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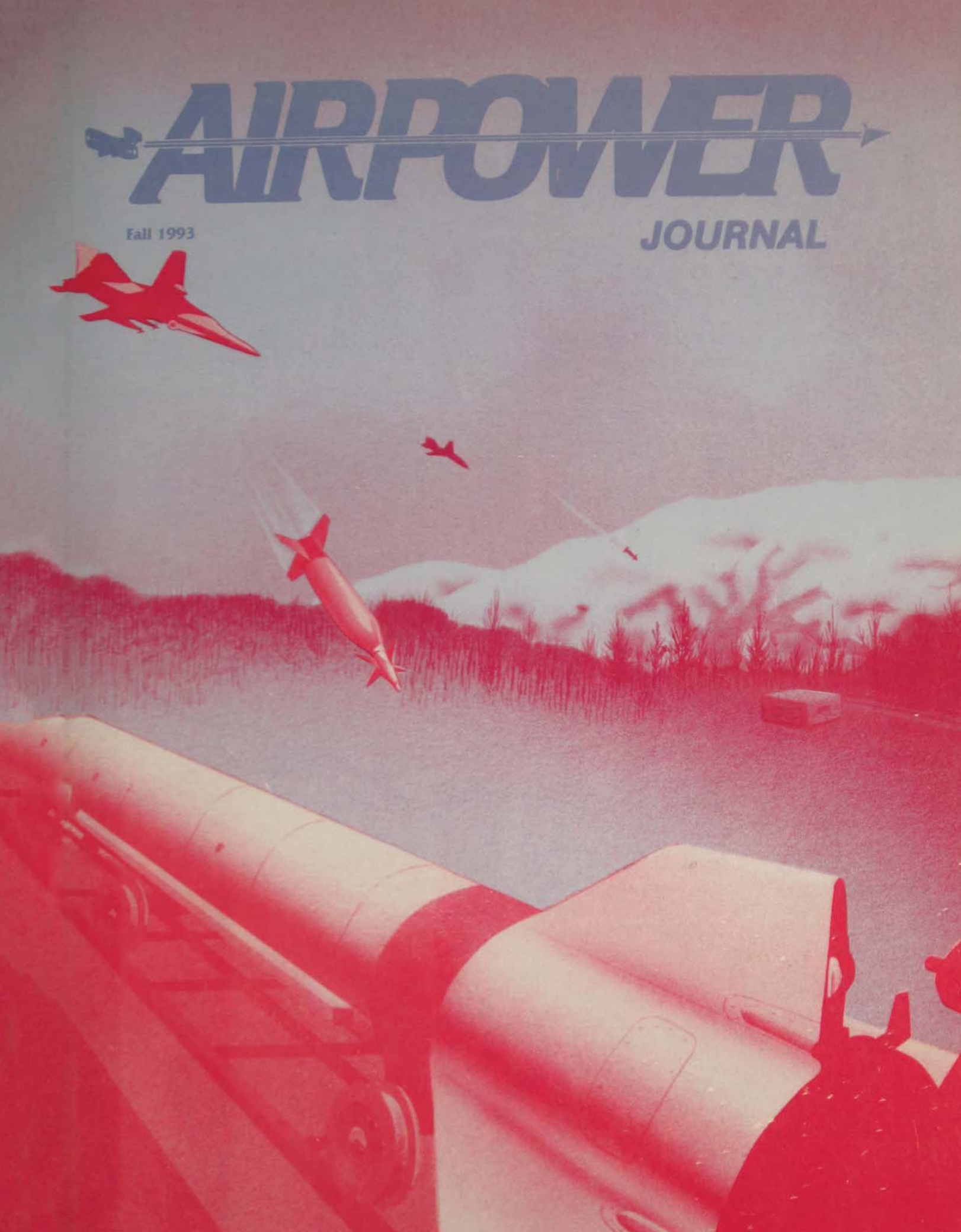
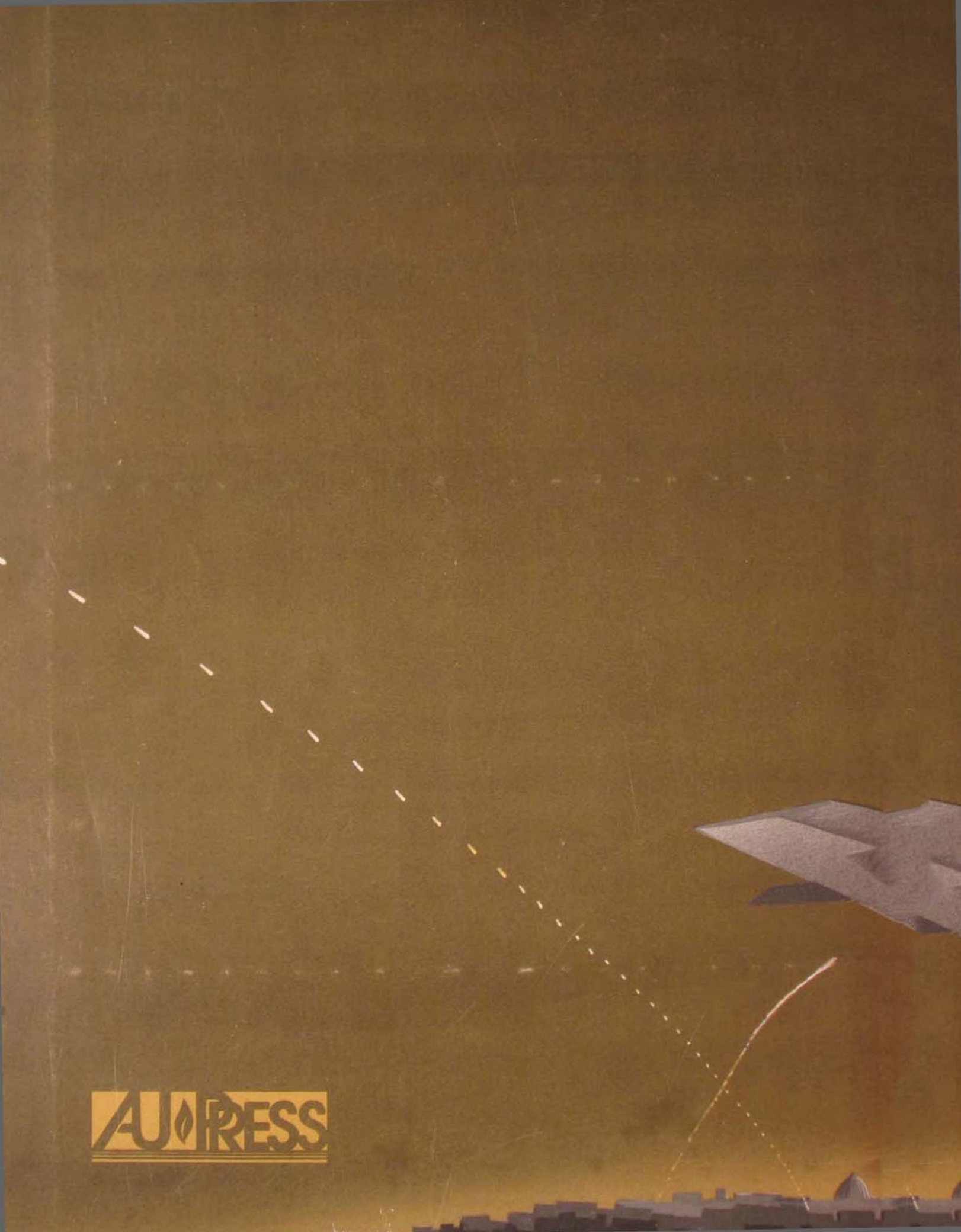
Fall 1993

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EDITORIAL

Mental Preparation for War

"THE MOST important element in war is, as it has always been, the competing minds of the antagonists" (AFM 1-1, vol. 2, 25). As dichotomous as it may seem, war is more a mental affair than a physical one. While this idea has been understood through the centuries, technological advancements have made it even more apparent. After the Gulf War, Gen Norman Schwarzkopf indicated that had we had the Iraqis' equipment and they ours, we still would have defeated them because our thinking was superior.

If it is the mind's ability to think, anticipate, prepare, and execute that produces victory over a foe with the same ability, how do we prepare the minds of our people to ensure future operational success? Military people need a working knowledge of military ideas, theories, histories, and current thinking. No one is clever enough to conduct successful warfare without having devoted significant time to studying what others have discovered. As Archduke Charles of Austria said, "A great captain can be formed only by long experience *and* intense study; neither is his *own* experience enough—for whose life is . . . sufficiently fruitful of events to render his knowledge universal?" (Charles M. Westenhoff, *Military Air Power: The CADRE Digest of Air Power Opinions and Thoughts* [Maxwell AFB, Ala.: Air University Press, October 1990], 145).

Where does one obtain such insight? Some may say that our professional military education (PME) courses provide this learning. To an extent, they are right. However, mining the mother lode of military thinking available for those who would be "Great Captains" cannot be accomplished in a few relatively brief courses at our formal PME schools.

Real professional military education is a career-long effort. It is a responsibility shared by the institution and the individual. Currently the institution is doing little to discharge this responsibility. A few who have either exceptional vision or simply an interest in military thinking take it upon themselves to continually study their profession—but not many.

We might look appreciatively at the US Marine Corps professional reading program. Each rank (officer and enlisted) has a specific list of books to study. They know that it is as much their professional responsibility to read and understand the books on their list as it is to keep their hair cut and their boots shined. A former commandant, Gen A. M. Gray, Jr., made this abundantly clear by conducting discussions with the troops in the field about the ideas in the books on their lists.

It's intriguing to consider how our current PME schools would change if students came to them with a vast background in military thinking gained through a continual program of reading and discussing the ideas available in print. They could then spend more of their time in active learning experiences that hone war-fighting skills like problem solving, critical thinking, and effective team building. They could devote their efforts to developing the sharpness and quickness of their most important weapon system—their minds.

When you think about it, it seems odd that we move people (and their families) to a school for 10 months and then devote a significant part of their time to reading background material they could have studied and digested during the years before they came. It seems especially wasteful when we consider that the schools' facul-

ties and facilities could be arranged to help students reach significantly higher levels of preparation if only the background material has been mastered beforehand.

A career-long professional reading program with effective incentives could make a significant difference in our future preparation to defeat the "competing minds of the antagonists." RBC

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

MILITARY STUDY SOCIETIES

I read with interest Lt Col Kimble D. Stohry's article entitled "The Douhet Society: A Recipe for Your Professional Development Program?" (Spring 1993). About nine months ago, several graduates from the first class of the School of Advanced Airpower Studies started a similar group in the Pentagon. Although we had heard of the Douhet idea in school, the real impetus came from Lt Gen Buster C. Glosson, who encouraged us to "keep up our thinking and study of air power." We soon discovered (as swamped action officers) that achieving the general's challenge would not be as easy as we thought—unless we put aside some time for just that purpose. General Glosson gave his wholehearted support to the concept.

The Mitchell Society, as we call it, meets once a month to review and discuss an air power topic of mutual interest. From the outset, the Mitchell Society was envisioned as a forum to express high-quality ideas. The ground rules are simple: (1) anyone with an interest in Exploring Aerospace Power (our motto) can come, (2) the members pick the topics and lead the meetings, (3) topics should be associated with written material (i.e., a book, an article, or a manual that can be distributed the month before, giving members the chance to read the topic and compose their thoughts and arguments), and (4) there are no more rules.

So far, our agenda has included discussions on the utility of strategic air power, the uses for air power in the Yugoslavian war, noncombat uses for air power, air power in the Iran-Iraq War, and a critical review of the *Gulf War Airpower Survey*.

It seems to me that high-tech weaponry and motivated people who are schooled in the history and application of aerospace power will help keep the Air Force on the cutting edge of military power far into the future. The Pentagon's Mitchell Society joins with the Douhet Society and groups like it to make this dream a reality.

Maj Jason B. Barlow, USAF
Bowie, Maryland

OTHER FACTORS

As a regular reader of your journal, I have consistently found many of its articles both enlightening and immensely useful to my graduate work on national security and defense policy; however, 1st Lt Matthew M. Hurley's "Saddam Hussein and Iraqi Air Power: Just Having an Air Force Isn't Enough" (Winter 1992) was of special interest to me. Having been involved in ongoing research on the uses of air power in the third world, with a particular focus on the development and operational histories of the Iraqi and Iranian air forces, I found Lieutenant Hurley's article an important step forward in understanding just what accounts for the magnitude of the defeat of the Iraqi air force (IQAF) at the hands of the coalition.

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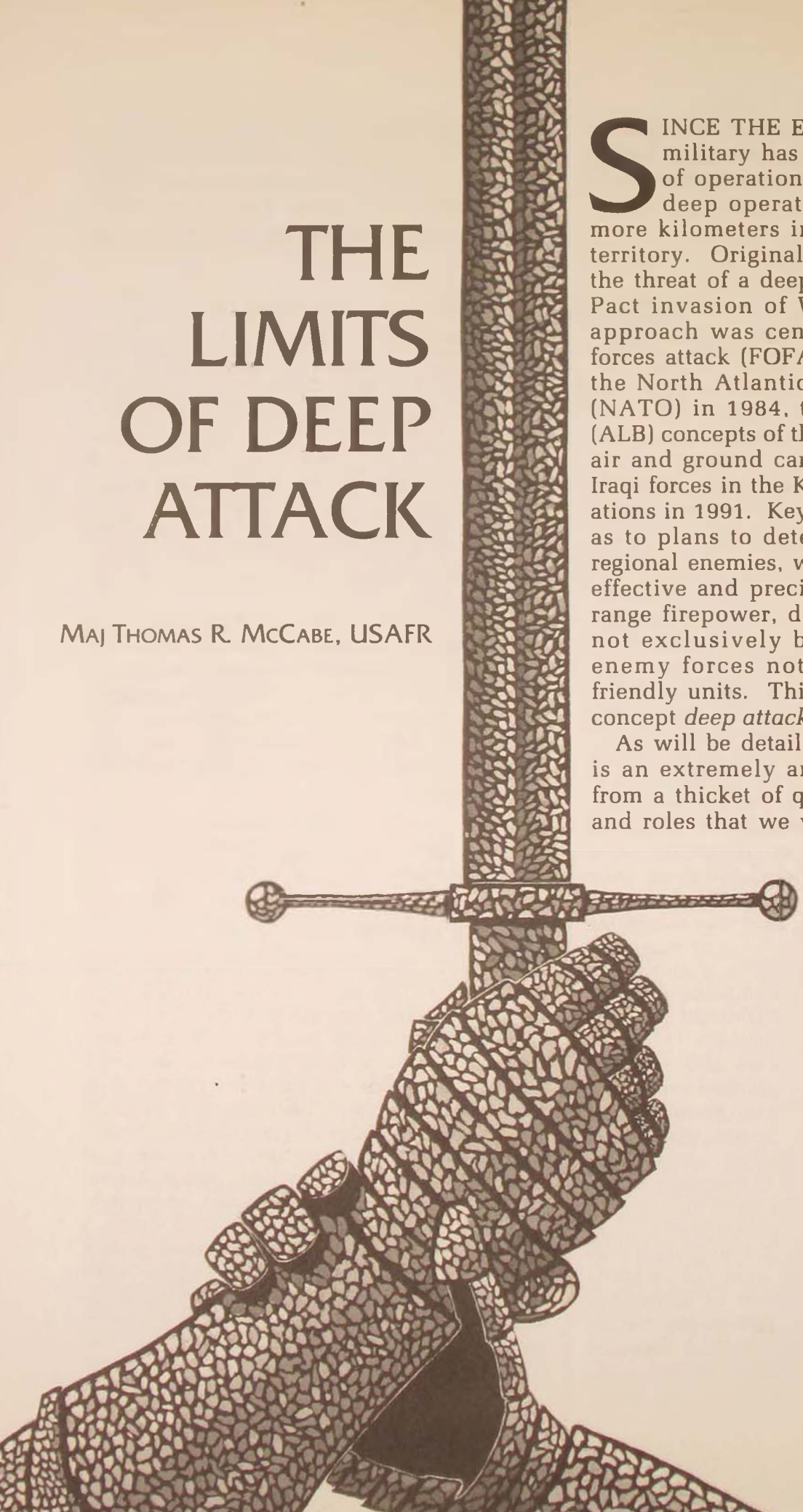
THE LIMITS OF DEEP ATTACK

MAJ THOMAS R. MCCABE, USAFR



SINCE THE EARLY 1980s, the US military has emphasized concepts of operational art[1] that called for deep operations reaching 100 or more kilometers into enemy-controlled territory. Originally devised to counter the threat of a deeply echeloned Warsaw Pact invasion of Western Europe, this approach was central to the follow-on forces attack (FOFA) concept adopted by the North Atlantic Treaty Organization (NATO) in 1984, to the AirLand Battle (ALB) concepts of the US Army, and to the air and ground campaigns that defeated Iraqi forces in the Kuwaiti theater of operations in 1991. Key to all of these, as well as to plans to deter future threats from regional enemies, was and is the need for effective and precise conventional long-range firepower, delivered primarily but not exclusively by air attack, against enemy forces not yet in contact with friendly units. This article will term this concept *deep attack*.[2]

As will be detailed shortly, deep attack is an extremely ambitious goal. Aside from a thicket of questions over doctrine and roles that we will not address here,[3]

effective deep attack requires a variety of capabilities that the US military either partially possesses or does not yet actually have, despite the perceived and actual successes of deep attack in the war with Iraq. A frequently unacknowledged key to the success of deep attack—and the purpose of this article—is to understand how an enemy might react to counter the threat of deep attack.

The purpose of this article is threefold: to examine the potential limits and weaknesses of deep attack, to briefly evaluate how a potential enemy might go about exploiting these weaknesses, and to examine the implication of those limits and weaknesses. The article is also an indication of the perishability of the military advantage demonstrated in Operation Desert Storm. The US has established a new standard for warfare,[4] one that is now known worldwide. As was the case with the standard set by the German blitzkrieg in 1940, we should expect that everyone who can will try to match or exceed the standard; anyone who cannot match it will try to devise ways to defeat it.

The Limits of Deep Attack

As we examine deep attack, it becomes clear that such an effort is an enormously ambitious and complex undertaking. For maximum effect, it requires integrated operations using diverse capabilities. If any part of the integration does not work, the concept's effectiveness rapidly degrades and may collapse entirely. This being the case, let us examine, in general terms, what is required.

Deep attack requires the ability to detect, identify, and attack a huge number of targets such as enemy command, control, communications, and intelligence (C^3I) nodes; radars; supply centers; transportation bottlenecks; and troop concentrations.

It requires effective deep reconnaissance to detect and identify targets, especially mobile targets.[5] Deep reconnaissance is also required *after* an attack for bomb damage assessment (BDA) to evaluate the results of the attack.[6] Finally, deep reconnaissance must be at least reasonably survivable on a modern battlefield.

It requires the ability to prioritize detected targets in keeping with the guidance of higher command for the conduct of the air campaign, to determine the most effective method of dealing with those targets, to allocate strikes against them, to eliminate the overlap between such attacks ("deconflict") so that firepower is not wasted by unnecessary attacks, and to evaluate the results. This is an enormously complicated and, in terms of the modern battlefield, time-consuming process.[7]

It requires the ability to attack targets effectively and without prohibitive losses, using either air- or ground-launched precision guided munitions (PGM) or aircraft capable of bombing with great accuracy.

Deep attack also requires the ability to do one or more of the following:

- To complete the entire "targeting cycle" process in a short time.
- To respond rapidly to modify preplanned targeting of mobile targets.
- To call in attacks either in real time or on very short notice.[8]

If these requirements can be met, deep attack will be an incredibly effective warfighting mechanism. The capabilities demonstrated in Desert Storm, though devastating, were actually, in many ways, a rather rudimentary example of such a mechanism. However, as is generally the case with integrated efforts, the entire system may be subject to rapid degradation and possibly to massive failure if any key subsystem fails. Much of the technology necessary to make such a concept fully effective is, at best, only partially in existence today, and it may be several (or many) years before such technology fully

emerges.[9] When evaluating Desert Storm, we should recognize that US effectiveness against Iraq was enhanced by Iraq's attempt to wage a defensive positional war of attrition rather than a war of maneuver. It remains to be seen if the speed and robustness of the deep-attack process can be increased to handle a war where both sides are attempting to wage a war of maneuver and where our own command, communications, and air power are central targets of enemy efforts. Since deep attack is only partially mature, potential enemies can be expected to exhaustively study the concept and its relevant parts and, at the very least, to seek to devise workable countermeasures. Likely countermeasures can be found in four major areas, each of which is examined in this article: disrupting the ability to see deep, disrupting the ability to wage an integrated deep battle, reducing the vulnerability of forces, and exploiting the operational limits of modern systems.

Disrupting the Ability to See Deep

Central to deep attack is the need to see deep. Before any targets can be struck, they must be identified as targets, precisely located, and, more than incidentally, their defenses accurately assessed so that they can be hit without prohibitive losses. Our intention is to do this by integrating information from a complex variety of sources and sensors—above all, advanced battlefield airborne surveillance radars such as the joint surveillance target attack radar system (JSTARS).[10] This being the case, an obvious countermeasure is to blind or at least degrade friendly reconnaissance. There are any number of ways to do this, ranging from passive denial (camouflage) through active denial (electronic and electro-optical countermeasures) to offensive denial (physically attacking the surveillance systems).

The most subtle way to disrupt the ability to see deep is to combine all of these in a program of *maskirovka*, a Soviet term for an integrated program of camouflage, concealment, and deception. Such an effort could be done in either peacetime or wartime, although the techniques used will vary accordingly and can be undertaken at any or all of the three levels of warfare (strategic, operational, and tactical). We should expect these efforts to be integrated with and supplemented by a centrally controlled program of electronic warfare. The former Soviets called this *radio-electronic combat* (REC), and we will use that term in this article.[11] Finally, even before the conflict begins, we should expect efforts, probably by terrorist groups, to physically attack surveillance systems.

With the start (or, as in Kuwait, the renewal) of hostilities, enemy efforts will likely concentrate on operational and tactical *maskirovka*. In addition (and in keeping with the traditional Soviet REC concept), we should expect a massive effort to destroy friendly intelligence systems and platforms (especially airborne surveillance platforms such as JSTARS), using an integrated effort of air, missile, rocket, ground, and special operations forces attacks that will undoubtedly seek to take advantage of particular enemy strengths.[12] We should expect this even if the enemy is on the strategic defensive.[13] An additional future aspect we must anticipate is an attempt to neutralize low-orbiting reconnaissance satellites with some kind of rudimentary antisatellite capability, most likely a high-powered energy weapon.[14] Finally, we must expect attempts to degrade what surveillance capability survives through a campaign of jamming and other electronic countermeasures (ECM) such as chaff corridors against reconnaissance systems and the data links from the reconnaissance systems to ground sites.

Disrupting the Ability to Wage an Integrated Deep Battle

There are two major approaches to derailing the execution of deep attack. The first

The performance of stealthy aircraft, such as the F-117, and precision guided munitions (PGM) in Operation Desert Storm established a new standard for warfare. Because that standard is now known worldwide, we can expect other nations to match it or devise ways to defeat it.

is to disrupt the C³I necessary to effectively organize and control it. The second is to neutralize the weapon systems necessary for deep attack.

