaplain, Maj Robert Stroud, USAF
March AFB, California

The Greatest War: Americans in Combat, 1941–1945 by Gerald Astor. Presidio Press (http://www.presidiopress.com), 505B San Marin Drive, Suite 300, Novato, California 94945-1340, 1999, 1,033 pages, $39.95.

This book is an incredible oral history of World War II. However, it is not a chronology of battles. Instead, Gerald Astor, esteemed author of numerous narrations, presents "a sense of what the American fighting man" experienced in terms of what he "thought, felt, saw, heard, and tried to do."

The Greatest War encapsulates the sheer magnitude of the war. From the beginning of that fateful day in December 1941, when most of the sailors at Pearl Harbor thought it was "yet another damned drill," to the end, when the pilots "were able to see through the heavy welder's goggles a brilliant flash of light," Astor presents a sense of what the American fighting spirit was like.

The shelves now overflow with one-volume histories of that war—books containing few speakers other than their authors—and with exhaustive official histories. So, why, one may ask, do we need yet another book on World War II?

Gerald Astor has combined the meticulousness of an exhaustive history with a narrative that touches on most of the war's most important engagements by interjecting the reminiscences of hundreds of participants. Just as Stephen Ambrose has an ability to "let the soldier tell it like it is," Astor has a knack for preparing a great narrative by expertly weaving the words and thoughts as told by ordinary soldiers.

Told mainly from the viewpoint of the sailors, soldiers, airmen, and marines who fought it, this tribute to the "Good War" covers a wide range of experiences. Well written, smartly compartmentalized, and thoroughly engrossing, *The Greatest War* is the next great classic.

Maj Dominic J. Caraccilo, USA
Fort Benning, Georgia

The Greatest Generation by Tom Brokaw. Random House (http://www.randomhouse.com), 201 East 50th Street, New York, New York 10022, 1998, 390 pages, $24.95.

It should come as no surprise that *The Greatest Generation* has continued its reign on the best-sellers lists as long as it has. Brokaw's tribute has struck a resonant chord in America. We are a land hungry for heroes—and heroes are exactly what he provides us. But these heroes are common folk not all that different from us, aside from the fact that they were products of a generation and culture that equipped them to pass tests of personal character at least as great as any challenges we have known. For his tribute to this pivotal American generation and the consequent resurgence of a recognition of the value of patriotism, the Congressional Medal of Honor Society bestowed its Patriot Award on Brokaw.

What makes this passing generation unique? How can the author justify labeling it our "greatest"? Furthermore, if these people were truly so exceptional, is there any way in which we can recapture a portion of their legacy today? These are the questions this volume explores. In 41 brief chapters, Brokaw provides biographical snapshots of more than 50 members of the generation who entered adulthood as the world endured the flames of the Second World War. He argues persuasively that the values and fabric of our nation—despite its imperfections—equipped these women and men to face enormous challenges and overcome obstacles, even as they expended their sweat and blood to protect and extend democracy and freedom.

Rather than downplay the differences among Americans in the first half of the twentieth century, Brokaw acknowledges that they came from diverse social and geographic backgrounds: "They were not lockstep in their ideologies. Their varied views on social, diplomatic, and military questions" were particularly manifest in their postwar contributions to our nation's development (p. 330). This is an important message of the text. The sacrifices and labors of many of the individuals whose lives were tested by this global conflict continued to build the United States into the world's foremost power, even as the echoes of gunfire and explosions dimmed in their memories. But they did not forget entirely, as we are reminded by Charles Van Gorder, a surgeon in the 101st Airborne who participated in the D day invasion: "I have flashbacks of the war every day. You can't get it out of your mind" (p. 35). Sustained by his faith in God

through combat and captivity, this hero describes how he and his fellow surgeons operated nonstop for 36 hours, until "finally I got so tired my head fell down into an open abdomen" (p. 28).

Brokaw goes to great lengths to affirm that the nobility of this generation is not restricted to its combatants. People on the home front pitched in to do their share and work toward victory. He also mentions (repeatedly) that this generation was not without its flaws, particularly "the stains of racism that were pervasive in practice and in policy" (p. 183). For some readers, the validity of this sad truth would be more powerful if Brokaw mentioned it less frequently in his narrative and allowed the far more persuasive testimonies of its victims to stand on their own stark merit. A case in point is the shocking story of Sgt Johnnie Holmes, who "encountered real, bitter racial hatred and segregation for the first time" when he arrived for training in Kentucky. Brokaw records that "Holmes is persuaded that Fort Knox dentists experimented on the black soldiers. He remembers being strapped in a dentist chair and getting his teeth drilled with no novocaine" (p. 195).

Due to the large number of individuals whose stories are told in this book, it is no exaggeration to say that *The Greatest Generation* includes something for everyone. Some will find the combat stories inspiring, and others will be moved by the many stories of love and fidelity. Still others will find the postwar accounts of community service and a strong commitment to a profound work ethic particularly intriguing. Some will see parallels between these stories and the lives of their parents and grandparents; others will have their eyes opened to a panorama of patriotism heretofore unseen.

Although the overall tone of the book is serious, as befits a discussion of war, its pages provide ample occasion for humor. Likewise, it includes a number of surprises, such as the tale of Julia Child, who found herself ineligible for the Women Accepted for Volunteer Emergency Service (WAVES) due to her height (six feet, two inches). Eventually, she worked her way into the Office of Strategic Services and ended up in Bombay, India. Child, now in her eighties, relates that sailing aboard a troopship was quite memorable: "The trip was quite jolly. There were not very many women and lots of boys" (p. 301). Art Buchwald and Andy Rooney also share their unique insights into military life. The book includes the stories of a number of people with recognizable names, but the majority of experiences are recounted by average people—not too different from us.