Disrupting C³I obviously overlaps considerably with neutralizing the ability to see deep. In fact, in Western military thinking, the two are often combined in a category known as C³I countermeasures (C³ICM). An obvious approach is to target the command nodes that integrate the data and run the war. The success of deep attack will be critically dependent on a rather limited number of key command nodes, especially the corps headquarters and the tactical air control centers (TACC) that are intended to direct the offensive air war. Disrupting or destroying these will have an immediate impact. This can be accomplished through physical destruction using the most expedient means available or through disrupting C³ links.

Neutralizing deep-attack forces is the other approach to disrupting the ability to wage deep attacks. At present, deep-attack forces are primarily air units, especially fighter-bomber and dual-role units, although they increasingly include long-range attack helicopters[15] and long-range artillery, rocket, and tactical surface-to-surface missile units. Four major methods are available to target these units, and an enemy must be expected to use all of them. These approaches are

- Active defenses
- Targeting deep-attack forces
- Operational techniques
- Tactics

Active defenses can be used as part of either an offensive or defensive posture. The character of such defenses can be expected to vary according to the sophistication of the enemy and, equally important, the financial resources available to them. Late-generation aircraft, strategic surface-to-air missiles (SAM), radars, and the C³ systems needed to tie them together into an effective integrated air defense system (IADS) are extremely expensive. Unfortunately, it appears that some of the

Central to deep attack is the need to see deep. Critical to our ability to see deep is the joint surveillance target attack radar system (JSTARS). Attempts to degrade our reconnaissance include camouflage, electronic and electro-optical countermeasures, and direct attack on the aircraft carrying systems like JSTARS.

former Soviet republics may be prepared to sell massive quantities of their latest equipment to virtually anybody with hard currency.[16] For those who cannot afford SU-27s and SA-10s, antiaircraft artillery (AAA), and shoulder-fired SAMs such as the Stinger are simple to use, comparatively cheap, and potentially very deadly. Further, when netted with sensors and command and control systems, such weapons can provide considerably more than a point-defense capability.[17]

Targeting deep-attack forces, an enemy can be expected to expend massive efforts to neutralize the bases and units that provide deep-attack firepower, using a locally tailored mixture of air attacks, missiles, special operations forces (SOF), and possibly chemical weapons. These attacks are especially likely to be effective against nonhardened assets in the early stages of an allied buildup, when friendly forces (and, most especially, American reinforcements) are only partially available and may be most vulnerable.[18]

Operational strategies that seek to pit an enemy's strengths against our weaknesses can be effective in neutralizing deep-attack forces. Their aim would be to seize the initiative and force us to fight at their initiative and on their terms. Obvious possibilities are the launching of an offensive, using surprise, or both. Attacking with such ferocity and tempo that we are kept in a defensive crouch would effectively prevent us from mounting deep attacks.

Tactics might also be used to neutralize deep-attack forces. The Soviets and NATO expected any conventional war in Europe to be fought under at least the threat of nuclear attack and escalation. The tactics that the Soviets in particular evolved to minimize the potential effectiveness of any nuclear attack are also potentially effective against conventional weapons, including the PGMs whose use is central to the effectiveness of deep attack. Such tactics include dispersion, mobility (rapidly moving forces are harder to find and attack and are therefore less vulnerable), and timing (attacking at the time and under circumstances that reduce

the effectiveness of opposing reconnaissance and defensive systems).

Reducing the Vulnerability of Forces

The third category of countermeasures to deep attack is that of reducing the vulnerability of forces. There are two major approaches to doing this. The first approach is to reduce the detectability of potential targets through the various techniques of tactical *maskirovka*, especially visual camouflage and decoys, reduction of heat signatures, reduction of communication transmission signatures, and the reduction of radar signatures, including the use of "stealth" materials and techniques on individual pieces of equipment. The second approach is to use hardening to reduce the vulnerability of equipment and facilities that are to be key targets for deep attack—tanks, rockets/missile launchers and artillery, unit headquarters, and supply lines. This can be done by a number of means including dispersal, redundancy, camouflage, mobility (changing position frequently), increased distance from the forward edge of the battle area (FEBA) where feasible (especially for headquarters and supply depots), improved defenses, improved armor for individual tactical equipment, and an increased cushion of supply.

Exploiting the Operational Limits of Modern Systems

The final approach to countering deep attack is to exploit the operational limits of modern systems. Often viewed as miracle weapons by the uninformed or unsophisticated,[13] PGMs and their launch and control platforms are actually subject to a wide variety of limits that can vary broadly depending on the system and weapon in question. Thus, while PGMs may well be among the world's finest ambush weapons, they may well lose much of their usefulness in a head-to-head fight against a thinking and prepared enemy.[14] A shrewd enemy must be expected to understand and exploit a number of problems and limitations involving target acquisition and identification, environmental factors, and limitations of weapons.

Shoulder-fired surface-to-air missiles such as the Stinger are good active defenses against deep attack. Such weapons are straightforward in their use, comparatively cheap, and potentially very deadly.

Precision guided munitions, often viewed as miracle weapons, and their launch and control platforms are actually subject to a wide variety of limits.

The target-acquisition problem. Unlike close-air-support missions, in which targets are generally acquired by a ground or airborne forward air controller (FAC) who then directs the attack against them, deep-attack missions will probably have to acquire their own targets. This is likely to be a tall order, especially in a single-seat aircraft, and strongly implies a need for a last-minute intelligence/situation update capability such as a deep-attack or interdiction FAC.

The target identification/identification friend or foe (IFF) problem. The lack of an IFF capability—being unable to tell friendlies from hostiles—can be expected to compound the target acquisition problem. During the war with Iraq, the coalition used a variety of measures, including precision navigation equipment, infrared beacons, and thermal tape. Generally such equipment was adequate. In a future war of maneuver in which hostile and friendly forces are intermixed, moving rapidly, and perhaps operating the same types of equipment, it will likely not be adequate, especially at night or in bad weather. Further, this problem is being compounded by the steadily increasing ranges of both air-to-surface and ground weapons.

Environmental factors. Many of the sensors on which PGMs and their controlling platforms depend are subject to degradation by a variety of environmental factors, including bad or cloudy weather, smoke, and the inability to penetrate foliage or structures.

Weapon limitations. Many existing PGMs—especially laser-guided ones such as the Hellfire antitank missile—require control all the way to impact. This requires the airborne or ground-based laser designator to stay within the line of sight to the target until impact, which increases the risk of the controlling aircraft being detected and shot down and the ground designator being suppressed before the weapon hits. In addition, laser-guided weapons in particular have a variety of other significant limitations.

Conclusions

It is clear that there is a diverse assortment of countermeasures available to degrade or defeat the various components of deep attack. These countermeasures are frequently straightforward and cover a broad variety of methods, including technology, tactics, organizational changes, and mass. Further, these countermeasures are, generally speaking, not mutually exclusive, and an enemy must be expected to use them all. There is, in fact, little if anything new in these approaches and tactics. They are fundamentally the same methods the Soviets devised to reduce the vulnerability of their forces to nuclear attack in a possible European campaign against NATO.[21] Many of them, especially tactical and operational *maskirovka*, predate the nuclear era. Actually, they date back to the experiences and practices of World War II forces that had to contend with superior hostile air power. Considering the respect that our enemies

have generally had for American air power, the emerging US focus on deep attack has merely given potential enemies even more reason to do what they were likely to do anyway.

Implications

The United States has embraced deep attack, primarily based on air power, as a central focus of our military strategy to defeat any future regional enemies. From a doctrinal point of view, this makes great sense. It minimizes reliance on forward-based American forces and emphasizes our historic role as a strategic reserve force. Further, it exploits the traditional strengths of the American military, especially our ability to employ sophisticated technology and the quality and initiative of our troops. What remains very much open to question is whether such a strategy will continue to work as well as it did against Iraq. We must assume that the Saddam Husseins and Kim Il-Sungs (and perhaps the Leon Trotskys) of the next century will be a great deal more sophisticated and even more dangerous than the Saddam Hussein of 1991. That being the case, the US embrace of deep attack carries substantial or major risks, which are summarized below.

There is the risk that the tightly integrated airland technologies of war will not always work as planned, reinforced by the risk of dangerously underestimating the ability of a suitably inclined enemy to put sand in the gears (to create and exploit friction, as Clausewitz might say).

There is the risk that deep attack may be dangerously premature in regard to major aspects of technology. In particular, the advanced surveillance technology necessary to make it work only partially exists, at best, as does the technology necessary to rapidly process and distribute information. With the approaching budget crunch, such technology may never fully exist or, equally important, exist in a form that can be expected to survive long enough to be useful once shooting starts. We should remember that many of the programs originally planned to support conventional deep attack have died—some quietly, others noisily—and if other programs run behind schedule or over budget, they may become mortally vulnerable in today's fiscal circumstances.

The operational consequences of the new focus on deep attack are, as yet, limited. The US has proclaimed its success, and it will clearly provide the framework for emerging technology and tactics. Therein lies the ultimate potential danger. If we embrace a doctrine, strategy, and operational art based on technologies and tactics that will not work when we need them, we risk surprise and defeat when we apply them. And while the outcome of such a regional defeat would have far fewer massive implications than it would have had 10 years ago, when such a defeat might have meant the Soviet army overrunning Western Europe, we should not underestimate the potential cost, espe-

Many existing PGMs, especially laser-guided ones such as the Hellfire antitank missile being fired here, require control all the way to impact.

cially in terms of the blood of the people who do the fighting. Korea in 1950 is the obvious example. Having failed in an attempted quick and cheap win, we would presumably have to try it again, this time the hard way. So what should we do? I suggest two general approaches.

First, we cannot overemphasize to all concerned, especially to Congress and the public but also to ourselves in the military, that we cannot expect cheap victories, however much we might like them. We cannot expect future enemies to cooperate, as Saddam Hussein did, by providing a favorable target-rich environment. We should remember that George Custer had a target-rich environment at the Little Big Horn, and it was the richness of targets that killed him. We should remember that the circumstances and situation in Kuwait were unusually favorable. In particular, there was a highly developed air infrastructure in Saudi Arabia and the neighboring Gulf kingdoms available for use, and our key regional allies, especially the Saudis, were generally equipped with air and support equipment that was at least interoperable with our own. Further, local air forces had largely been trained by American and British instructors, and English was the functional international language. Finally, we had several months to prepare. Compare this with a hypothetical situation in Eastern Europe some time in the future, where the local air forces will be, at best, only partially organized and trained along Western lines, where equipment and support infrastructure will generally not be interoperable with ours, where readiness will be extremely low, where English will not be the international language, and where we will likely have to fight in a short-notice, come-as-you-are war.

In Desert Storm, conditions were favorable for our interaction with regional allies. Their equipment was interoperable with our own, English was the functional international language, and local air forces had been trained by American and British instructors. We should not expect all situations and conflicts to work out so well. Coalition aircraft flying in formation during Operation Desert Shield include two Qatari aircraft (a Mirage and an Alpha Jet), a French F-1C, an American F-16, and a Canadian CF-18.

Second, in regard to weapons and surveillance technology, we should take care to see that our reach does not exceed our

grasp. We may simply be expecting more than present or foreseeable technology can deliver. Therefore, before buying a technology in large amounts at high cost and making it central to our operational strategy, we should demand that it prove itself. It should face the most rigorous operational testing, under geographic and climatic conditions closely simulating those of likely real-world operating areas and against targets permitted the widest possible independence in devising defenses and countermeasures. If a new technology works in a fair test, then we should buy it, but only then.

Finally, until such technology matures and, for that matter, even if it does, we should seek methods of improving our deep-attack targeting capability that better exploit existing or potential assets. There are three obvious possibilities:

- Increased use of existing ground assets (special operations forces, reconnaissance units, scouts, armored cavalry) to detect mobile deep-attack targets and act as ground forward air controllers.
- The expansion of joint antiarmor tactics from a primary focus on close air support to include joint attack against follow-on forces at interdiction ranges, since, as previously noted, Apache attack helicopters can reach targets at ranges that traditionally have been associated with interdiction missions.
- The use of fighter aircraft as forward air controllers for interdiction or deep-attack missions, an approach pioneered in the war with Iraq.[22]

These three methods are straightforward, although not necessarily easy. Since they seek to exploit existing assets, they are not likely to cost a great deal of money. They may require some adjustment of missions and roles,[23] and for maximum effectiveness they will require improved capabilities for communications and data transmission between the relevant aircraft, ground units, and command systems.[24] Exploiting these capabilities would go a long way toward consolidating and rapidly expanding the unprecedented qualitative military advantage Desert Storm demonstrated in what is turning out to be, despite the end of the cold war, an increasingly noisy and nasty world environment. □

Notes

1. *Operational art* is "the employment of military forces to attain strategic or operational objectives in a theater of war or a theater of operations through the design, organization, and conduct of campaigns and major operations. Operational art translates theater strategy into operational and, ultimately, tactical action." Joint Test Publication (Pub) 3-03, *Doctrine for Unified and Joint Operations*, 11 December 1990, xii.

2. As a more precise definition, this article defines deep attack as the use of conventional firepower, primarily but not necessarily air power, to influence the ground battle at the operational level of war by doing some or all of the following: isolating and shaping the ground battlefield, weakening the combat power of enemy ground forces not yet in contact with friendly forces, weakening enemy offensive air and operational-level surface-to-surface missile capability, and interfering with the enemy scheme of maneuver. Whether deep attack is undertaken to support the scheme of maneuver of friendly ground forces or whether the ground campaign will be a supplement to the air campaign will need to be determined by the circumstances and characteristics of the theater in question. This definition blends a variety of missions, including the concepts of tactical interdiction, offensive counterair, the emerging concept that, for lack of a better term, can be referred to as offensive countermissile and the follow-on forces attack. This definition draws heavily from Ian Lesser, *Interdiction and Conventional Strategy: Prevailing Perceptions*, Rand Report N-3097-AF (Santa Monica, Calif.: Rand Corp., June 1990).

3. Major emerging (or reemerging) doctrinal issues include the role and interface of naval attack aviation in an air campaign, whether air power should complement ground power or vice versa, and whether and under what circumstances air power can be decisive by itself in war.

4. See Frank Kendall, "Exploiting the Military Technological Revolution: A Concept for Joint Warfare," *Strategic Review* 20 (Spring 1992): 23–30.

5. Detection and identification are not necessarily the same thing. Detection is the ability to note that something is there, while identification is the ability to determine just what that something is and whether it is worth further attention. Identification requires much better image quality than detection.

6. Some sources report that bomb damage assessment was one of the key bottlenecks during the Gulf War. See, for instance, "War Problems Prompt 'Baseline Review' of Intelligence Imagery," *Aerospace Daily* 160 (2 December 1991): 341–42.

7. Maj Mike Sweeney and Capt Don Spence, "TACAIR Targeting," handout, USAF Air-Ground Operations School, Hurlburt Field, Florida, 1988.

8. Various efforts are under way to speed up the targeting

cycle, primarily by automating various parts of the process. Some sources claim that the aim is to reduce it to three hours. See Comdr R. T. Williams, "The Challenge of Integrating Naval Air Power into a Land Campaign under JFACC," thesis, Naval War College, 1991, 24.

9. Many programs relevant to deep attack have been delayed or canceled over the years. These include

- Aquila, a sophisticated Army unmanned air vehicle;
- Advanced Synthetic Aperature Radar System (ASARS), an advanced radar system that was to be put on the TR-1, a version of the U-2;
- Precision Location Strike System (PLSS), an airborne system that was to detect and locate hostile radar transmitters and direct weapons against them with en route updates; and
- All-Source Analysis System (ASAS), an Army data-fusion system.

Financial constraints are likely to delay the introduction of other equipment.

10. For an overview of the role of JSTARS in Desert Storm, see Peter Grier, "Joint STARS Does Its Stuff," *Air Force Magazine* 74 (June 1991): 38–42.

11. The Soviet term was actually closer to "radio-electronic struggle." See David G. Chizum, *Soviet Radioelectronic Combat* (Boulder, Colo.: Westview Press, 1985), 3.

12. North Korea, for example, could be expected to emphasize the use of its large and well-trained commando force in this role.

13. A central reason for the adoption of AirLand Battle by the US Army was that previous tactics ("Active Defense") ceded the initiative to the enemy. The dangers of fighting a war in a reactive mode were made obvious by the 1991 Persian Gulf War.

14. This author is inclined to expect such an antisatellite (ASAT) system to be a ground-based laser, since such a system would be easier to hide and harden than a missile-launched ASAT system, and would be more tactically flexible and responsive. In any case, such a capability is not likely to be easy to build. For a useful study of the requirements for such a system, see Federation of American Scientists, *Laser ASAT Test Restriction* (Washington, D.C.: Federation of American Scientists, 1991).

15. AH-64 Apache attack helicopters can hit targets at ranges traditionally associated with interdiction missions, as noted in Lt Col Thomas Runge, *Firepower and Follow-On Forces Attack: Making Every Round Count* (Maxwell AFB, Ala.: Air University Press, March 1991), xii.

16. It is all too easy to imagine an economically desperate Russia selling advanced interceptors (Su-27s, MiG-25s, and MiG-31s) and advanced air defense missiles (SA-5s, -10s, and -12s) to any government with hard currency. See "Cash-Starved Russia Sees Arms Sales as Quick Way to Generate Income," *Washington Post*, 23 February 1992, A1. Also see "Russia to Fight Weapon Sales Curbs," *Defense News* 7 (18–24 May 1992): 1.

17. The potential threat from such weapons was revealed during the bombing of North Vietnam, and the danger they present continues even if you have achieved air superiority or supremacy. During the 1991 Persian Gulf War, US aircraft generally bombed from medium altitude (10,000 feet or higher) to minimize the risk from light antiaircraft artillery (AAA) and SAMs. The potential danger from netting such weapons with sensors and C^3 is discussed in Mark Hewish, "New Sensors and Processing Boost Short-Range Air Defense," *International Defense Review* 19, no. 2 (1986): 167–76.

18. One of the pictures on the wall at the US Air Force Gulf War Air Power Survey during 1992 was a picture of an airfield full of unrevetted F-15s that were unsheltered and parked nearly wingtip to wingtip. Undoubtedly intended as an illustration of the global reach—global power concept, it also struck this student of World War II as a picture of Hickam Field, Hawaii, on 6 December 1941. For more detailed and not necessarily dated information on the vulnerability of air bases to attack, see "In 1991, Air Force Will Learn Whether It Has a Home," *Washington Times*, 12 January 1989, 1, and "Getting the Jump on Base Damage," *Insight* 5 (6 February 1989): 34–36.

19. For one of the worst examples, see Frank Barnaby, *The Automated Battlefield* (New York: Free Press, 1986). Dr Barnaby embraces precision guided munitions with the enthusiasm of a contractor trying to make a sale. Unfortunately, he compares the PGMs of the year 2000 with the targets of 1960, thereby grossly underestimating both the survivability of modern weapons and the potential of countermeasures. For a more detailed critique, see Thomas R. McCabe, "The Myth of the Bulls-Eye War," unpublished article, summer 1988.

20. For a detailed study, see US General Accounting Office, *Antitank Weapons: Current and Future Capabilities: Report to the Honorable Charles E. Bennett, House of Representatives* (Washington, D.C.: Government Printing Office, 1987).

21. The Soviets also planned to apply such tactics in a conventional European conflict. For an excellent study, see C. J. Dick, "Soviet Responses to Emerging Technology Weapons and New Defense Concepts," Soviet Studies Research Centre, Royal Military Academy, (Sandhurst, U.K.: November 1986).

22. Maj James S. Robertson, "FastFACS in the KTO: The First Combat Test of the F/A-18D," *Marine Corps Gazette* 76, no. 5 (May 1992): 86–94. Another alternative worth exploring is the use of attack helicopters as airborne FACs.

23. Currently, the primary emphasis of most of the ground units of the types specifically mentioned is to find the enemy. Using them as ground forward air controllers to control air strikes would probably be more a shift of emphasis rather than an entirely new role.

24. Prototypes of such technology already exist, such as the Automated Target Handoff System. See Jay C. Lowndes, "Cooperative Attack," *Air Force Magazine* 74, no. 11 (November 1991): 60–64.

Summer 1993

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for his article

A New Approach to Command and Control: The Cybernetic Design

Congratulations to 1st Lt Gary A. Vincent on his selection as the Ira C. Eaker Award winner for the best eligible article from the Summer 1993 issue of the *Airpower Journal*. Lieutenant Vincent receives a $500 cash award for his contribution to the Air Force's professional dialogue. The award honors Gen Ira C. Eaker and is made possible through the support of the Arthur G. B. Metcalf Foundation of Winchester, Massachusetts.

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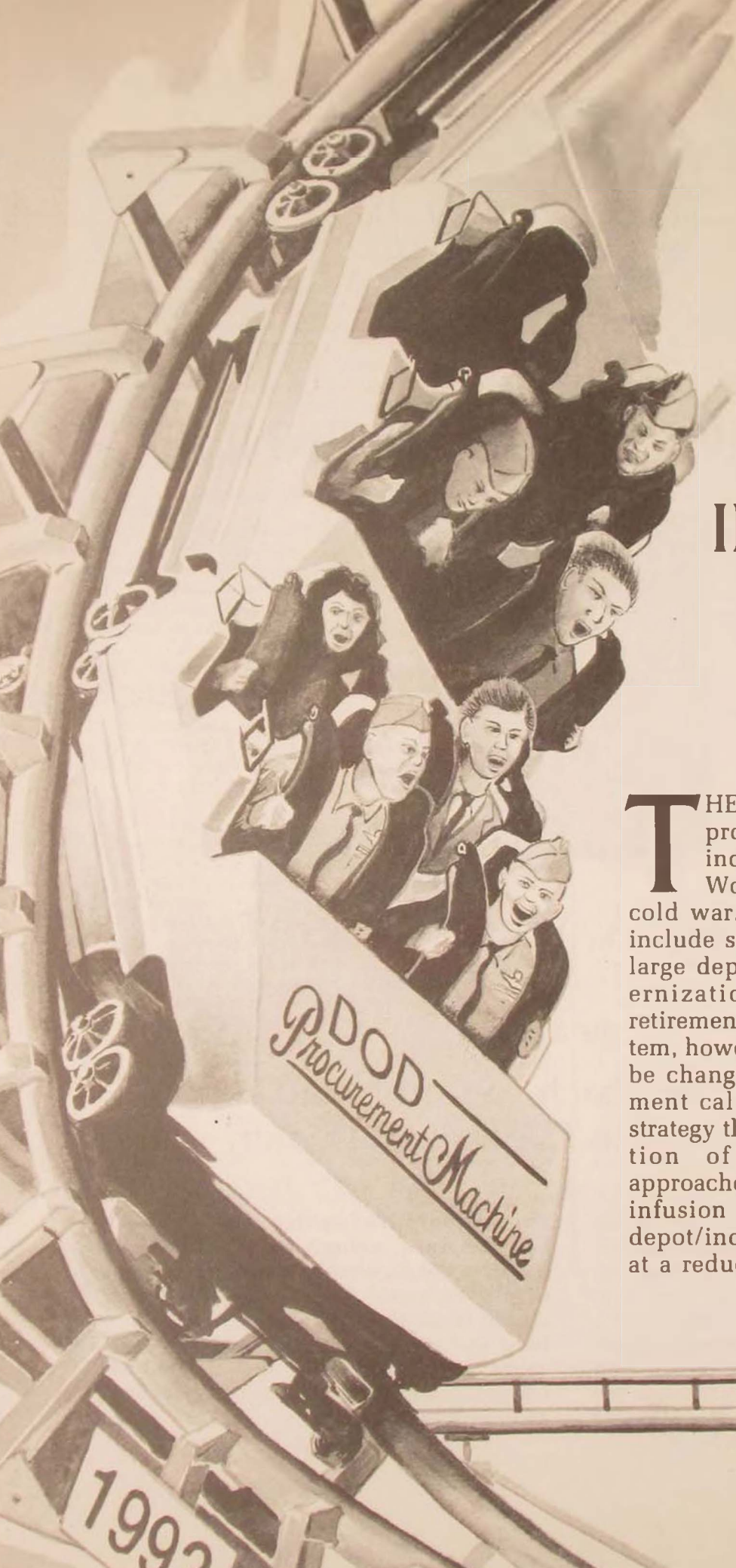


A NEW DEFENSE INDUSTRIAL STRATEGY

THE CURRENT US force structure, procurement process, and military industrial base were established in World War II and sustained by the cold war. Characteristics of this system include substantial production capability, large depot capacity, threat-driven modernization, and swift acquisition and retirement of weapon systems. Such a system, however, is no longer viable and must be changed. The new security environment calls for a new defense industrial strategy that features slower-paced acquisition of weapon systems, modern approaches to manufacturing, programmed infusion of technology, and rationalized depot/industry sustainment structure, all at a reduced cost. At the same time, the

US military must be able to respond quickly when our country's interests are unexpectedly challenged. Further, the military must continue to provide for the security of the US from external threats, including nuclear proliferation. That is, even as the military downsizes its forces, it must be able to maintain, surge, deploy, and sustain those forces and—if conflict arises—decisively win the fight. In order to preserve these capabilities, we must link military requirements to our supporting industry in a coherent and cooperative way. This article explores the feasibility of attaining such a goal by examining where we are now, what we need, and how we can do it.

Where We Are Now

The budget of the US Department of Defense (DOD) has been declining since the mid-1980s and shows no signs of leveling off. Although our interests have not changed, our financial resources have diminished. The FY 1994 president's budget (PB—of President Bush) and the FY 1994 amended president's budget (APB—of President Clinton) call for even deeper cuts (fig. 1). These budget reductions, in turn, translate into cuts in our force structure (fig. 2). For example, the Air Force has already reduced its fighter force by 40 percent and its bomber fleet by over 50 percent (fig. 3). Even though these cuts are deep, we are still not finished.

In the spring 1993 reworking of the budget for FY 1994, the Air Force lost two more wings, yet DOD still has a potentially large bill to pay over FY 1995–98. If

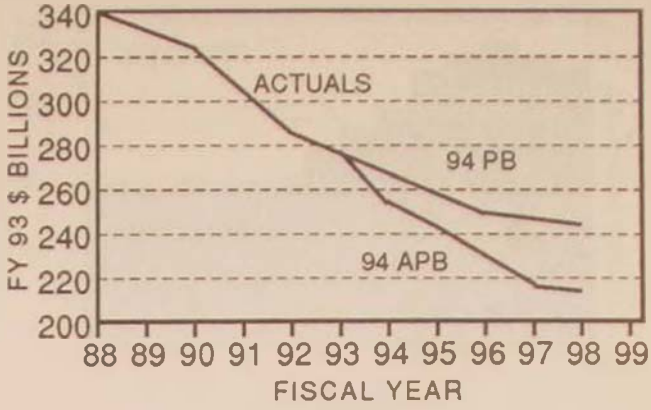


Figure 1. DOD Budget Authority Trends (From Office of Management and Budget, "President's Economic Program" [press release], 17 February 1993; *National Defense Budget Estimates, FY 93*, March 1992, 61; and Air Force Force and Financial Plan)

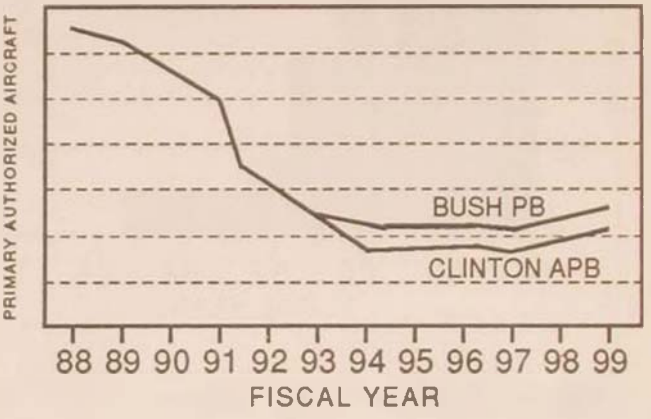


Figure 2. USAF Force Structure (From Air Force Force and Financial Plan)

we continue to cut defense according to this pattern, we must dip even deeper into our force structure, despite the fact that it already has been halved in less than a decade.

During this period of budget cuts, our purchases of new technology have also

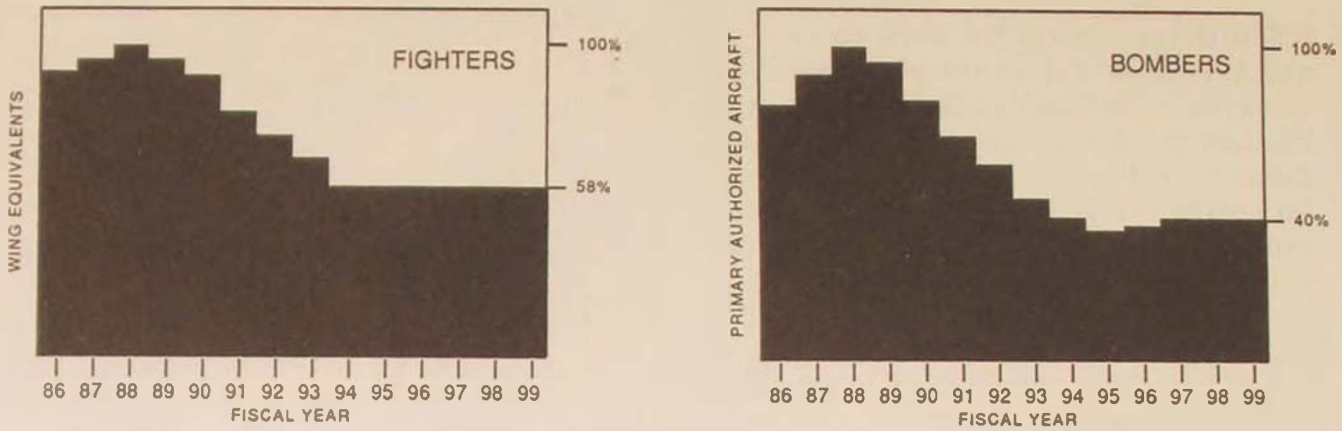


Figure 3. USAF Force Structure Reductions (From Air Force Force and Financial Plan)

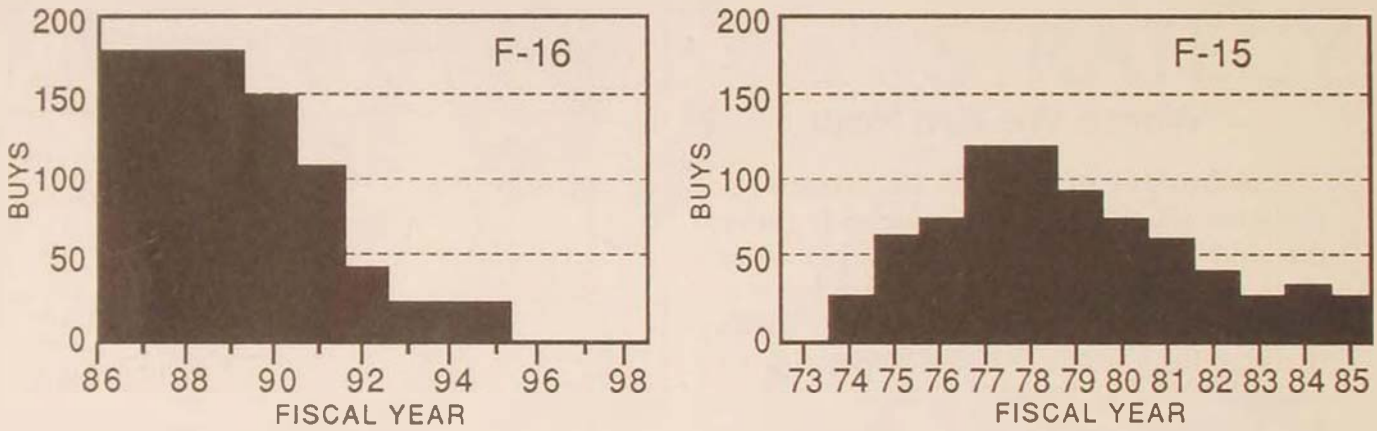


Figure 4. Profiles of Fighter Buys (From Air Force Force and Financial Plan)

been sharply curtailed. For example, our procurement of F-16 aircraft has been reduced to 24 per year and will be terminated in fiscal year 1995; our F-15C/D production line closed in 1985; and our purchases of B-2s will be limited to only 20 aircraft (figs. 4 and 5). Additionally, our fighting force continues to age, despite the fact that we are retiring older systems first (fig. 6). The same is true of support aircraft (fig. 7).

These trends bode poorly for the future unless we change our ways. Furthermore, uncertainty about some weapon systems calls our future capability into question.

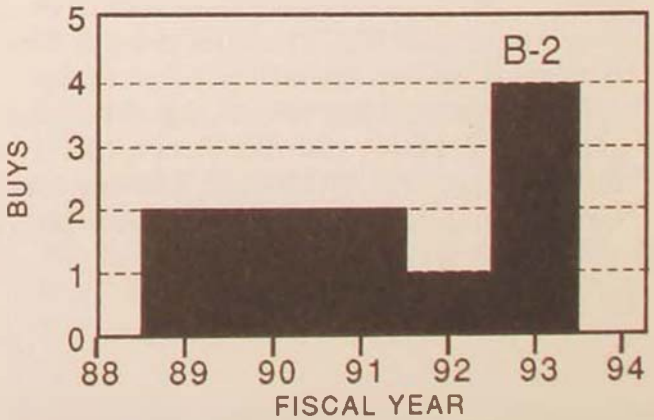


Figure 5. Profiles of Bomber Buys (From Air Force Force and Financial Plan)

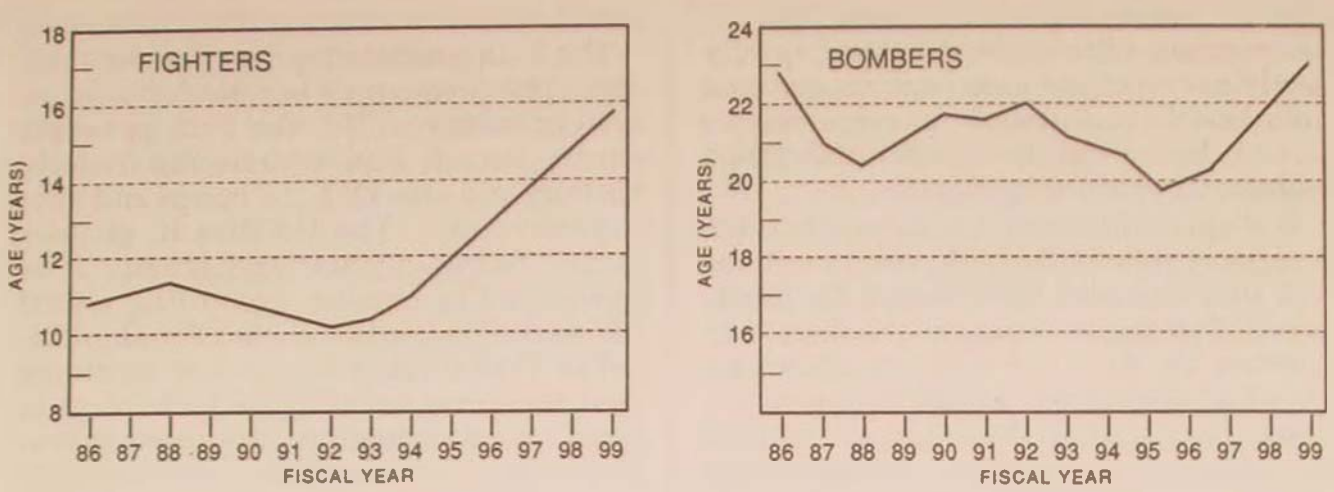


Figure 6. Average Age of Fighting Force (From *USAF Statistical Digest, FY 92–93*, E22–E25; and Air Force Program Data System)

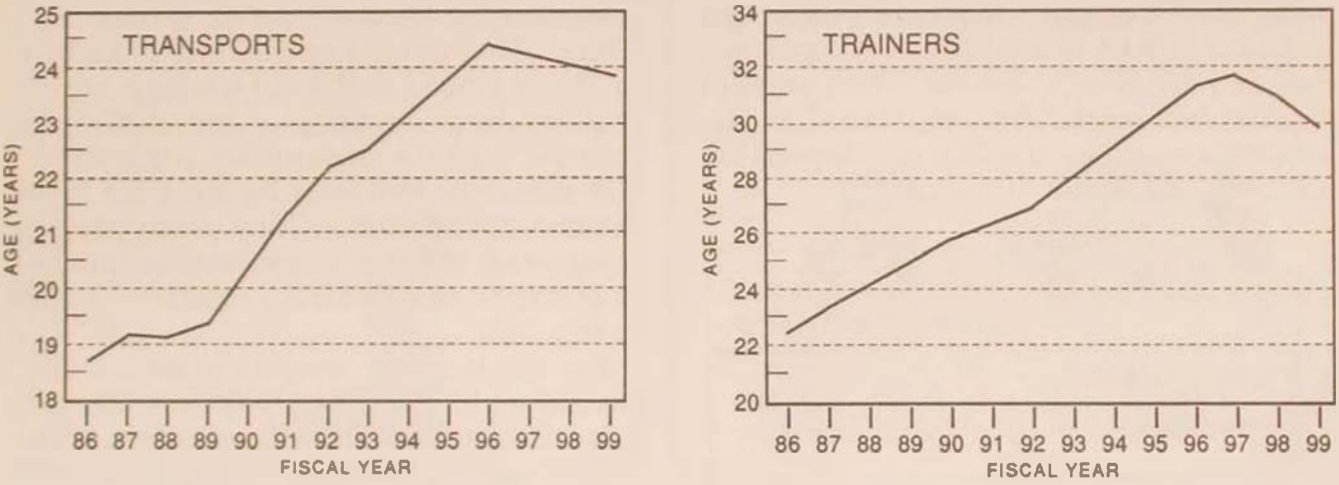


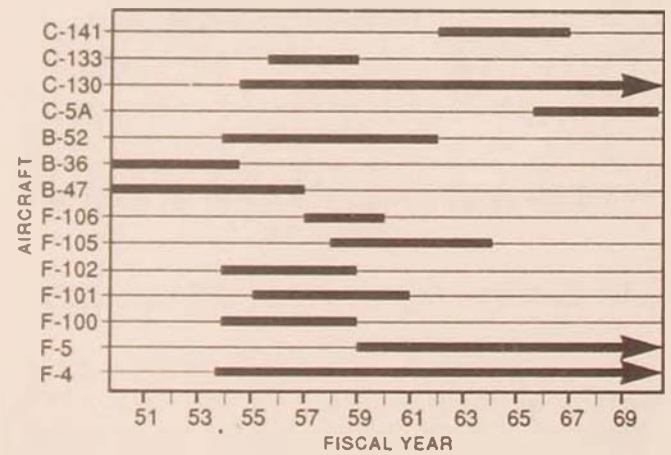
Figure 7. Average Age of Support Force (From *USAF Statistical Digest, FY 92–93*, E22–E25; and Air Force Program Data System)

For example, the AX and multirole fighter are still in the design stage; the B-2 production line has already begun to close; the C-17 is fighting for its life; the last T-37 trainer was delivered to the Air Force in January 1970; and Joint Primary Aircraft Training System (JPATS) candidates are competing with each other to replace the T-37, but the Air Force has not yet selected the winner.

Such pressures on force structure also tend to exert pressure on industry. During the past 50 years, the US built a robust industrial base that produced the technology and weapons that helped bring the cold war to a close. But subsequent budget cuts are forcing reductions in DOD's total obligation authority. Just as the military draws down and reshapes itself, so must our vast industrial arsenal adapt

because our current production capacity vastly exceeds our projected needs. Not only has the volume of our requirements shrunk, but so has the number of different systems in production (fig. 8).

Our practice has been to produce weapon systems in high volume at the best unit cost and then sharply terminate production in anticipation of a follow-on contract (fig. 9). Thus we were able to stay ahead of the former Soviet Union in the "technology race." Although this system is enormously productive, it is also enormously inefficient. To wit, half of the B-1B buy was purchased in one year, but there was no follow-on contract. The same is true of the C-5B at Lockheed and may well be true of the F-15E at McDonnell Douglas. Moreover, Lockheed is fighting hard to maintain F-16 production at Fort Worth, Texas. With smaller buys ahead, such "fits and starts" in the acquisition and production of weapons are neither sensible nor affordable.



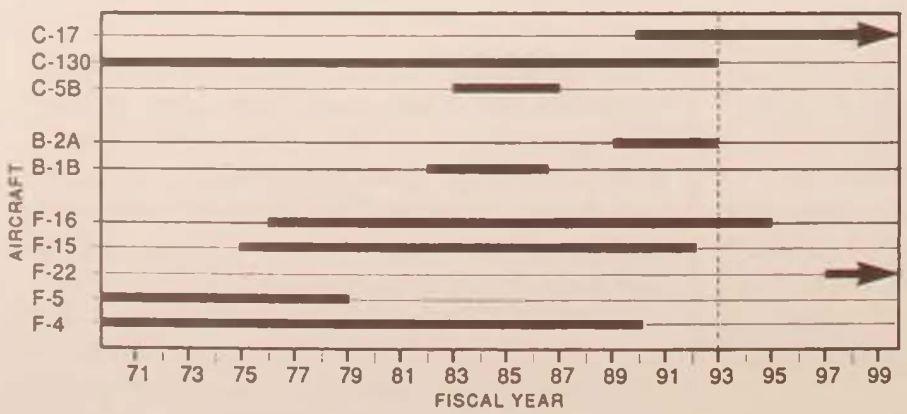


Figure 8. Production in the 1950s and 1960s versus Production in the 1970s through 1990s (From Air Force Force and Financial Plan; M. B. Rothman, *Aerospace Weapon Systems Acquisition Milestones: A Data Base*, Rand Report N-2599-ACQ [Santa Monica, Calif.: Rand Corporation, October 1987]; and *Aircraft Cost Estimating System*, vol. 1, *Aircraft* [Delta Research Corporation, 1988])

The F-15 program typifies the old strategy. The premier air superiority weapon system in the world, the F-15 prevents enemy aircraft from penetrating friendly territory and attacking our troops and vital infrastructure. The US flies it, as does Israel, Saudi Arabia, and Japan. It is unequaled in combat, compiling a 95:0 kill record by US, Israeli, and Saudi pilots.

The F-15's 1960s design has served us well for a long time, but its technology is aging and its potential for growth is limited. Stealth technology, for example, cannot be economically incorporated into the current system. The F-15's performance and efficiency are also limited by its design. Hence, we need an improved fighter such as the F-22 to ensure that we maintain air superiority in future conflicts. However, the current F-22 buy profile is linked to the old strategy, which requires large capacity, substantial overhead, a rapidly expanding work force, and extensive tool-and-die work for high-volume production. Once production is completed, the line evaporates as quickly as it started unless foreign customers step in (fig. 10).

For the reasons previously mentioned, we can no longer afford to pursue this pattern. Because of the reduced threat to the US, now is the time to take risks, shift

gears, and posture ourselves for the future by establishing a new strategy. Further delay serves only to age our force structure, idle our industrial capability, and waste our depot capacity.

What We Need

We should seriously consider implementing the new defense industrial strategy of "lean production," which entails increased productivity, decentralized responsibility, sharply reduced resource inputs, enhanced responsiveness, and affordable sustainability over long production periods. For the aerospace industry, adoption of this strategy would result in reductions in industrial capacity and production overhead, smaller buys, and a "living" production line capable of adapting to change. In the military sector, the strategy incorporates upgrades and new technologies as a matter of department policy, the latter involving

- modernization of combat/combat support systems in "capability" lots (e.g., a squadron per year, a brigade per year, a ship flight every x years) instead of a certain number per year or a production rate cued to unit cost;
- modernization of special systems (e.g., airborne warning and control system, joint surveillance target attack radar system, airborne early warning/ground environment integration segment, etc.) with long-term, level production—perhaps as low as one system per year; and
- meshing the life cycle and technology edge of existing systems to produce a

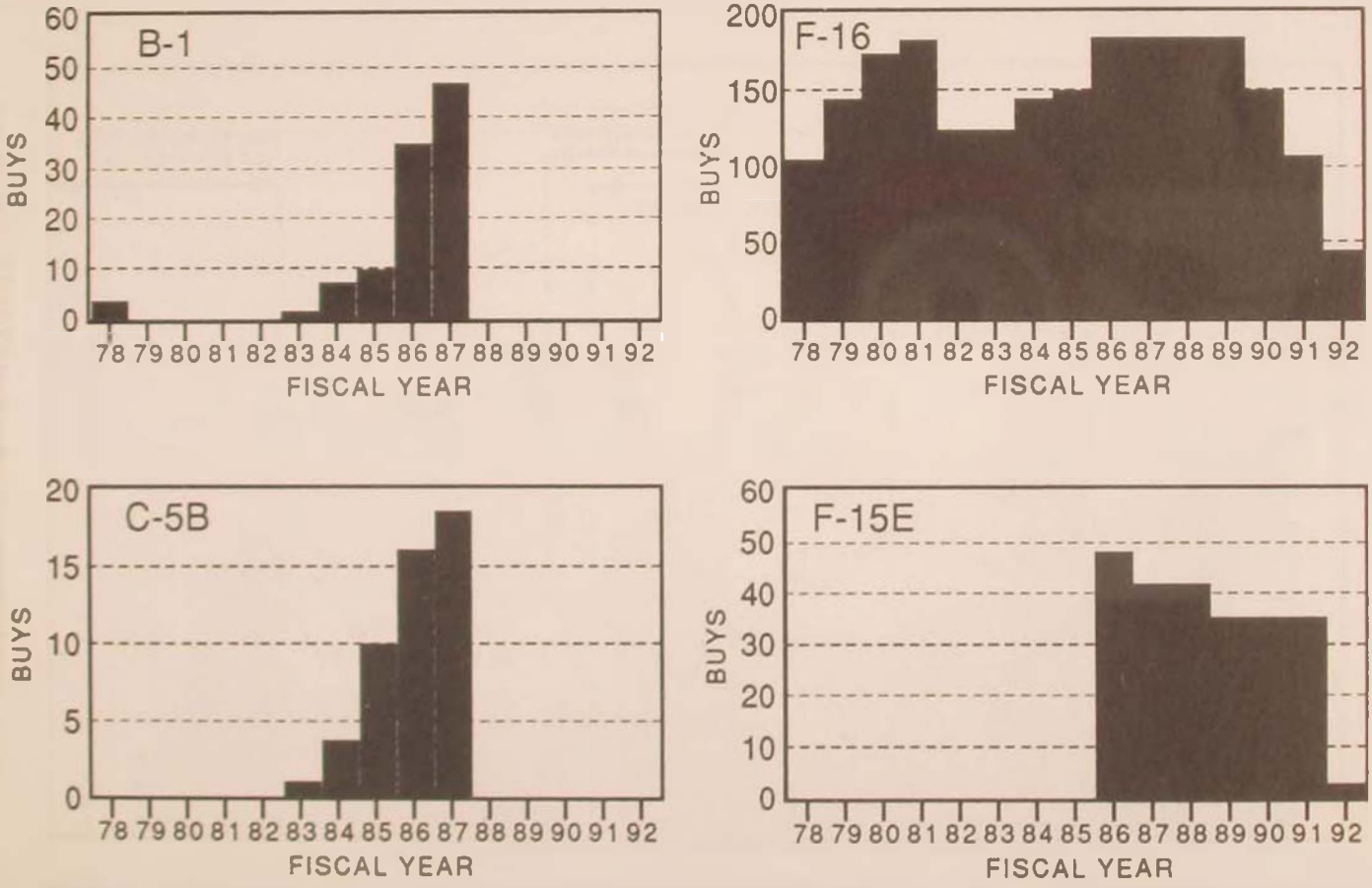


Figure 9. USAF Buy Profiles (From Air Force Force and Financial Plan)

smooth transition to tomorrow's modernization.