Some readers have alleged subtle undercurrents of bias in *The Greatest Generation.* Although Brokaw has never made his personal politics a secret, this reviewer suspects that any such instances are unintentional. Still, in a chapter stating that President George Bush "represents an unequaled record of public service," it is slightly disconcerting to read phrases such as "by his own admission George Bush is not a reflective man" and "he answered in that clumsy but endearing way of his" (pp. 275–78).

A more valid, but understandable, shortcoming of the volume is Brokaw's propensity toward hyperbole. One assumes that this is unavoidable, given the assumption of the title that here we have a generation of men and women who dwarf both their ancestors and descendants. Still, Brokaw does not belittle America's other generations (although he notes the inability of many members of his favored generation to understand the mind and values of their own children and grandchildren). Instead, he sets the members of this esteemed generation on a pedestal, as it were, in the hope that we can both learn from them, recapturing the essence of what made them unique, and remember to share a well-deserved "thank you" with each of them—while we still have the opportunity.

Chaplain, Maj Robert Stroud, USAF
March AFB, California

Soldiers are made on purpose to be killed.

—Napoléon

I Can Write Better than That!

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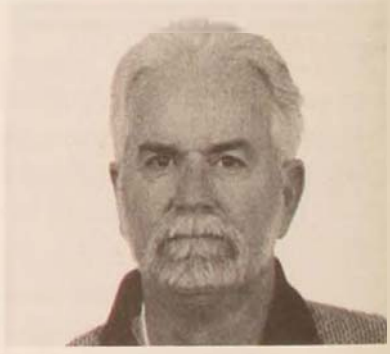

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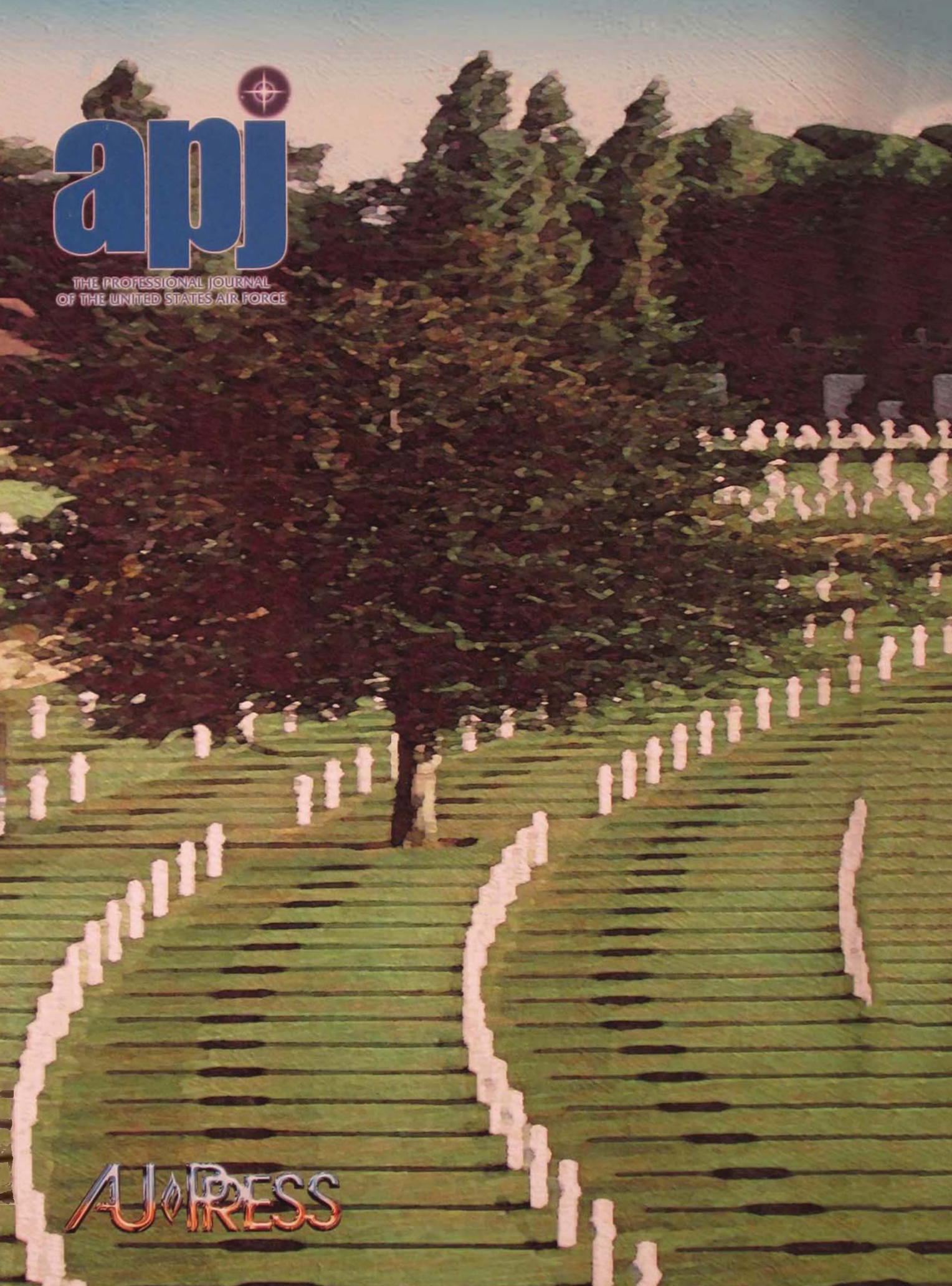
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