How We Can Do It

This new strategy is in line with the current administration's industrial and defense policies. President Clinton has called for a revitalized industrial base, and Secretary of Defense Aspin echoed this call in his confirmation testimony, which emphasized the need for new thinking on force modernization that would reduce procurement funds but streamline industrial capacity. Further, Aspin has called for a process that would maintain our superior technological advantage and a viable industrial base by relying on various modernization strategies, some of which are outlined below.

Alter Production Rates

Instead of building major weapons in quantities driven by unit costs, the new strategy focuses on modernization by combat units. In the case of the Air Force, this would entail the modernization of one squadron equivalent of capability per year. We would acquire the most capable platforms—ones that have room to incorporate new technologies—and "lock in" one airframe per mission area after the engineering and manufacturing development (EMD) phase. This would have the effect of reducing procurement risk and flattening the pace of system retirement. Further, this approach would

- put modernization on a predictable track,
- allow future systems to retire more gracefully over longer periods of time,

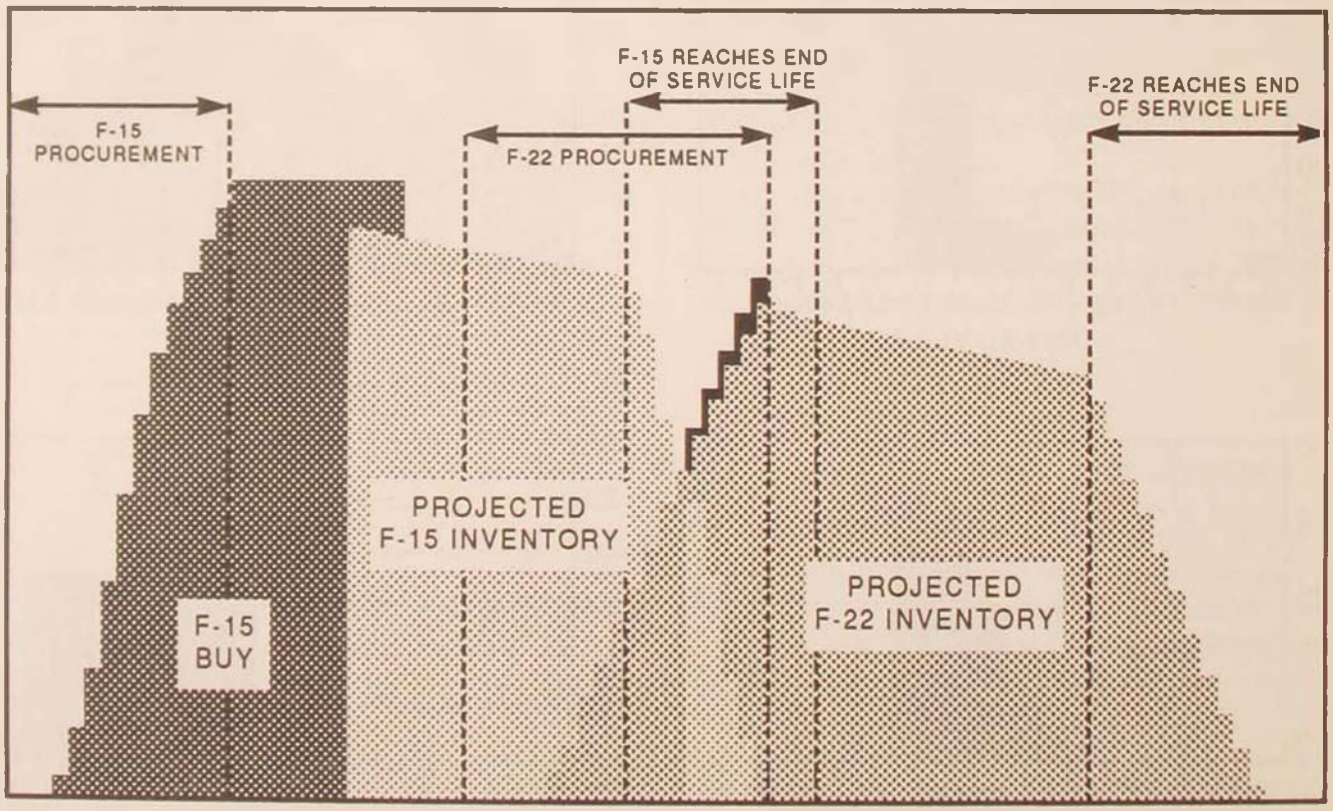


Figure 10. Life Cycles of the F-15 and F-22 (From Air Force Force and Financial Plan; and Air Force Program Data System)

- allow industry to optimize planning,
- allow government to insist on limiting burden and overhead to only that which is required for long-term production, and
- create a viable long-term production base and preserve industrial capability.

In the case of our F-15/F-22 example, the new strategy would require the Air Force to alter its approach to procurement now—well before establishing the production line. The revised F-22 procurement profile would be much flatter and extend over decades (fig. 11). A potential glitch in this system, however, is that it might create a gap in our war-fighting capability as the F-15 reaches the end of its programmed service life before the flattened F-22 production is complete. This could be corrected by endorsing selective service life extension programs (SLEP) of weapon systems, as necessary (fig. 12).

We should implement this approach to maintaining air superiority now—when threats to our security are minimal. Full EMD funding for the F-22 is our best hedge against uncertainty. Delaying F-22 production would begin to create a bow wave that will overlap what we can fix with an F-15 SLEP.

Establish Programmed Infusion of Technology

Along with moving toward long production runs, we must remain technologically innovative and be able to incorporate such innovations in our weapon systems. This would be possible through a DOD-directed policy of programmed technological infu-

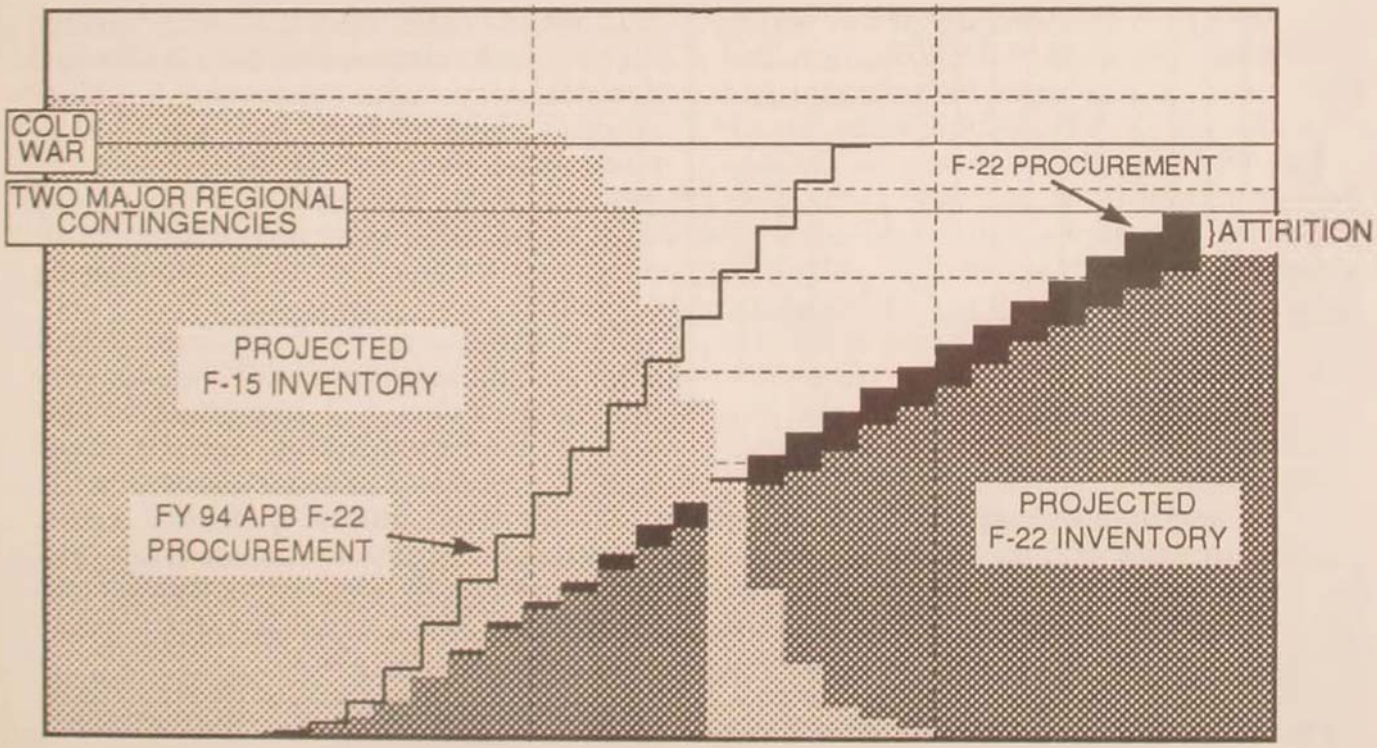


Figure 11. Proposed Capability Increment Buy (From Air Force Force and Financial Plan; and Air Force Program Data System)

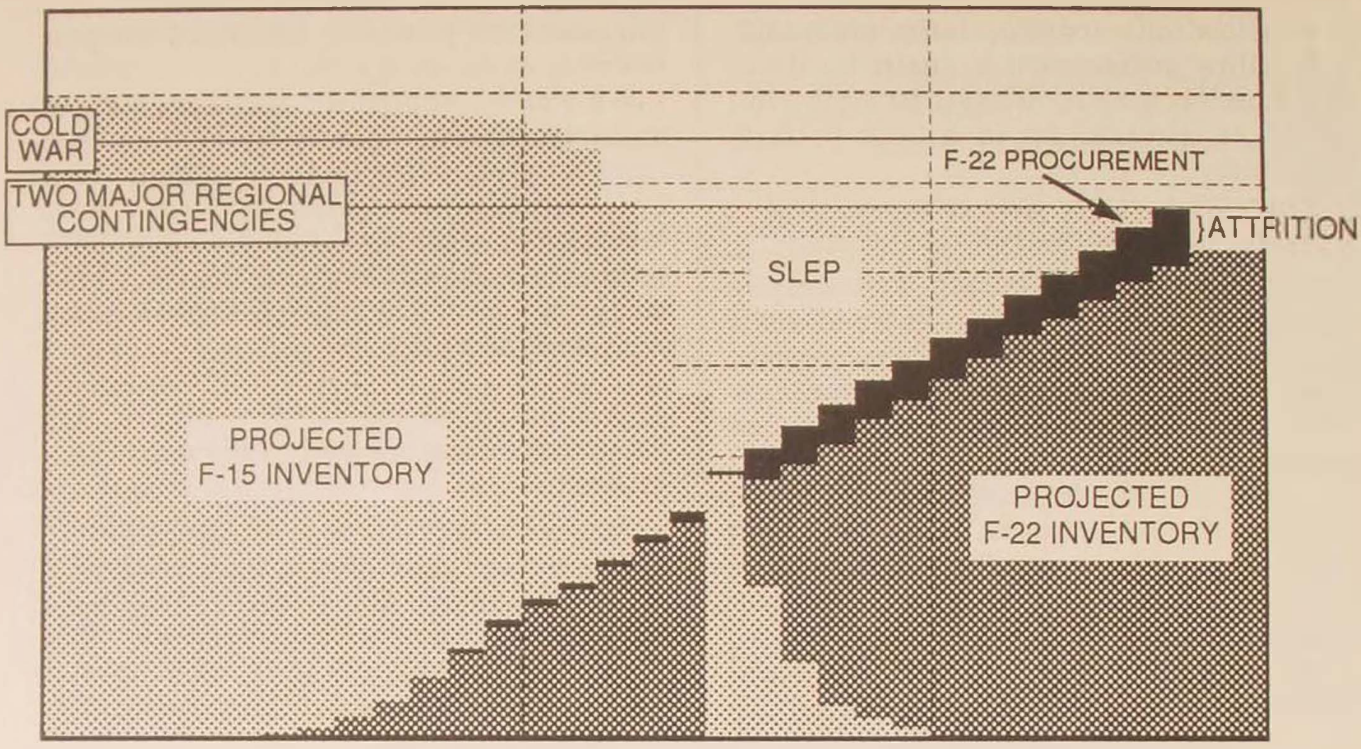


Figure 12. Proposed Capability Increment Buy and SLEP (From Air Force Force and Financial Plan; and Air Force Program Data System)

sion for all major weapon procurement programs. We should develop, test, and "roll over" technologies for upgrades and modifications in a systematic way.

The Office of the Secretary of Defense has structured its science and technology programs in a very sensible and coherent manner, grouping efforts according to their availability for force application. This existing structure provides a direct link to our new DOD procurement policy. Again, using the F-22 as an example, procurement would be structured into capability blocks—wings in this case—with a science and technology (S&T) category linked to each block. Such a system incorporates the time-phased availability of our S&T technology development efforts (advanced technology development [budget element 6.3A], exploratory development [budget element 6.2], and basic research [budget element 6.1]). Accordingly, the F-22A would link with EMD, the F-22B with "ready" program 6.3A technologies, the F-22C with "emerging" 6.2 technologies, and the F-22D—two decades away—with "visionary" 6.1 technologies (fig. 13). Note that from our current perspective, the 6.1 technologies are generally those that are 10–20 years away from being applied to war-fighting hardware, as is the purchase of the fourth wing of F-22s.

This block approach integrates and directly links the proposed DOD industrial production policy to a departmental policy of technology infusion. Industry meets a requirement and minimizes costs, while procurement is phased and predictable. Moreover, in addition to meeting our own needs, we supply arms to nations around the world.

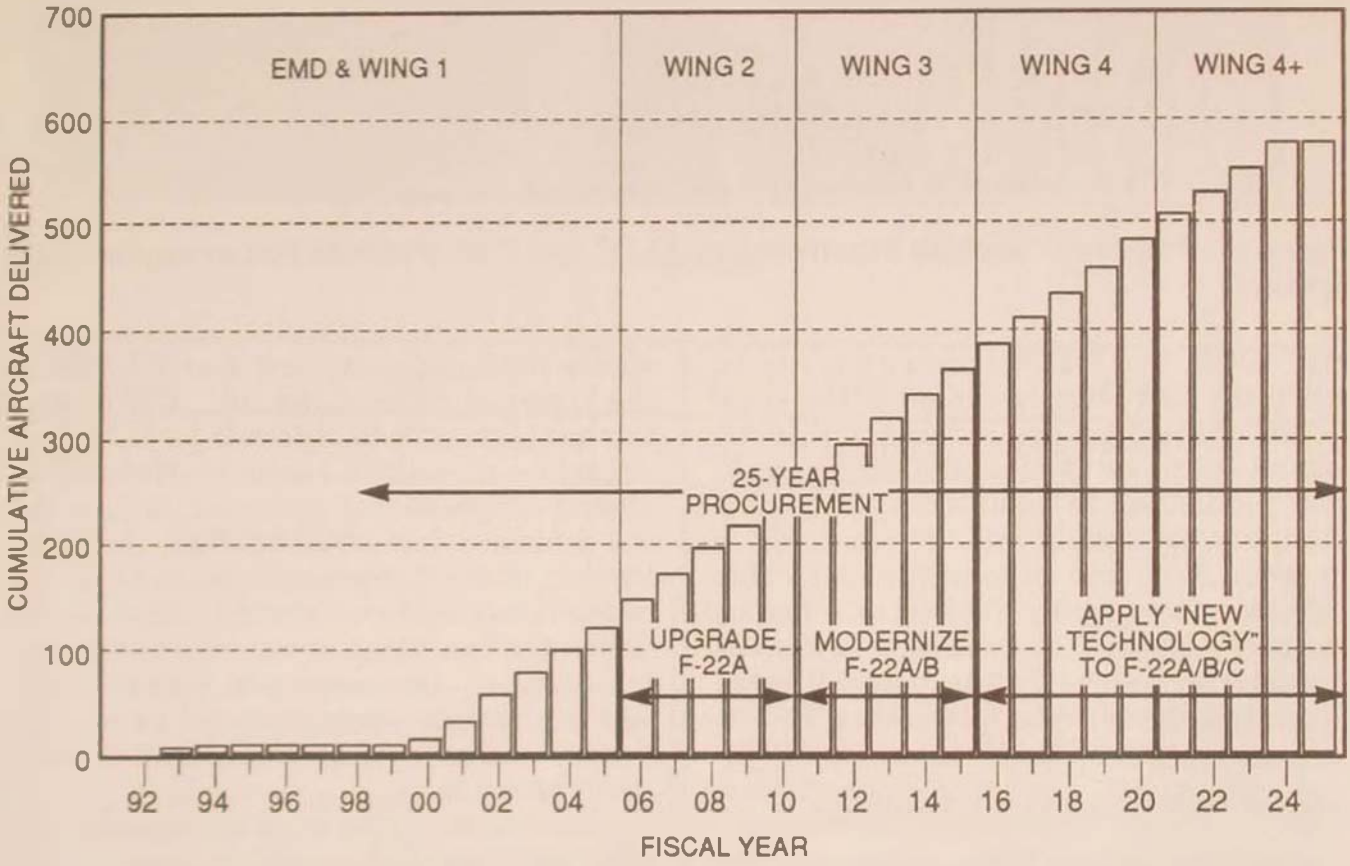
Make Revisions in Foreign Military Sales

Deciding whether or not to sell US weaponry to foreign buyers is always a

major policy issue, usually dependent upon the availability to US forces of the superior version of the weapon—the next upgrade as a minimum. A structured procurement approach with programmed technology infusion would make products available sooner and at a known risk.

A revised approach to foreign military sales (FMS) would offer a current capability for sale once the next level of technological infusion is available to US forces. By procuring new systems in unit-sized packages and removing older systems in similar numbers, we can release weapons in unit quantities for FMS over an extended period (fig. 14). This not only makes for a much better scheme, but also gives us the opportunity to work "influence and assess" programs with potential recipients over a longer period of time. Moreover, foreign countries are more willing to accept a used weapon system for FMS if there is a long-term commitment to operate it in US inventories.

Applying this approach to the F-15 example also makes sense for marketing its replacement—the F-22—as long as the policy of technological infusion is operat-



WEAPON SYSTEM	F-22A	F-22B	F-22C	F-22D
TYPE OF ENHANCEMENT	EMD+MODIFICATION	UPGRADE	MODERNIZE	"NEW TECHNOLOGY"
TECHNOLOGY SOURCE	MODERNIZATION $	6.3A $	6.2 $	6.1 $

Figure 13. New DOD Procurement Strategy

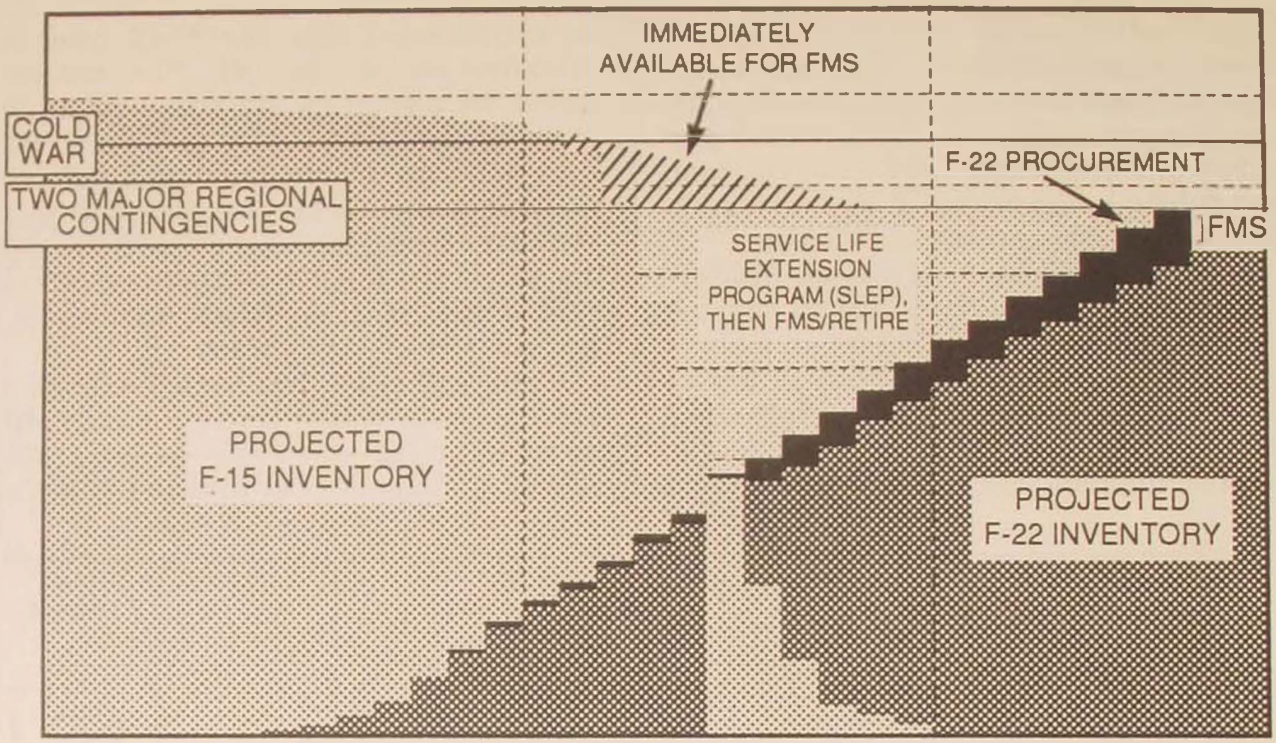


Figure 14. Proposed Capability Increment Buy, SLEP, and FMS (From Air Force Program Data System)

ing. Once the F-22A production run to equip the first wing is complete and once F-22B production commences with 6.3A technologies, we should offer follow-on F-22A production to qualified FMS buyers. Similarly, we should sell "B" when "C" is in production, and so forth (fig. 15). This pattern creates additional business for the industrial base, as well as additional options for defense, state, and National Security Council policy planners.

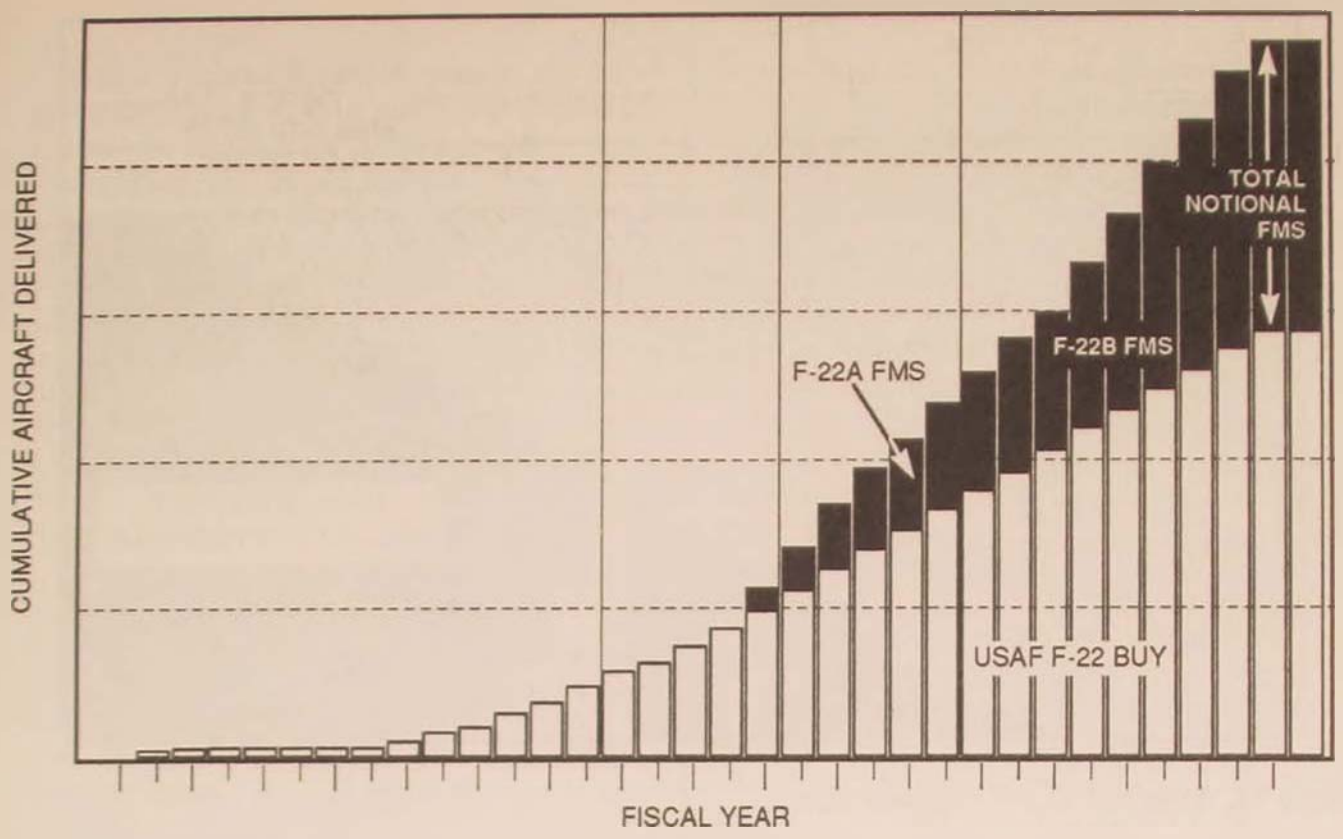
Assure Sustainment and Readiness

A sound approach to sustainment and readiness must also be a part of our new strategy. When we modernize by combat unit and flatten production, we generate a requirement to extend the life and capability—and combat effectiveness—of existing systems in all services.

Our approach to this part of the new strategy can have a significant effect on costs. At the moment, both industry and the military services have a modification/spares repair capacity that vastly exceeds the expected demand (fig. 16). Correcting this problem will be difficult for both the private and public sectors. However, altered congressional guidance, linkage to the proposed industrial strategy, and utilization of the competition mechanisms to rationalize resources should allow us to derive the best value at minimum expense to taxpayers. Downsizing in both the private and public sectors would be evolutionary and more manageable than is currently possible.

Sustainment. The need for repairs has been declining for several years, due in part to modernization of weapon systems but principally to overall downsizing of military forces. Consequently, all services have much more depot/yard capacity than they need. For example, there are 12 major air-related depots alone across the four services.

A new approach to modernization will require that we extend the life of most—if not all—of our current major weapon sys-



WEAPON SYSTEM	F-22A	F-22B	F-22C	F-22D
TYPE OF ENHANCEMENT	EMD+MODIFICATION	UPGRADE	MODERNIZE	"NEW TECHNOLOGY"

Figure 15. Notional FMS

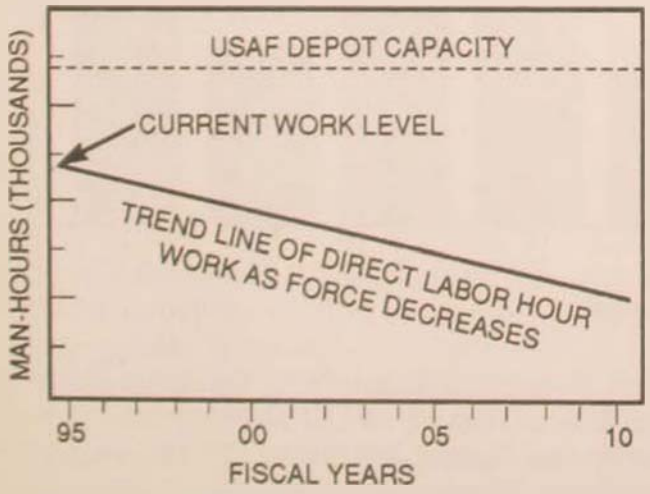


Figure 16. Notional Depot Work Load

tems. The F-15, for example, would undergo modification as necessary, consistent with a notional schedule (fig. 17). We should package this work to optimize opportunity for broad bidding across industry and air depots. We should also structure such a long-term effort into multiple work packages to expand the bidding pool and preserve the sustainment base. Further, if we remove congressional restrictions that direct at least 60 percent of the work load to depots (fig. 18), we would create strong incentives for implementing efficiencies in the depot system. This action would also expand opportunities for industries hit hard by force cuts and would create a healthy climate for competition.

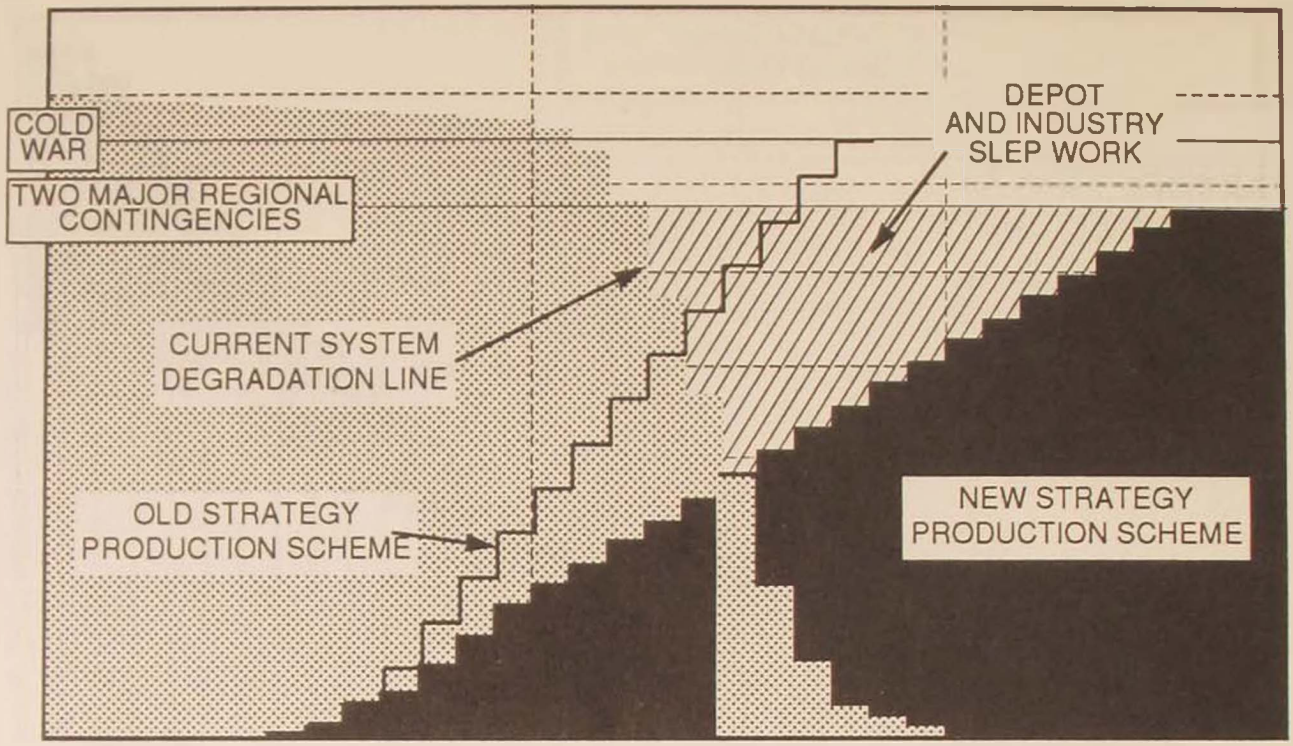


Figure 17. Notional SLEP Requirement

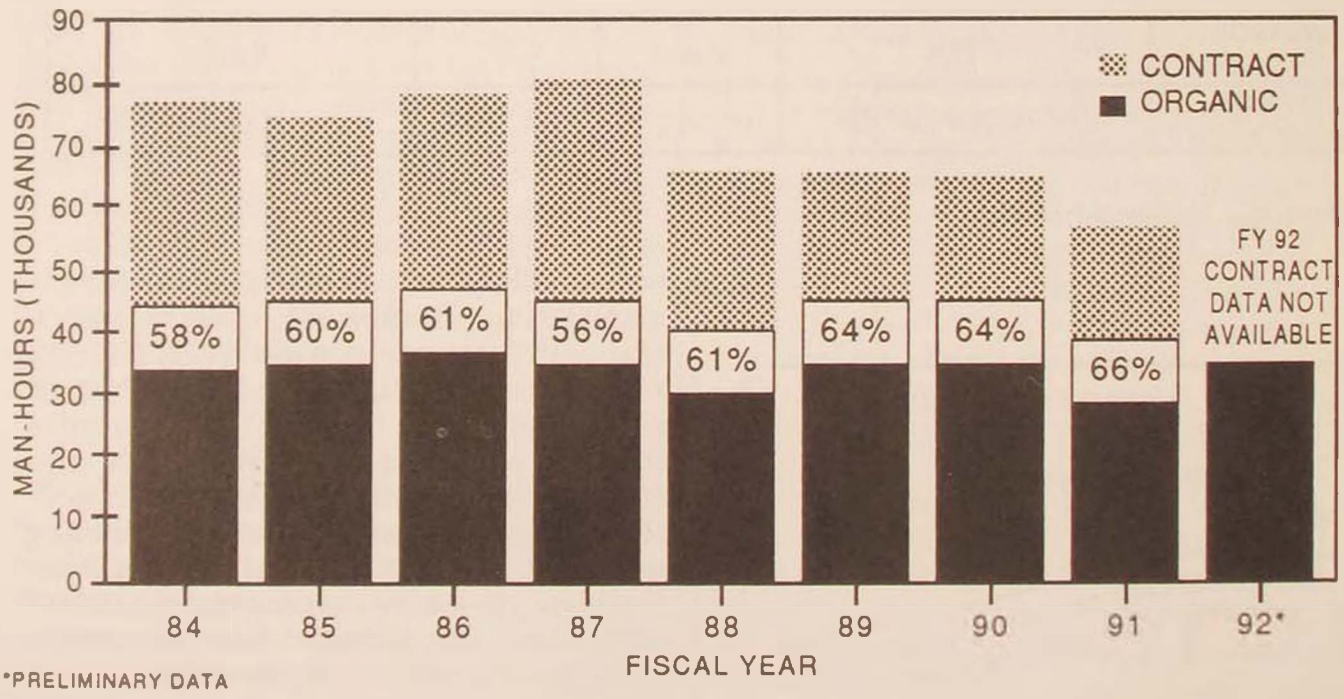


Figure 18. Historical Air Force Depot Work Load Share (From Headquarters Air Force Logistics Command [AFLC], *AFLC FY 91 Depot Maintenance Annual Report*, AFLCP/AFMCP 66-65, 1 May 1992, 27; idem, *AFLC FY 89 Depot Maintenance Annual Report*, AFLCP 66-65, 15 January 1990, 63; and idem, *AFLC FY 88 Depot Maintenance Annual Report*, AFLCP 66-65, 16 January 1989, 56)

If this approach makes sense, we have an opportunity to downsize the depots in a more evolutionary manner. After functionalizing the depot system, appointing executive agents to direct the functional integration of like work of the various services (i.e., putting the Army in charge of all ground systems, etc.), and removing restrictions on competition (the 60/40 rule), we should seek the exemption of depots from the base realignment and closure (BRAC) process. Such an exemption would have important economic and political implications:

- competition is leveled and opened by standardizing the accounting rules for military depots and civilian industries (the American Institute of Certified Public Accountants could chair this effort),
- the depot work force assumes control over its future (i.e., it must compete successfully or die),
- employment levels are tied to success in bid competition,
- adjustments in the depots' labor force are directly related to trends in winning open bidding competitions, and
- consolidations/closures are directly linked to efficiency and work load.

Gradually opening all work packages to competitive bids still means that the depots and industry will share the work, but not according to some predetermined ratio. All work packages would also meet commercial specifications unless more stringent specifications were justified. Since both the military depots and civilian industries will respond to competitive pressure, it is unlikely that either will gain a monopoly. Other factors working against monopolization include the cost of fixed equipment, test gear, and unique processes; the nature of the work; the environmental risk; and the age of the required process, manufacturing technique, or technology. In short, the strengths of military depots and civilian industries will determine how the work is divided between them. The process will rationalize the total sustainment capacity to meet both defense and industry needs during peacetime.

By following the above principles, both the military and industry would achieve major savings yet preserve the nation's ability to defend itself. Functionalizing the military depot system is essential; otherwise, efficiencies, economies of scale, and baselining competition will not be effective. Considerable consolidation of the Air Force's repair facilities for all DOD fixed-wing aircraft would occur over time. That service's five large depots and one small depot would be combined with the Navy's six naval aviation depots, and then would be rationalized and downsized to a level of efficiency that would be both sustainable and competitive. Finally, the new principles of competition would link the concepts of production (industrial base) and repair (sustainment base).

Readiness. Our recent experience in Operations Desert Shield and Desert Storm suggest that the new strategy can meet wartime surge requirements. Once Desert Shield began, substantial forces deployed for operations in just a matter of weeks. All services immediately accelerated work schedules at logistics/commercial locations. Specifically, the Air Force sharply ramped up its depot activity, pulling C-141 and C-5 aircraft out of depots an average of two weeks ahead of schedule for potential theater employment.

Conclusions

Regardless of the final industry/depot work ratio, the new strategy offers many advantages. If DOD chooses to modernize our land, sea, and air forces in capability increments per year (i.e., land brigade/naval groupings/air squadrons), it assures an affordable modernization scheme during a period of reduced budget authority and much reduced risk. Moreover, today's shallower acquisition

gradient sets up a much more affordable modernization cycle later in the twenty-first century, regardless of risk (fig. 19). In the case of the Air Force, realigning projected procurements in the near term could affect all major force-employment systems.

Should a major threat emerge, we would be in the most efficient posture for reconstitution. Warm production lines would be turning out almost all of our critical weapon systems, and existing design teams would be infusing new technology into production. In short, the nation would have a ready fighting force in constant modernization, with readiness and sustainment determined by market forces.

In sum, we must maintain a technologically superior military force, armed with all-purpose, high-tech conventional weapons that are credible and easily deployed. Further, such a force must be able to prosecute US and allied interests with a minimum expenditure of money and lives. In order to do this, we must reshape the distribution of work between military depots and civilian industries so that the forces of competition drive an appropriate conversion to civilian production; industries are downsized for smooth production of technology systems; technology is integrated into production; and industry can handle limited production surges. This approach links the national military strategy and a superior, responsive force with

- the president's commitment to revitalize the domestic sector,
- the Congress's commitment to supporting defense conversion,
- the secretary of defense's commitment to reposture acquisition strategy and nurture new technologies,
- the military's need for readiness and sustainability,
- the need to maintain an affordable base in industry to supply technological weaponry, and
- long-term stability in the industrial work force—both military and civilian.

Any policy that bonds this new DOD approach to our industrial partners must be developed in concert with key industry leaders and must entail rules of competition agreed to under third party oversight. All this would come from a draft DOD directive that

- establishes lean production as the DOD approach,

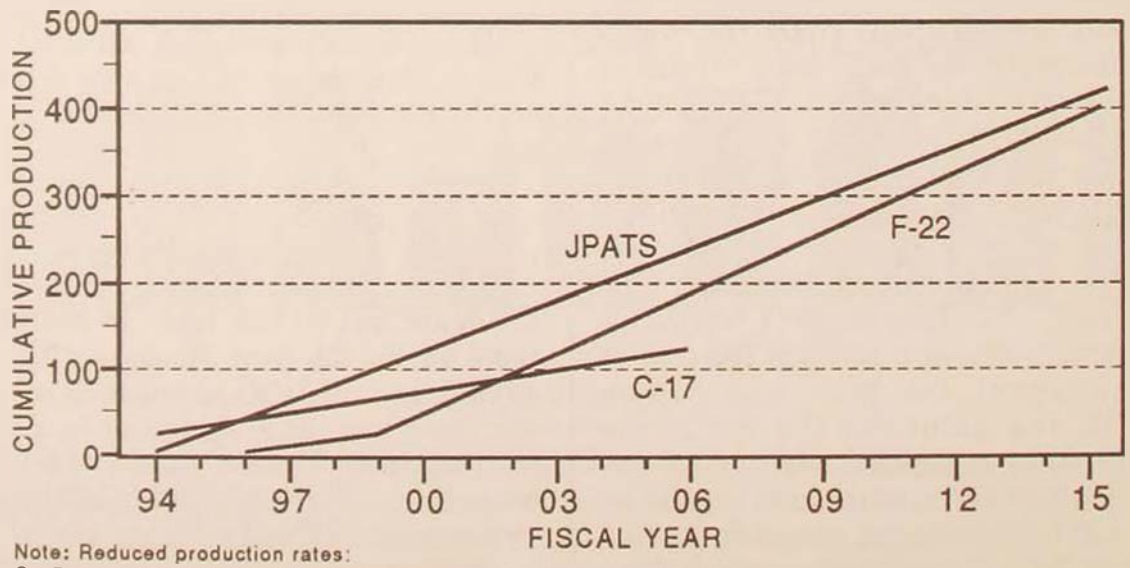


Figure 19. Cumulative Production (Reduced Production Rates)

Our current force structure, procurement process, and military industrial base—characterized by large-volume production, threat-driven modernization, and swift acquisition—date back to World War II. For example, in response to the threat in the Pacific theater, workers in the Boeing Company (USA) produced nearly 4,000 B-29s in three years.

- requires systematic technological infusion,
- spreads capability buys over decades,
- requires SLEPs to maintain the effectiveness of weapon systems,
- aligns depot responsibility by function, with an appropriate executive agent in charge,
- uses the market mechanism to strike the appropriate long-term balance between military/civilian sustainment structure, and
- sets deadlines for implementation.

This new defense industrial strategy will deliver a modern military and modern industrial sector, maintain the most capable force for the lowest cost, and protect the industrial base and critical technologies for national security needs and commercial exploitation. It will link technology, modernization, force structure, and the industrial base into a cohesive mechanism and offer industry predictable and substantial primary production and secondary repair work that will assure broad partnership over the long run. Further, this strategy will sharply reduce up-front acquisition, divert savings to sus-

In spite of its 95:0 kill record, the F-15 (top) is restricted by limited growth potential and aging technology. We need its successor, the F-22 (bottom), to ensure that we can attain air superiority in future conflicts.

taining force structure and funding domestic needs, use competition to size sustainment work, and keep lean production lines active. In turn, active lines will protect logistic surges and sustainment needs, while providing a solid base for reconstitution should a major threat to US interests emerge. Thus, military requirements are linked to supporting industry in the context of a new security environment. We need a change. Now is the time to act. □

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THE LEADERSHIP IMPERATIVE IN A TRANSFORMING AIR FORCE

Lt Col R. Joe Baldwin, USAF

THE LAST DECADE of the twentieth century promises to be one of the most eventful in modern history. These truly revolutionary times mark a defining moment for the United States Air Force. Sweeping change in the international arena, coupled with irresistible domestic pressures to cut the defense budget, has produced a dramatic shift in America's national security strategy. Fortuitously, in 1990 the senior leadership of the Air Force got out in front of events and promulgated a strategic planning framework for the post–cold war era.[1] Subsequent efforts to realize the promise of global reach—global power and to implement organizational realignments have put the Air Force in a good position to meet the demands of a regionally focused military strategy while building down to lower force levels.[2] However, merely restructuring the Air Force in accordance with an

overarching strategic framework is insufficient to ensure the vitality of our service into the next century.

Meeting the Challenge of Transformation

The key to transforming our Air Force into a leaner, meaner service that retains its reputation as "the world's most respected air and space force" lies in the hands of blue-suit leaders across the ranks and at all levels.[3] Officers and noncommissioned officers alike must exhibit tremendous leadership as they implement fundamental change throughout the Air Force and seek to take care of our most cherished asset—quality people. As we charge ahead in restructuring our service, undertaking "Quality Air Force" initiatives, creating composite wings, implementing two-level maintenance, revamping training and education programs, and assessing equipping requirements, we must never forget the critical importance of the human factor to organizational success.[4]

Far-reaching change inevitably creates enormous anxiety and tension among the people who make up an organization. This natural development is further aggravated in today's Air Force by the uncer-

An Air Force leader must adhere to high moral and ethical principles and live a life of personal integrity. Though women have served in the Air Force for a number of years, recent scandals such as "Tailhook" have highlighted the leader's role in maintaining high morale while fostering a climate of "zero tolerance."

tainty and turmoil associated with defense budget cuts, force drawdowns, base closures, selective early retirement boards (SERB), and reductions in force (RIF). Leaders across the Air Force must carefully manage the transformation of our service with due concern for people as well as for the mission. Otherwise, we run the serious risk of producing a well-armed, yet hollow, force lacking in morale, esprit, and cohesion. The current situation places a premium on involved leaders who set the example, insist on quality performance, maintain a consistent focus on the mission, and, above all else, take care of their people.

Involved leadership is all the more critical given the likelihood that the Air Force will be the force of choice when the nation responds to fast-rising regional crises. No other service can go directly from the United States to the fight in a matter of hours and apply overwhelming firepower with the precision and lethality that we can. Regrettably, we still live in a troubled world racked by age-old animosities, proliferating arms, and unyielding instability.[5] All these pose a potential threat to US security interests around the globe. Thus, the Air Force must be prepared to safeguard those interests through the assured capability to project highly agile, extremely flexible, and decidedly lethal aerospace power to any hot spot in the world. But there can be no global reach or global power without involved leadership and quality people.

Fortunately, we have a tremendous heritage to draw upon as we take on this challenge. The brief history of the Air Force is replete with visionary leaders—Benjamin D. Foulois, William ("Billy") Mitchell, Frank M. Andrews, Henry H. ("Hap") Arnold, Claire L. Chennault, Carl A. ("Tooey") Spaatz, Ira C. Eaker, Hoyt S. Vandenberg, Elwood R. ("Pete") Quesada, Curtis E. LeMay—who shepherded the air arm through good times and bad, then wielded this most flexible of military instruments to win our nation's conflicts. Selfless airmen served in the front lines during the cold war, providing awesome nuclear and conventional capabilities that deterred Soviet aggression, defended Western democracies, and assured the ultimate victory of Western liberal values over a bankrupt communist ideology. Clearly, the realization of a Europe whole and free in the early nineties was due in no small measure to more than 45 years of sacrifice and commitment on the part of United States airmen.

More recently, the adroit application of aerospace power assured the triumph of coalition efforts to turn back blatant Iraqi aggression against Kuwait in the Persian Gulf region. It is indisputable that the fierce 1,000-hour air campaign against Iraq and its forces in the Kuwaiti theater of operations made possible the brief 100-hour ground war that culminated in a decisive victory for the coalition. This impressive feat resulted from the extraordinary leadership and devotion to duty of blue suiters at all echelons—from the Air Staff and major commands to US Air Forces, Central Command (CENTAF) Forward all the way down to the units.

These remarkable military professionals projected enormous combat power halfway around the world to halt further aggression, created an expeditionary air force in the sands of the Arabian Peninsula, developed a comprehensive war plan orchestrating hundreds of air assets, and launched a massive air campaign that demolished Iraq's war-fighting capability. Their extraordinary performance provided compelling evidence of Giulio Douhet's assertion that "aerial warfare will be the most important element in future wars."[6]

We must now capitalize on the same energy, skill, enthusiasm, and dedication that produced a decisive victory in the Gulf War to successfully transform our service into the premier air and space force of the twenty-first century. That endeavor will require a personal commitment on the part of officers and noncommissioned officers (NCO) throughout the

"Regardless of what appears to be some superficial ideas of present day conduct . . . the man who is genuinely respected is the man who keeps his moral integrity. . . ." Gen H. H. Arnold demonstrated the conviction behind his words when he fought for the predominance of air power and supported its advocates in spite of strong resistance to his views.

Air Force to get involved with their people, to address subordinate concerns over organizational change and personnel turmoil, and to instill a keen sense of pride in being part of a unique military organization that takes care of its own.

This kind of involved leadership is essential if we are to provide the comprehensive air and space power necessary to defend our nation and its global interests against a vast array of threats in the austere fiscal times that lie ahead.[7] While there is no textbook answer on how best to provide the requisite leadership during this challenging period, the following discussion highlights some important considerations for those who would lead the way in our transforming Air Force.

Top Priority: Integrity

The most important characteristic that an Air Force leader must possess is personal integrity. *Webster's Third New International Dictionary* defines *integrity* as an "uncompromising adherence to moral and ethical principles." It is that and much more in a professional military organization such as ours. Integrity constitutes the essential ingredient for sound, effective leadership. An officer or NCO who lacks integrity is worthless to the service and highly destructive of its ethical standing with the public. Such an individual neither earns nor deserves the trust of superiors or subordinates. And no one can lead effectively without such trust.

If you expect your people to give 110 percent day in and day out and to willingly undergo the rigors of combat, then you must exhibit unquestioned honesty, be forthright in what you expect of your troops, and behave in an ethical manner in all that you do. If you would have others follow you, then cultivate a well-deserved reputation as a solid military professional who possesses the highest personal standards and demonstrates unerring ethical behavior. Take responsibility for your actions and those of your people. Never try to avoid blame by pointing the finger at someone else. Rather than wasting time in an unethical effort to shift the blame, strive to identify the cause of the problem and take immediate action to resolve it. Superiors do not expect you and your people to be perfect, but they do expect you to recognize genuine mistakes and to correct them.

Moreover, the leader with true integrity has the courage of his or her convictions and the will to take action on those convictions. That characteristic is crucial in a self-monitoring profession such as ours wherein we must make tough ethical calls as to the propriety of individual actions. A few years ago, a wing commander furnished his office and quarters in an extravagant fashion that was blatantly wasteful

of Air Force resources. He had behaved similarly as a vice-commander of another wing, but no one had called him on it there. No one had the guts to do the right thing and report him to his superiors or go through inspector general channels. Consequently, he continued his profligate ways when he became a wing commander until a junior member in his unit had the courage to file a fraud, waste, and abuse complaint against him. Unfortunately, his eventual removal from command threw an entire wing into turmoil and tarnished the image of the Air Force due to the commander's lack of integrity and the failure of other Air Force people to do the right thing earlier.

A leader's personal life must always be above reproach. Set the example of self-discipline and moral rectitude for your people to follow. Take prompt corrective action in the event of sexual harassment or other inappropriate behavior. Realize that the American public closely scrutinizes your behavior and that of your subordinates as a direct reflection of the United States Air Force. We cannot afford nor can we tolerate any "Tailhook" affairs in our service. Perhaps General Arnold said it best:

> Personal integrity also means moral integrity. Regardless of what appear to be some superficial ideas of present day conduct, fundamentally—today as always—the man who is genuinely respected is the man who keeps his moral integrity sound, who is trustworthy in every respect.[8]

Loyalty Cuts Both Ways

Loyalty is an essential ingredient of involved leadership. Loyalty up the chain entails not only the staunch support of one's superior but also the courage to disagree with him or her and the will to provide honest feedback on issues within your purview—all in private. Few senior officers like yes-men (or yes-women) who do not think for themselves but instead try to get ahead through ingratiating behavior. Once your boss has made a decision, however, loyalty requires your unflinching support for that decision, especially in front of the troops. It matters little whether you personally agree or disagree with the decision or how you expect your subordinates to respond to it. You must give it your wholehearted support as long as it is not immoral, illegal, or contrary to regulations. Never attempt to pacify your people by joining them in criticizing your superiors.

Gen Benjamin O. Davis, Jr., fought bigotry and official discriminatory policies throughout his career. His efforts helped pave the way for an integrated Air Force.

In an era of growing regional threats to US interests, we should all take our cue from Gen George Kenney, a master of developing innovative ways to generate the most combat capability possible from limited air assets in World War II.

Loyalty also entails taking care of the needs of your people and supporting them in the face of adversity. Gen George S. Patton once observed, "There is a great deal of talk about loyalty from the bottom to the top. Loyalty from the top down is even more necessary and much less prevalent."[9] Thus, put the health and welfare of your troops first. See that their needs are adequately taken care of. Then be prepared to stand behind your subordinates when they are in the right and beside them when they are in the wrong. There can be no more dispiriting, morale-busting development than to have a superior not support you in the face of adversity. However, the involved leader who has the courage to take up for subordinates in both good times and bad will be repaid many-fold by troops who deeply appreciate such unselfish loyalty.

In 1943, then-Colonel LeMay came to the aid of an Eighth Air Force pilot during a mission critique when it became apparent that he was being made the scapegoat for a bomb run to Bremen that had gone bad. Although most of the other officers conducting the critique were his senior, LeMay stood up, stopped the inquisition, and made it clear that his superiors had completely lost their perspective in seeking to pin the blame on someone for what in essence had been an honest mistake. Interestingly enough, LeMay had gone to bat for a pilot who was not even in his bomb group because he was so incensed at the injustice being done to a brave airman who was doing his best in the war-torn skies over Europe.[10]

Strength of Character Will Carry the Day

It won't always be easy to do what is right in the confusing and uncertain days that lie ahead for our Air Force. But it will be absolutely essential for the future of our service and the nation that we stick by our principles, defend our people, and stand our ethical ground on the difficult issues that confront us. Strength of character will be pivotal in this regard. We can learn much from our Air Force forebears who have risked it all for what they believed in.

General Arnold exhibited tremendous character in promoting air power and the widely shared vision of an air service that would be independent of the US Army during the interwar years. As an air power advocate, then-Lieutenant Colonel Arnold testified in favor of Col Billy

Mitchell at his court-martial in 1925, despite strong warnings from senior officers that such action would endanger his career. Arnold steadfastly supported Mitchell and continued to fight for a separate air service because of his firm conviction that it was the right thing to do for the defense of the nation. As a result, he was publicly admonished by the chief of the Air Service and exiled to Fort Riley, Kansas. Not one to be dissuaded by a little adversity, Arnold persevered in his beliefs, excelled in his career, and eventually became chief of the Army Air Forces. From that position, he directed the development of and influenced the employment of the massive air armada that pummeled the Axis powers during World War II. Moreover, he laid the foundation for the creation of an independent United States Air Force in 1947.[11]

In a similar manner, Gen Benjamin O. Davis, Jr., demonstrated extraordinary character in fighting the destructive bigotry that pervaded the air service. In World War II, he led the all-black 99th Pursuit Squadron and 332d Fighter Group to great honor and distinction in the Mediterranean theater of operations. He stood for exceptional professionalism, rigid discipline, and equal opportunity for black aviators to fly and fight. He attacked racial segregation ruthlessly in 1945 in testimony before a general officer panel evaluating how best to employ blacks in the military. Thereafter, he spoke out against segregation to military and civilian audiences as well as the press. All that took tremendous courage since segregation was War Department policy at the time. Ultimately, this activism, combined with the impressive performance of Davis and the Tuskegee airmen he led, provided compelling evidence of the propriety of integrated air units. In light of all that, General Vandenberg, chief of staff of the Air Force, approved the order to integrate the Air Force. Throughout a long and distinguished career, General Davis contin-

Although Gen Curtis LeMay was tough and demanding, his emphasis on training and preparation during World War II paid off with his bomber groups achieving an impressive record of putting bombs squarely on target and returning to base with minimal losses. Here LeMay (on right) stands with another Air Force visionary, Brig Gen Haywood Hansell.

Creating a quality work environment means taking care of your people by seeking ways to recognize exceptional performers.

ued to set the professional standard in a variety of senior command and staff billets while combating racism wherever it raised its ugly head.[12]

"People Are the Essence of Our Business"[13]

Our greatest strength as a service lies in our high-quality people. We are extremely fortunate to have the best people we've ever put in uniform as we draw down the Air Force. They are well educated, highly trained, and committed to excellence—literally the best and brightest our nation has to offer. Their exceptional quality is recognized worldwide. Former Warsaw Pact military leaders have been astonished at the authority and responsibility we entrust to our young officers and NCOs. Many have been so impressed that they are now professionalizing their military based on the American model, often with American assistance. While the current drawdown in forces is regrettable in many respects, in the end it will produce a core of experienced aerospace professionals who possess the expertise, the energy, and the commitment to keep our Air Force number one in the world.

As we implement extensive changes and fundamental restructuring in a fiscally austere environment, Air Force leaders must capitalize on the talent and skill of these top-notch people. Continue to push authority and responsibility down to the lowest levels possible. Implement quality initiatives that are tailored to the unique requirements of your organization, then strive for constant improvement of the process. Nurture and cultivate the creativity and ingenuity of your troops. Strive to empower those people working on the cutting edge who best know how to get the job done efficiently and effectively. Ensure that the right procedures are in place to make it tough to say no to good ideas and encourage anyone with a good idea to surface it via those procedures.

While Eighth Air Force commander in the late eighties, Gen James P. McCarthy capitalized on the bright, young officers and NCOs in his command by having them participate on numbered air force (NAF) working groups that addressed the hot issues of the day. In this manner, he focused the creativity and ingenuity of his young leaders on such initiatives as enhancing unit conventional capabilities, improving pilot retention, increasing bombing accuracy, and streamlining alert changeover procedures. The NAF working groups developed comprehensive proposals for action that were reviewed and approved by the commander, then submitted to the commander in chief, Strategic Air Command (CINCSAC). Ultimately, many elements of these proposals were approved by CINCSAC for implementation throughout the command. In a similar

vein, General McCarthy unleashed an air refueling wing to rewrite the book on daily tanker operations. Unencumbered by regulations or headquarters oversight in virtually every area except safety, the wing developed a number of innovative procedures that were eventually adopted throughout the command to optimize tanker operations.[14]

In this era of growing regional threats to US interests, we must concentrate on squeezing the most combat power possible out of shrinking aerospace assets. Urge your troops to apply their brain power and their ingenuity to the vital task of exploiting the enormous combat potential of Air Force weapon systems. Gen George Kenney was a master at developing innovative ways to generate the most combat capability possible from rather limited air assets under his command in the Southwest Pacific during World War II. As Gen Douglas MacArthur's air component commander, he (1) employed bombers as airborne artillery in support of struggling ground forces, (2) delivered troops and equipment by air into the heat of battle, (3) devastated enemy shipping and closed down sea lanes by employing "skip-bombing" techniques, (4) converted bombers into heavily armed interdiction platforms, (5) deceived the Japanese into making futile air strikes on mock airfields and established expeditionary airfields nearby, (6) launched mass surprise attacks against major Japanese airfields to gut the combat effectiveness of their air forces, and (7) dropped parachute fragmentation bombs (his own invention) to demolish enemy aerodromes.[15]

General Kenney was a true master at ingeniously exploiting the vast potential of air assets to seize control of the air, devastate enemy forces, and provide tremendous support for ground and naval operations in the Southwest Pacific. We would do well to follow his lead in the lean years ahead when we inevitably will be called upon to use limited aerospace assets in innovative ways to deal with regional crises that erupt.

Do the "Impossible"

Too often in the past, we have allowed bureaucratic inertia or conventional wisdom to stymie good ideas and novel approaches to doing our business better. We can no longer afford this tyranny of the status quo. Today Air Force leaders must create an atmosphere that encourages people to take on the daunting challenges that confront us with innovative solutions, then support those solutions up the chain despite the odds against them. Inspire your people to do great things by convincing them that they can truly do what others write off as impossible. Don't allow innovation to be blocked by a negative, excuse-seeking mentality that blames the system. Instead, embolden your troops by implementing their good ideas when possible and staunchly supporting others by recasting and resubmitting those that must be approved by higher authority. Never accept as a final answer the oft-repeated lines "It's never been done that way before" or "The boss will never approve that." Continually buck the conventional wisdom and strive to convince your people that they can indeed "make it happen." Build their confidence, reward their initiatives, and support their good ideas. In turn, the results of their efforts will greatly impress your superiors.

When he took over as Eighth Air Force commander in 1987, General McCarthy immediately sought to develop realistic conventional deployment exercises for his bombardment wings. However, he encountered stiff resistance from Headquarters SAC, the NAF staff, and his wing commanders. Nevertheless, he persevered in developing an exercise that would have bomb wings deploy seven-bomber packages to relatively austere airfields to fly two weeks of conventional training sorties in Red Flag or similar exercises. This would be a tall order for bomb wings that had gotten used to operating almost solely from home station. Through force of personality, General McCarthy convinced his staff and wing

commanders it could be done, then overcame the objections of higher headquarters to deploy the first unit (the 97th Bombardment Wing) to Clinton-Sherman Industrial Air Park, Oklahoma, in less than three months' time. The resulting Mighty Force exercise program saw Eighth Air Force bomb wings deploy to a variety of continental US (CONUS) and overseas locations, set up tent cities, feed the troops from mobile kitchens, conduct bladder refueling, use mobile communications systems, respond to mission-type orders, and keep aircraft flying for two weeks of intense conventional operations.[16]

Subsequently, under the direction of Lt Gen E. G. Shuler, Jr., Eighth Air Force bomb wings performed evermore demanding and realistic deployments that pushed units further up the conventional learning curve. He too fought an uphill battle against nonbelievers to conduct two highly successful NAF-wide exercises (Mighty Warrior 88 and 89) that entailed deploying all Eighth Air Force bomber and tanker wings as well as some command elements to austere operating locations in the CONUS and Europe. These deployed units conducted a combined command post and field training exercise that spanned a two-week period of rigorous flying operations at wartime sortie rates.[17] The dedicated efforts of all those who strived to bring off these realistic conventional exercises, despite the naysayers, paid off in the unprecedented capability of SAC bomb wings to deploy and fight during the Persian Gulf War.

Maintain an Unwavering Focus on the Mission

In these increasingly austere and uncertain times, it is vitally important that we keep our mission of defending the United States through control and exploitation of air and space in the forefront of the minds of our people.[18] Convince your troops of the significance of what we are about in the Air Force and the vital importance of their contribution to this mission. Inform them about the vital role that aerospace power plays in implementing a regionally focused defense strategy that relies largely upon global reach and power to safeguard America's vital interests. Educate them on Air Force doctrine and the evolution of our service during this century. Emphasize our great leaders and impressive accomplishments in two world wars, Korea, Vietnam, the cold war, the Gulf War, and innumerable crises. Stress their place in the continuous and proud line of dedicated American airmen who have given their all to fight and win their nation's wars. Remind them of Gen Douglas MacArthur's admonition: "Yours is the profession of arms. . . . You stand as the nation's war guardian, as its lifeguard from the raging tides of international conflict, as its gladiator in the arena of battle."[19]

Seek to build a cohesive team of committed aerospace professionals who are capable of generating the maximum combat power possible from shrinking resources. Concentrate on those fundamental activities that underwrite unit readiness to perform our mission and that give us an unquestioned capability to deploy and fight. Meanwhile, avoid the diversion of time, energy, and resources to less significant activities that contribute to neither. Work the substance hard and the image will take care of itself.

Lead the way for your troops by giving 110 percent in dedicated duty performance on a daily basis. Set the professional standard for them to emulate. Inculcate an unrelenting drive for excellence. Moreover, utilize an enlightened leadership approach that insists on quality performance but does not shoot them in the face every time your people make a mistake. Be firm but fair. Never accept mediocre performance. When people don't

measure up, insist on taking the necessary corrective action whether that consists of remedial training, removal from flying status, reassignment, administrative counseling, nonjudicial punishment, or even court-martial. We cannot afford incompetence, disregard for standards, or dereliction of duty in any unit, most especially in those where lives may be on the line.

A few years ago, a KC-135 tanker mishap occurred in which several aircrew members died. The aircraft commander made too steep a descent in attempting to land the aircraft, bounced it off the runway, attempted to go around, but failed and drove the doomed tanker into the ground next to the runway. The aircraft broke up and the crew compartment became engulfed in flames. It turned out that this aircraft commander had a track record of serious problems in landing the airplane—problems that had never been adequately addressed through retraining or administrative action. He was a dedicated officer who was well liked by his peers and his superiors and appeared to be headed for a successful Air Force career. Thus, no one wanted to hurt his prospects by taking the tough remedial action dictated by his poor landing skills. Consequently, the unit mission and safety considerations were compromised by an overweening concern for an individual's career. The result was a tragic mishap that quite possibly could have been avoided. Obviously, much worse things can happen to an aviator than busting a check ride, going through additional training, or even coming off of flying status. Air Force leaders must have the courage, the strength of character, and the wisdom to make the tough decisions when the circumstances warrant.

Realistic Training is de Rigueur

The post–cold war era of come-as-you-are crises makes it imperative that we keep Air Force units honed to a razor-sharp edge. Achieving that goal requires that we engage our troops in the most demanding, realistic training possible in peacetime. It also necessitates taking the initiative to evolve tactics, techniques, and procedures to stay abreast of the diverse threats and situations we may encounter around the globe. Seek to capitalize on the enormous talent and brain power of your people to further your unit's war-fighting capabilities. Moreover, seek to exploit the inherent capabilities of assigned weapon systems to contribute to the fight. Don't allow your people to become complacent or your unit to stagnate.

While he commanded 3d Bombardment Division in England during World War II, General LeMay insisted on just this kind of rigorous training and mental ingenuity to prepare his crews for combat and to continually refine their war-fighting skills. LeMay evolved various formations to concentrate the defensive firepower of his bombers and enhance their survivability. He developed new procedures to enable aircrews to take off in foul weather and improved procedures to form up hundreds of bombers over Britain for massive attacks on the continent. When his people weren't flying missions, they were attending ground school, firing live rounds at the target range, performing intensive target study, learning foul weather takeoff procedures, honing formation flying skills, or refining bombing techniques. Aircrews were not overly enamored with their commander's demanding approach to business and soon began referring to him as "Old Iron Ass." But General LeMay took their criticism in stride and said, "I don't mind being called tough, since I find in this racket it's the tough guys who lead the survivors."[20] Ultimately, LeMay's emphasis on training and preparation paid off when his bomber groups achieved an impressive record of putting bombs squarely on target and returning to base with minimal losses.

In a similar manner, Eighth Air Force

began training selected bomb wings to perform long-range strikes from the CONUS in 1987 in anticipation of future crises that might necessitate such missions. Under General McCarthy's direction, the NAF staff worked out the details of these round-robin sorties with affected bomb wings, Headquarters SAC, and other agencies. It then tasked wings to fly Mighty Strike exercise sorties into the Mediterranean and other regions of the world to prove the concept and refine mission procedures. Continuation of this realistic exercise program under General Shuler had Eighth Air Force primed and ready to launch long-range B-52 strikes from Barksdale AFB, Louisiana, against vital power and communications facilities within Iraq at the initiation of the Desert Storm air war. Seven bomber crews flew halfway around the world, dispatched their deadly ordnance of conventional cruise missiles from outside Iraq's borders, then returned home after a record-setting 35-hour combat mission.[21] That operation put potential aggressors on notice that the United States can reach out and touch them unexpectedly with devastating strikes flown from the CONUS.

If we are to remain the world's most respected air and space force, we must have the vision to anticipate future crises and develop the appropriate aerospace capabilities to handle them through realistic training and rigorous exercises. However, no amount of preparation can prevent our units from becoming hollow due to uncertainty and fear over the future. Only involved leadership that keeps the mission in the forefront while providing a stable, secure, and reassuring environment can do that.

Take Care of Your People

During these trying times of force drawdowns, base closures, SERBs, and RIFs, it is imperative that we take care of our most valuable resource—Air Force people. We must not be a cold, uncaring institution but a professional outfit that takes care of its own by assisting those transitioning to civilian life while continuing to provide a decent quality of life for those who remain with us. Our dedicated airmen are the backbone of the Air Force's combat effectiveness. We must continue to do right by them (and their families) if we are to maintain the enthusiasm, esprit, and commitment that binds our people into a coherent war-fighting team.

Therefore, place a high priority on the quality of life for your troops and their families. Ensure they have a decent environment in which to live and work. Demonstrate an evident concern for the welfare of your troops. Be creative and persistent in addressing their needs. After taking charge of SAC, General LeMay sought innovative ways to take care of his people. He utilized spot promotions to reward standout performers. He prevailed upon the Army Corps of Engineers to replace open-bay barracks with semiprivate dorms for enlisted troops. He worked with Sen Kenneth S. Wherry of Nebraska (R-Nebr.) to secure funding to build new married quarters at SAC installations. He even went so far as to establish hobby shops at all his bases to provide his troops an enjoyable outlet for their mechanical talents. General LeMay firmly believed that he could demand the utmost in performance and commitment from his people if he took good care of them, and they proved him right.[22]

Similarly, you should strive to provide a quality work environment for your people. Use self-help where feasible to upgrade work areas. Involve your people in planning and effecting upgrades, then take part in the work yourself. Your people will work hard to fix up their own work areas, take pride in the results, and welcome your participation as an indication of your concern. Even modest improvements can help inspire troops because they know the boss cares.

Structure your outfit to encourage innovation and reward performance. Look out for the best interests of your people. Seek any and all opportunities to recognize your exceptional performers. Capitalize on the awards and decorations program, specialty awards, and awards whenever possible at the NAF, major command (MAJCOM), and Air Force levels. Create your own unit awards and spread the wealth to deserving people. Be sure to recognize your top people in public forums such as commander's calls or award ceremonies. Written and verbal pats-on-the-back are always in order.

Take a sincere interest in furthering the careers of your troops. Put in the time and effort to do performance reports, promotion recommendations, and decoration nominations right. Encourage your people to improve themselves through professional military education, specialty courses, and college or advance-degree programs. Support the efforts of individuals to get good follow-on assignments. A well-placed phone call or endorsement letter can greatly enhance prospects for individuals to land a desired job. Never hesitate to go to bat for a deserving subordinate. In the end, your people will respond to your concern for their welfare with dedicated service above and beyond the call.

Maintain a Visible Presence

Effective Air Force leaders must get out of their offices and become immersed in all aspects of their unit's operations. Maintain a visible presence throughout your outfit—observing, directing, encouraging, critiquing, or praising as appropriate. Get out and put your footprints on the organization. Infuse the unit with your spirit, enthusiasm, commitment, and high standards. Energize your people to excel. Solicit their concerns on frequent visits to the flight line, maintenance shops, launch control facilities, guard posts, or wherever your people work—day and night, in good weather and bad. Hold periodic commander's calls or similar gatherings to keep your people informed and to enable them to express their concerns directly to you.

When he was commander of Twelfth Air Force in North Africa during World War II, Gen James H. Doolittle saw it as his job to visit every unit under his command, engage his troops, discover any problems, and begin to work the solutions. To facilitate this process, he often arrived at a unit and announced that he was going to fly a combat mission with them aboard one of their aircraft (B-17, B-25, or B-26) as an observer or copilot. He "was convinced that nothing gives your men the confidence in you and in themselves that having you go with them does." He tried to pick the tough missions so he could get a good understanding of the challenges that confronted his bomber crews in combat. Moreover, he wanted everyone in his command to know that the "old man" would fly the dangerous sorties and that he was knowledgeable about bombing tactics, formation flying, and the methods to evade flak and fighters.[23] Doolittle's actions reflected a common approach to combat leadership in World War II that saw group, wing, division, and NAF commanders risking their lives to gather firsthand knowledge about the progress of the air war and to bolster the confidence of their troops.

As a military leader, you must be present and visible when the critical is happening in your unit. Never hesitate to take charge during an emergency or crisis. Your troops will want to see you in the thick of things, and that is where you need to be if you are to lead effectively. Your presence will bolster the confidence of your people and allay their fears. By all means, let the experts do their jobs, but be present and on the scene to provide over-

arching guidance and continuity. Then, take responsibility for the outcome.

In 1987, one of the best examples of on-the-scene leadership in peacetime occurred at Barksdale when a KC-10 exploded on the ramp shortly after Gen John T. Chain, Jr., CINCSAC, arrived on station to speak at an NCO Academy graduation. Despite the stress of this ill-timed and deadly mishap, the wing commander remained calm, cool, collected, and in charge. His professional demeanor was contagious. His people performed superbly under dangerous conditions in response to his crisp directions. They quickly moved to control the mishap area, taxied endangered airframes out of harm's way, extinguished the fuel-fed inferno, attempted to rescue a maintenance person from the airframe, and minimized injuries incurred. That evening, the commander appeared on local newscasts to calm the fears of the local civilian and military communities and to lay to rest rumors about a terrorist incident at the base. His confident performance was especially reassuring to those living on or near a SAC installation that kept bombers on alert. Undoubtedly, the superb performance of then-Col Brett M. Dula during this pressure-filled emergency contributed to his subsequent selection to become a general officer.[24]

Exploit the Full Measure of Your Authority

While deputy commander in chief of US European Command, General McCarthy stressed the need for leaders to use the full measure of the authority entrusted to them by their superiors. Too often, individuals are reluctant to do so because they incorrectly believe that their boss wants to be in on every decision. So they buck all substantive decisions up the chain and shy away from taking the initiative in fear of jeopardizing their career. In most instances, Air Force superiors expect subordinate leaders to decide upon all matters within their purview as long as they keep the boss informed. Superiors have enough to do without having to make a subordinate's decisions for him or her. Thus, they prefer to make only those extraordinary decisions that lie beyond the authority of their subordinate leaders. Moreover, they readily expect those leaders to be self-starters who can get a good read on the boss's agenda, then undertake initiatives to further that agenda.[25]

The key to this approach lies in fully understanding the goals and operating philosophy of your superior, as well as his or her expectations for you and your unit. Armed with this knowledge, you can move out smartly to exploit your authority in performing the unit mission and implementing appropriate initiatives, all the while keeping your boss informed. If you operate in this manner, you will gain greater latitude from your superior, greater satisfaction in your job, and greater success in your career. As a boss yourself, you must be willing to allow your subordinates to behave in a similar manner. Groom them for positions of increased responsibility by encouraging them to exercise the full measure of their authority while always keeping their superior in the loop. For your part, strive to get involved only in those decisions that cannot be handled at a lower level and that require your action or that of your superior.[26]

If you do so, then you will be traveling in good company. During World War II, General Spaatz was especially adept at assigning responsibilities to subordinate air commanders, empowering them with the necessary authority to carry out those responsibilities, then getting out of the way while they discharged them. His willingness to repose confidence in his commanders inspired them to great heights in accomplishing the mission for "Tooey."[27]

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Involved Leadership—The Ultimate Key to Success

As we transition to a new, streamlined Air Force that focuses on power projection and employs the latest in management techniques, we must continue to provide the involved leadership that is essential to the successful transformation of our service. Ours is a particularly human endeavor. We ask our dedicated people to undergo risks, to withstand hardships, and to make sacrifices in defending the United States and its global security interests. We owe them the very best we can provide in the way of quality leadership at all times, but most especially during this era of enormous change and uncertainty.

Gen George C. Marshall's advice to his commanders in World War II applies equally well to those who would lead in today's Air Force:

> The truly great leader overcomes all difficulties. . . . The lack of equipment, the lack of food, the lack of this or that are only excuses; the real leader displays his quality in his triumphs over adversity, however great it may be.[28]

If the United States Air Force is to remain the world's premier air and space force, we must triumph over the adversity that confronts us as we transform our service into a leaner, meaner combat organization capable of meeting the challenges of the future. We dare do no less if we are to meet the security needs of our great nation and keep faith with our illustrious Air Force forebears. □

Notes

1. See details of this framework in Donald B. Rice, *Global Reach—Global Power: The Air Force and U.S. National Security*, white paper (Washington, D.C.: Department of the Air Force, June 1990); and idem, "Reshaping for the Future," testimony before the House Armed Services Committee, 20 February 1992, in *Vital Speeches* 58, no. 12 (1 April 1992): 354–61.
2. See organizational initiatives in *Air Force Restructure*, white paper (Washington, D.C.: Department of the Air Force, September 1991); and Gen Merrill A. McPeak, "Restructuring the Air Force: Organize, Train, and Equip," address to the Air Force Association Convention, 18 September 1991, in *Vital Speeches* 58, no. 3 (15 November 1991): 69–74.
3. From the USAF vision statement in "State of the Air Force," *Airman*, December 1992, A3.
4. See full panoply of endeavors identified in "Reshaping the Force" section in ibid., A4-18.
5. See *National Military Strategy* (Washington, D.C.: Joint Staff, January 1992) for discussion of regionally focused defense strategy (page 1), the strategic landscape, US interests and threats to same (pages 1–4), the need for an unquestioned capacity to respond to regional crises (pages 7 and 11–12), and the strategic principles of readiness, aerospace superiority, strategic agility, power projection, decisive force, and technological superiority (pages 9–10). The attributes of aerospace power make the Air Force particularly well suited to implement the defense strategy articulated herein.
6. Giulio Douhet, *The Command of the Air* (1942; reprint, Washington, D.C.: Office of Air Force History, 1983), 91.
7. For an intriguing discussion of the unique nature of our "comprehensive" Air Force that seeks to provide the full range of air and space capabilities, see Gen Merrill A. McPeak, "Does the Air Force Have a Mission?" address at Maxwell AFB, Ala. Text of the address is in "McPeak: No Clear Mission Statement Until Now," *Air Force Times*, no. 52 (3 August 1992): 4–5.
8. Gen H. H. Arnold to Lt Col Leroy L. Stefen, letter, 5 November 1946, 7 January 1947, 2.
9. Gen George S. Patton, Jr., *War as I Knew It* (New York: Bantam Books, Inc., 1981), 346. Also see page 390 for guidance on proper care of troops.
10. Edgar F. Puryear, Jr., *Stars in Flight: A Study in Air Force Character and Leadership* (Novato, Calif.: Presidio Press, 1981), 232–33.
11. Ibid., 17–19; and H. H. Arnold, *Global Mission* (New York: Harper & Row, 1949), 120–22.
12. John L. Frisbee, ed., *Makers of the United States Air Force* (Washington, D.C.: Office of Air Force History, 1987), 229–55. For a firsthand account of the challenges General Davis confronted, see Benjamin O. Davis, Jr., *Benjamin O. Davis, Jr., American: An Autobiography* (Washington, D.C.: Smithsonian Institute Press, 1991).
13. Favored expression of Gen James P. McCarthy, USAF, Retired, when discussing the importance of people to the Air Force mission. Used at USAFE colonel's orientation, 2 December 1991, Ramstein Air Base, Germany.
14. Gen James P. McCarthy, "SAC: The Command for the Future," *Combat Crew* 38, no. 3 (March 1988): 3–4.
15. For details, see George C. Kenney, *General Kenney Reports* (1949; reprint, Washington, D.C.: Office of Air Force History, 1987); and Frisbee, 127–50.
16. Gen James P. McCarthy, "The Conventional Challenge," *Combat Crew* 37, no. 9 (September 1987): 2; and Jeffrey P. Rhodes, "SAC Extends Its Wings," *Air Force Magazine* 71, no. 8 (August 1988): 44–50.
17. Lt Gen E. G. Shuler, Jr., "Mighty Warrior 88: Training as We Intend to Fight," *Combat Crew* 38, no. 10 (October 1988): 3, 6–7; and "Mighty Warrior 89," *Combat Crew* 39, no. 11 (November 1989): 3, 9.
18. McPeak, "Does the Air Force Have a Mission?" 5.
19. Gen Douglas MacArthur, "Duty, Honor, Country," *American Legion Magazine*, November 1986, 50.

20. Thomas M. Coffey, *Iron Eagle: The Turbulent Life of General Curtis LeMay* (New York: Crown Publishers, Inc., 1986), 56–59.
21. James P. Coyne, *Airpower in the Gulf* (Arlington, Va.: Air Force Association Aerospace Education Foundation, 1992), 4.
22. Coffey, 294–98.
23. Gen James H. Doolittle and Carroll V. Glines, *I Could Never Be So Lucky Again: The Memoirs of General James H. "Jimmy" Doolittle* (New York: Bantam Books, 1992), 306.
24. Maj Gen Brett M. Dula is currently commander, Second Air Force, Beale AFB, California.
25. Gen James P. McCarthy, "Commanding Joint and Coalition Operations," *Naval War College Review* 46, no. 1 (Winter 1993): 11.
26. Ibid., 12.
27. Puryear, 89–91.
28. Quoted in Lt Col Charles M. Westenhoff, *Military Air Power: The CADRE Digest of Air Power Opinions and Thoughts* (Maxwell AFB, Ala.: Air University Press, October 1990), 149.

MILITARY SUPPORT FOR "PEACE EFFORTS"

COL EDWARD MANN, USAF

TODAY'S WORLD is very different from what it was just a few short years ago. While some of this new world seems headed for greater regional and international unity (as in "Europe 1992"?), much of the rest of it seems to be disintegrating into racial, religious, ethnic, and tribal warfare with all the normally associated disregard for humanitarian concerns. The collapse of the Soviet Union and the condominium of superpowers that restrained client states and the potential unrest within them has

Under Reagan and Gorbachev, the role of each superpower's military forces was well defined. However, the collapse of the Soviet Union has blurred those roles, causing the international security environment to become unsettled.

produced an unsettled international security environment not unlike the one that existed just prior to World War I. Today, however, the United States is more inclined to be involved in diplomatic, socioeconomic, and—especially—military efforts to ameliorate conflict and suffering in the rest of the world—much more so than it was during the early years of this century.

Humanitarian operations and efforts to attain and maintain peace (wherever it might be threatened) are rapidly becoming a major focus of US, as well as United Nations, security policy. The US military establishment does not appear well prepared for this shift in emphasis. In fact, it has not even agreed upon definitions for these types of operations. Peacekeeping,

Proposed Joint Definitions

(Even if these definitions are finalized, they will apply only to the Department of Defense. We will eventually have to agree on something with the State Department and other agencies.)

[*Primarily* military operations:]

"Peacekeeping: Operations using *military forces* and/or civilian personnel *at the request of* the parties to a dispute to help supervise a cease-fire agreement and/or separate the parties.

"Peace-enforcement: *Military* intervention to *forcefully restore peace* between belligerents, who may be engaged in combat.

[*Primarily* diplomatic efforts:]

"Preventive diplomacy: *Diplomatic* actions, taken *in advance* of a predictable crisis, aimed at *resolving* disputes before violence breaks out. [We take exception to the word *predictable*. *Potential* would seem to be more appropriate.]

"Peacemaking: *Diplomatic* process of *arranging an end* to disputes and solving their underlying causes.

[Diplomatic *and* military:]

"Peace-building: *Post-conflict diplomatic and military action* to identify and support structures which will tend to strengthen and solidify peace in order to avoid a *relapse* into conflict [emphases added]."

Source: Joint Pub 3-07.3, "JTTP [Joint Tactics, Techniques and Procedures] for Peacekeeping Operations" (draft), 7 December 1992.

"Humanitarian and Civic Assistance: Assistance provided in conjunction with military operations, specifically authorized by Title 10, *US Code*, Section 401. Such assistance is limited to (1) medical, dental, and veterinary care provided in rural areas of a country; (2) construction of rudimentary surface transportation systems; (3) well drilling and construction of basic sanitation facilities; and (4) rudimentary construction and repair of *public* facilities."

Source: Joint Pub 3-07.1, "JTTP for Foreign Internal Defense" (final draft), 17 September 1991.

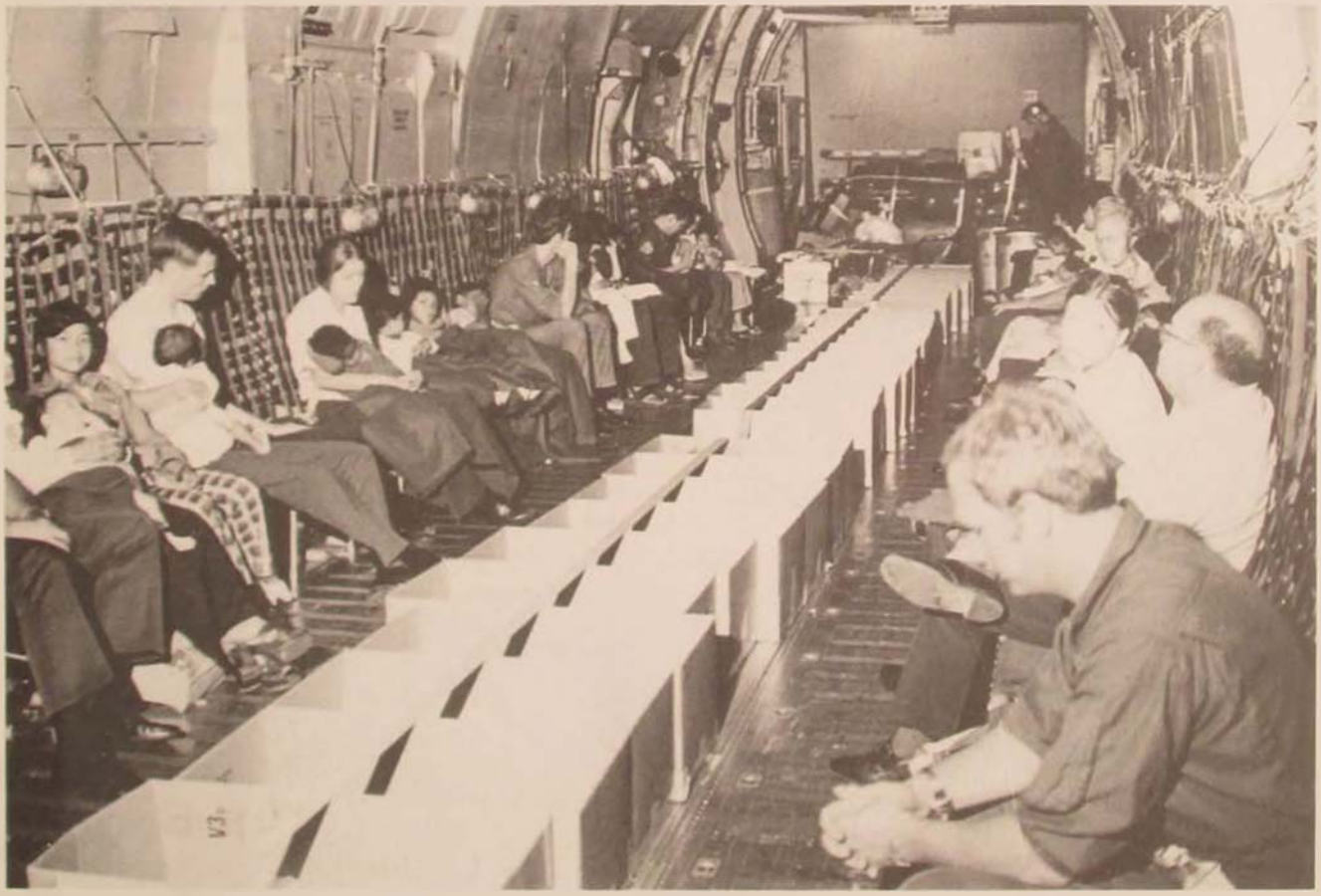
peace enforcing, peace building, and similar missions are likely to be predominant concerns of the US and the community of nations in the near-to-intermediate future. It is imperative that the military services begin preparing concepts, strategies, and doctrines to deal with these kinds of operations.

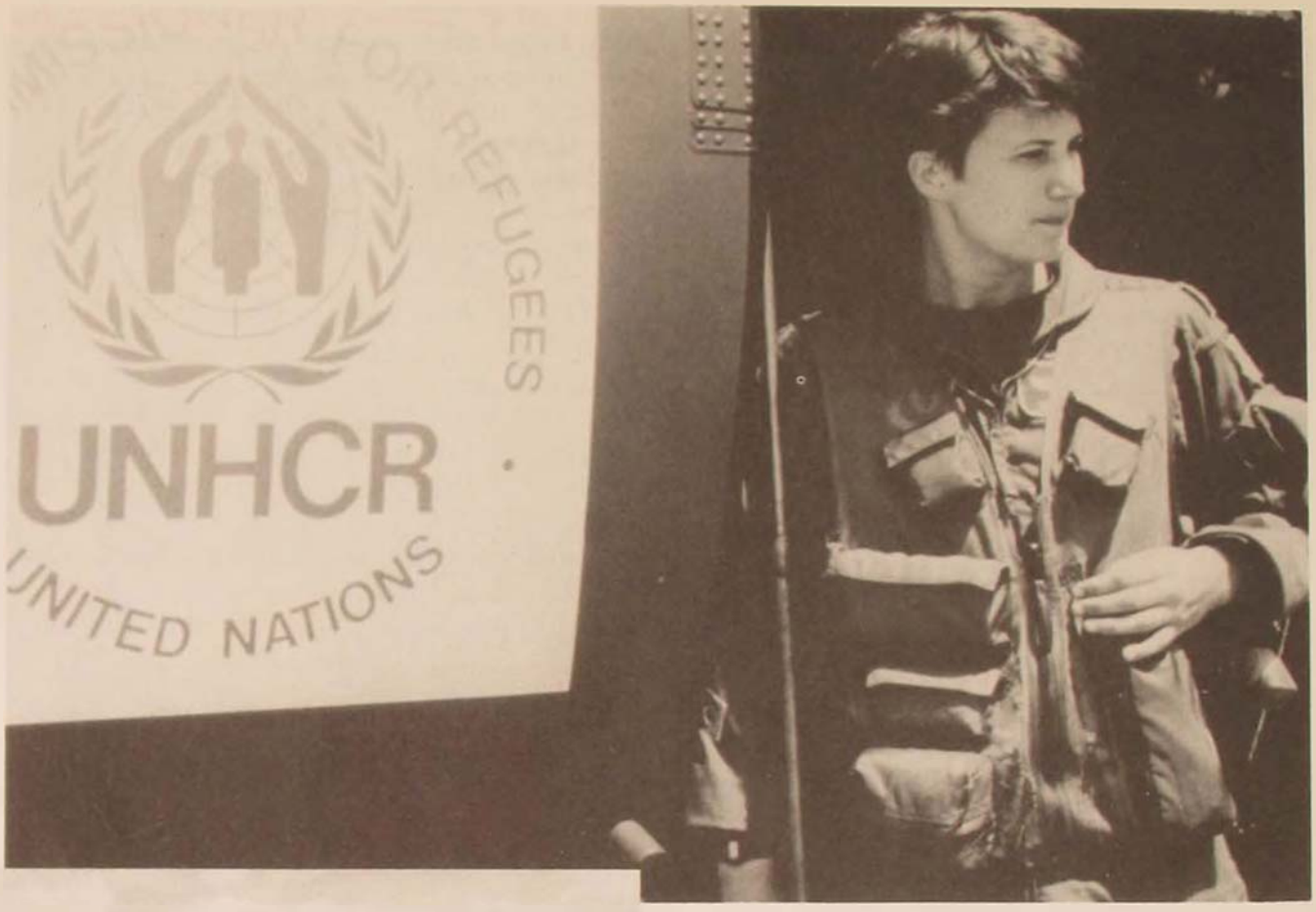
The purpose of this article is to address some of the key issues raised by the challenge of international "peace efforts" with the hope of at least beginning to ask some of the right questions, rather than having to learn everything from devastating experiences like the bombing of the Marine barracks in Lebanon. Since a common understanding of terms is essential for communications, we should examine some recently proposed definitions for activities relevant to peace efforts (see sidebar on page 52).

Most people are, of course, familiar with peacekeeping. The international community has considerable experience with peacekeeping operations and conducts them according to widely accepted rules of engagement. However, the military's understanding of peace enforcement or some of the other operations it may be asked to conduct or support is not nearly so well developed.

Using the proposed definitions as a starting point, one may offer some general thoughts on issues that will likely prove critical in the military's approach to these activities. These thoughts are not necessarily new, nor do they apply solely to peace efforts. Mostly, they are problems the military struggles with in all types of operations, but they seem to have particular significance for the kinds of operations

The US military has often contributed to humanitarian efforts. For example, during Operation Babylift in 1975, volunteers helped transport Vietnamese orphans in C-141 airlifters.





How do you define real peace? *Some efforts appear to be nothing more than political or diplomatic gestures, as suggested by the prominent display of the emblem of the United Nations High Commissioner for Refugees (UNHCR) on this C-130 during Operation Provide Promise in Bosnia (top). But other efforts, such as the delivery of basic foodstuffs to Somalia (left) and the prevention of hostilities between competing armies (below) in that country, can mean the difference between life and death.*

contemplated here. Further, they are matters that are most likely to be overlooked in the rush to embark upon interventions evoked by humanitarian concerns, despite the fact that such omissions would bear the gravest potential consequences. Because of the complexity of peace efforts, this article is not intended to be definitive. Rather, it is an "initial engagement," subject to considerable revision.

The relationship of political/military *objectives* to military operations is of paramount importance if one is to avoid unpleasant surprises that can lead to psychological exhaustion and defeat, as occurred in the Vietnam War. Certainly, this concern applies to all types of military operations, but—since peace efforts of all types are likely to be long-running affairs, lacking clear "turning-points"— it is critical to keep this relationship clearly in focus. Sun Tzu's admonition to know one's adversary and oneself (to whom we add actual and potential allies) is central to this relationship and applies equally to capabilities, will, and culture.

Types of Peace Efforts

As mentioned previously, past military operations in support of peace efforts have been primarily of the peacekeeping variety, although in 1982–83 the Marines may have made a serious mistake in Lebanon by conducting peace enforcement as if it were peacekeeping. Peacekeepers, by definition, have a *primary* responsibility to avoid any clash of arms, since they are inserted between opposing factions who want to avoid conflict but require assistance to do so. Although peacekeepers may have to defend themselves, they don't really expect to and even carry unloaded arms to avoid accidental altercations.

Eschewing loaded weapons would be a mistake for peace enforcers since, by definition, they will face at least one hostile adversary—someone who doesn't want peace and may adamantly reject it. In this case, the rules of engagement must be *very* different—an important point, because peace enforcement may become a much more common endeavor in the future.

A careful review of the proposed definitions (sidebar) suggests two major thoughts. First, this set of definitions may not be sufficiently comprehensive or complete. Considering that this breakout of peace efforts is new (at least to the military), one can expect to discover additional categories and to spend some time determining how these efforts relate to one another. Second, assuming an extensive interrelationship among all these types of peace efforts, the military must ask the question, Military intervention in conjunction with *what*? Otherwise, its commitments are likely to become infinitely open-ended, especially in the case of peace-enforcing operations.

Protecting people who want peace from people who don't (and sometimes separating people who don't from others who don't) does little to solve long-term, fundamental problems. Therefore, peacemaking and peace building will ultimately be necessary before we can extricate our military forces involved in peacekeeping and peace enforcing. Failure in the diplomatic mission will sooner or later force the withdrawal of the military mission, which will have achieved little but wasted much—specifically, the national treasure and the blood of our young men and women.

Importance of Objectives and End States

Avoiding such consequences calls for the clear articulation of national objectives as well as supporting diplomatic, socioeconomic, and military objectives. Sometimes it may be possible (though never advisable) to muddle through a full-scale war with objectives such as "making

the world safe for democracy," but to do so in the murky waters of humanitarian interventions will almost certainly be disastrous. We must remember Clausewitz's counsel that we always exercise military force for *political* objectives.

Military objectives, then, must proceed from national strategy derived from national (political) objectives. National strategy should involve diplomatic, socioeconomic, and military efforts in an appropriate mix, depending on the situation. Before undertaking peace efforts, the military must understand the diplomatic and socioeconomic objectives and strategies and coordinate with them when it formulates its own strategy. Otherwise, military efforts will be isolated, ineffective, or—even worse—counterproductive to efforts designed to solve the fundamental problems.

Whether US forces are involved in warfare or peace efforts, the press is there to cover everything—mistakes and all. Here, eager Somali children greet our humanitarian efforts under the watchful eye of the media.

Unhappily for military planners, national objectives and strategies may not always be clearly articulated. They may have to develop their own objectives and strategies and seek formal recognition for them later, as was the case during Operations Desert Shield/Storm. That is, the air campaign planners for Desert Storm initially wrote their own objectives, using extracts from speeches by President Bush, and refined them as they proceeded. They included these objectives in their briefing on the concept of operations to Gen Norman Schwarzkopf and Gen Colin Powell, among others, and—encountering no opposition—assumed the objectives were acceptable. Had the planners waited for someone to bring objectives to them, they might never have started planning—or they might have planned for the wrong war.

Defining and/or understanding the national objectives and strategy is step one in determining what the right "tools" are and how one should use them. A lack of clearly understood national objectives can lead to one's *assuming* an invalid military objective (usually in terms of destroying something—e.g., "Service the [expletive deleted] targets, and be done with it"). We must be wary of military objectives such as "reduce the flow of [something]," "destroy the army," "demonstrate resolve," "protect someone or something," and "restore the balance." They *may* relate to a real national objective, but they represent potential quagmires and should normally be avoided. Military objectives outline efforts that are "in support of" or "in conjunction with" something likely to achieve the national objectives.

When defining objectives and strategies at all levels, one should have in mind a

reference point or "desired end state"* that denotes success. Otherwise, failure is a non sequitur, and one can use the term *success* for almost any favorable change in status. This situation also implies that a little more effort will result in the achievement of objectives. However, a desired end state that is clearly understood allows one to measure progress in real terms. For instance, contrast "restoring and maintaining a balance in Vietnam" with "immediate and unconditional withdrawal of Iraqi forces from Kuwait." Each military employment should be measured against its expected contribution to the desired end state.

For example, even if it were possible to destroy every military weapon in a state such as Bosnia, there is nothing to stop people who have been waiting 800 years to kill each other from sharpening table knives and going after each other as soon as the peacekeeping force has left. If the desired end state is to make the killing more difficult, this approach may be suitable. But if the goal is to establish real peace in the area, this outcome will leave much to be desired. The problem is how to define "real peace." Certainly, the desired end state in such a case will include some goals that are political/diplomatic (e.g., reasonable government control), socioeconomic (e.g., at least a survival standard of living), and military (e.g., control of competing armies). If any of these goals are omitted—or even ill defined—long-term success is highly improbable.

Given a well-defined set of objectives and a desired end state, the next consideration is to know as much as possible about our adversary, our allies, and ourselves. Again, this consideration is true for any military operation but seems particularly critical when a country contemplates intervening in ethnic, racial, or religious disputes. There are many dimensions to this issue, some of which we understand well and some of which totally mystify us. For instance, the US military isn't too bad at monitoring military capability through surveillance and reconnaissance but isn't too good at discerning an adversary's intentions. Traditionally, it is miserable at understanding the history and culture of nations and peoples in conflict.

Know Our Adversaries

Our military spends considerable time designing and buying intelligence systems to identify and monitor foreign military capabilities, and it does these jobs rather well in most cases. The military also assumes that any given contingency will be preceded by a warning time, which it can use for analysis and action. That is, we expect to be able to anticipate an enemy's attack because of our ability to detect and monitor his preparations for the attack. Complicating this expectation, however, is the fact that military preparations are made for all kinds of reasons, including exercises and diplomatic signaling.

When Saddam Hussein began his buildup for the attack on Kuwait in late July 1990, nearly everyone read his action as a signal to Kuwait and other Middle East oil producers to pay more attention to his demands. Initially, that may even have been his intention. *When* Saddam decided to invade is still not clear. During the last few days of July, some mavericks began warning of an attack, but most intelligence agencies were not confident enough to affirm this assessment. As long as the indicators were considered ambiguous, any allied counterpreparation could have been escalatory. This quandary is far from being unusual; indeed, it is closer to being the norm.

*As used here, *end state* does not imply finality. As Clausewitz pointed out, the result of war is never final because the losers always hope to reverse the result at a later time. In the context of this article, the term refers to some reference point by which one can gauge the success of current operations. Thus, end state is a defining status, not the "end of history."

Simultaneous participation in a number of peace efforts could put a strain on our logistics structure. If a major contingency emerges while several peace efforts—such as the ones in Bosnia (top) and Somalia (above)—are in progress, we might not be able to respond effectively.

Most situations that our military is likely to face will entail indicators that are even more ambiguous than the ones prior to the Gulf War. For example, we will often be dealing with substate actors and/or peoples who recognize each other quite readily but who seem almost indistinguishable to us (e.g., Bosnia, Serbia, and Croatia; the Middle Eastern states; and Somalia). Their killing systems will be simple and small and won't require large logistic efforts. If we don't learn their history and understand their culture, we will make horrible mistakes and fail to achieve our objectives, no matter how well conceived and clear they are.

In situations involving multiple factions in conflict, each with its own objectives and strategies, we must understand each set of adversary objectives and strategies if we are to prevail. Because very few, if any, foes will be able to stand toe-to-toe with us on a battlefield, they are likely to

choose strategies for indirect engagements—terrorism, guerrilla warfare, and other "wear-them-down" approaches. Unless we are prepared to annihilate entire peoples, we will have to defeat such strategies through indirect means. Similarly, if our adversaries are willing to die for their cause, our adoption of a head-on strategy will produce a number of martyrs. Americans aren't likely to accept such situations for long and are even less likely to recognize our actions as peacekeeping or peace-enforcing missions. Thus, we must know not only the enemy's strategies but also his alternative strategies, because a thinking opponent is likely to make a change if his current strategy is failing.

Further, we must be able to search out enemy centers of gravity in order to attack them. Destroying them may not be necessary; sometimes merely capturing or neutralizing them will be sufficient. At any rate, we should identify enemy strengths and weaknesses and attack centers of gravity where the enemy is most vulnerable (not just his weakest point, which may or may not be important). Once again, this procedure applies in all cases of military action, but centers of gravity associated with peace efforts (i.e., those of a religious or ethnic group in a third world state) may be significantly different from the ones we are accustomed to. Therefore, finding real centers of gravity in such a case will require an understanding of cultures, customs, and ways of thinking that probably will be totally different from our own. We must not assume that our adversary will react to situations in the same way that we would. That is likely to be a terrible mistake.

Perhaps most important, we must know the strength of our adversary's commitment to his objectives. Since some people are willing to die for things that may seem unimportant to us, we tend to underestimate their commitment—a critical error. At the least, we should assure that the balance between commitment and capability remains tipped in our favor. That is, when the adversary's commitment is greater than our own, we must be sure that our capability makes up the difference—or we should stay home. We will never be able to measure these factors in finite terms, but we *must* try to understand the relative balance. If we don't, we will pay enormous costs and fail to achieve our objectives.

Know Our Allies

We should know the same kinds of things about our allies and not assume that their objectives and strategies are the same as ours. Incompatibility between their objectives and strategies and ours could produce real trouble. Mutual willingness to beat up on the same adversary may be enough—at least temporarily—but we should try to understand the potential consequences. For example, the Soviet Union was very helpful in defeating Hitler's Germany, but—aside from survival—the Soviets' objectives were quite different from ours. Failure to accept and understand the potential consequences of that fact contributed to 45 years of cold war and Soviet domination of Central and Eastern Europe.

Sometimes allies, who always have their own centers of gravity to protect, represent a center of gravity for us. Had Saddam been able to cause dissension among the Arab members of the coalition, for instance, the United States would probably have been unable to engage—let alone defeat—Iraq's army. Thus, his strategy was to attack centers of gravity within allied camps (both coalition members such as Saudi Arabia and our long-standing Middle Eastern ally Israel). Scud attacks on Israeli and Saudi cities caused less physical damage than a Los Angeles freeway accident, but the ensuing Scud hunt occupied most of the available F-15E sorties for weeks. The strange politics of the Middle East made both protecting

Israel and persuading it not to retaliate against Iraq extremely sensitive issues.

We must try to be aware of the potential for such problems and help allies protect their vital centers of gravity. If peace-enforcement missions drag on for years, as they well might, this task will be challenging, especially considering that in many cases our allies will have special reasons to be sensitive. Supporting Iraqi Kurds from Turkey, for instance, runs the risk of inciting further conflict between Turkey's government and its own Kurdish minority. The intermingling of cultures, religions, and ethnicities throughout Europe, Asia, Africa, and other areas of concern makes this complication nearly ubiquitous.

The US also needs to know, monitor, and reinforce its allies' commitment to the mission's objectives, because the level of commitment affects one's political—hence, military—latitude in many ways. In World War II, commitment of all Allies to the unconditional surrender of the Axis powers was crucial. During Desert Storm, the fact that the objectives of our Arab allies were somewhat narrower than our own necessitated operational plans designed to keep Arab forces out of Iraq. Even with all of its careful planning, the US had to be constantly concerned about allies who might have wanted to "cut a deal" with Saddam, since deal making is an important part of the Arab way of life.

Know Ourselves

Finally, we must know ourselves. What strengths and weaknesses do we bring to the situation, and how do they relate to those of our adversaries and allies? The fact that the US is the strongest nation in the world does not automatically assure an easy victory, even in relatively minor spats halfway across the world. After we have established our objectives and strategies, we must monitor them carefully throughout. Sometimes there are valid reasons for changing objectives and strategies (especially if they're not working), but such changes should be deliberate and considered—not the result of "policy drift." In any case, if the political objectives change, so must military activity. Results of actions (strikes, engagements, battles, etc.) must be measured not only against planned achievements (levels of destruction, etc.), but against their contribution to political and military objectives. This process must be continuous and iterative throughout the operation.

In those conflicts in which the US has the luxury of being in complete control, we are typically sensitive to casualties—on both sides—even though there is probably no logical place in war for such a sense of fair play. But in limited operations like peace efforts, we must be attentive to this issue. For example, Desert Storm probably ended prematurely because of the televised coverage of the "highway of death." However, we shouldn't expect the adversary to share our concern about casualties, a fact that has sobering implications for any of our people who are captured. Since adversaries in peace-enforcing operations may not be states—or may not consider themselves at war—the Geneva conventions might not apply to the treatment of prisoners of war.

We must examine all potential end states (both intended and unintended) and strive to know the cost of victory as well as the cost of defeat, because both are important. Sometimes the price is just too high—no matter the outcome. This knowledge, of course, relates to our objectives and our commitment to those objectives. Military leaders must be impartial and truthful in communicating the potential costs to the national command authorities. On the one hand, if we promise too much, the cost is measured in national treasure, diplomatic leverage, and—worst of all—human life. On the other hand, if we are overly cautious, our leaders are cheated out of a key element of national power, and US interests are left wanting.

Regardless of how well we prepare ourselves for peace operations, we are likely to wind up in bogs that will tie up our troops and resources (however limited) for extended periods of time. Young, frontline troops are likely to find these experiences frustrating, especially when friend and foe are nearly indistinguishable. We will make mistakes, and the press will be there to ensure that the public hears about them on the six o'clock news (and sees them on film at 11 o'clock). We will lose and take life in seemingly senseless altercations, and that will also be recorded for quick dissemination—as well as for posterity. Each of the endless candidates for intervention by the "world's police force" will carry its own "opportunity cost."

Although the commitment of our resources to individual interventions will usually be small (compared to our overall force structure), the sum of those commitments could eventually occupy a significant percentage of the force. Further, this situation will prove much more demanding of support structures (e.g., command, control, and communications [C^3]; logistics; intelligence; and automated data processing) than would a force of the same size in a single location, even allowing for the fact that some support demands will be reduced by lower tempos of operations.

Intelligence operations, already slow in providing planners and war fighters with what they need to know, will be especially strained in peace efforts. Such missions will require reams of very precise information, much of which can be collected only through human intelligence because photo reconnaissance exposes only what is visible and readily distinguishable. Thus, enemy weapons that are easily concealable or that blend into the environs may go undetected and prove lethal.

Similarly, C^3 and logistics structures will feel much the same pressure. If a major contingency emerges while several peace efforts are in progress, we could be in real trouble—especially if anticipated force structure cuts are implemented. If our support proves inadequate, American forces could be stranded all over the world.

Other efforts, such as psychological operations (PSYOPS), will also gain significance. Despite the number of arms in Somalia, for example, there was relatively little gunplay there because we had the opposition psyched. Future scenarios may require PSYOPS to keep adversaries respectful of our might as well as to gain the confidence of the people we are protecting. Considering that the ultimate solution to centuries-long hatred is probably education, PSYOPS are a necessary adjunct to military—not to mention socioeconomic or diplomatic—operations. If we continue on our present course, our new world order will undoubtedly make such considerations increasingly important.

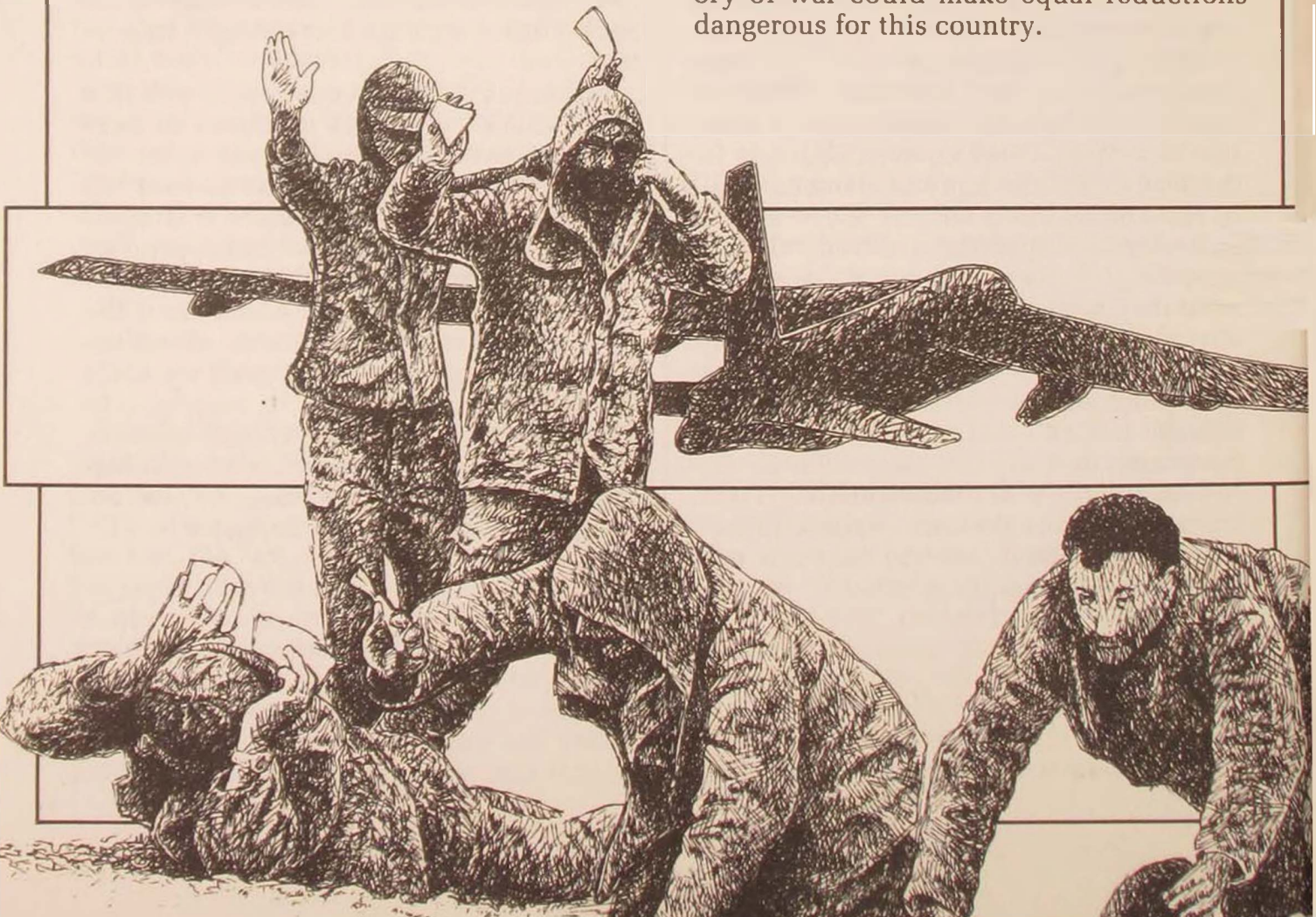
So simple a thing as one loaded gun in a guard shack could save hundreds of lives (it might have in Beirut, for example). In turn, deciding whether or not to load the gun may depend on as simple a thing as calling the operation peacekeeping or peace enforcement. In other cases, it will depend on how well we understand the complex nuances of diplomatic objectives and maneuverings and how well we adapt our military operations in response to those efforts. Our wake-up call came in 1983 with the bombing of the Marine barracks in Lebanon. Unfortunately, we are just now stumbling to the coffeepot. □

THE UNITED STATES NEEDS TO EXPLOIT ITS AIR POWER ADVANTAGE

LT COL PRICE T. BINGHAM, USAF, RETIRED

THE CLINTON administration has begun making decisions of profound importance to the national security of the United States. In response to economic realities, it has decided to make significant cuts in the defense budget and now must decide where to cut, recognizing that the collapse of the Soviet Union has not eliminated the need for a strong conventional military capability.

Before proceeding, the administration should be extremely cautious about accepting advice from anyone who proposes roughly equal reductions in our air, land, and naval capabilities. Such a recommendation would be convincing evidence of a failure to recognize that developments in technology have enabled air power (the ability to project military force by or from an aircraft) to revolutionize the conduct of conventional warfare. More importantly, the fact that the recommendation would be based on an obsolete theory of war could make equal reductions dangerous for this country.



Fortunately, the US can dramatically reduce its defense spending and still maintain a conventional military capability of great power. The solution is to exploit the immense advantage in air power that we realized from the revolution in warfare. To identify the actions that the Clinton administration should take to exploit this advantage most effectively, we must first examine how developments in technology have revolutionized the conduct of conventional warfare.

Air Power and Technology through World War II

Although technological developments have always changed the conduct of warfare, only with the invention of the aircraft did the effects of these developments become more revolutionary than evolutionary. Even with advances such as gunpowder, armies and navies were still the primary instruments for fighting wars—armies being the key to defeating armies, and navies the key to defeating navies.

Despite the predictions of several early air power theorists, even the aircraft did not seem able to revolutionize the conduct of warfare. These theorists based their predictions on the belief that air attacks against an enemy's population and industry would be sufficient to win wars, obviating the need to fight and defeat his army or navy.[1] Actual combat, however, consistently demonstrated that technical limitations prevented air attacks from making armies and navies obsolete. *The most significant limitations were the ones that affected the ability of airmen to find and hit a target with a suitable munition.*

These limitations also explain why air power revolutionized the conduct of warfare at sea but not on land during World War II. Indeed, many naval warfare experts were surprised by the fact that aircraft rather than battleships were the primary means we used for defeating Japan's navy.[2] However—despite the fact that aircraft played an important supporting role—we continued to depend on powerful land forces to defeat the enemy's land forces. Comparing the difficulty of finding and destroying targets on land to that of finding and destroying targets at sea accounts for this difference.

Finding suitable targets on land and at sea was dependent upon the characteristics of the respective operating mediums. The sea's (often) level, unobstructed surface made visual searches for targets relatively easy and enhanced the effectiveness of the primitive radar available in World War II. Complex terrain, however, prevented airmen from using that same radar to find enemy land forces (and even enemy cities—not to mention factories). Thus, pilots depended solely on their unaided vision to find enemy troops, tanks, trucks, and artillery. This restriction not only confined searches to daylight hours with good visibility, but made thorough searches time-consuming and dependent on many sorties.

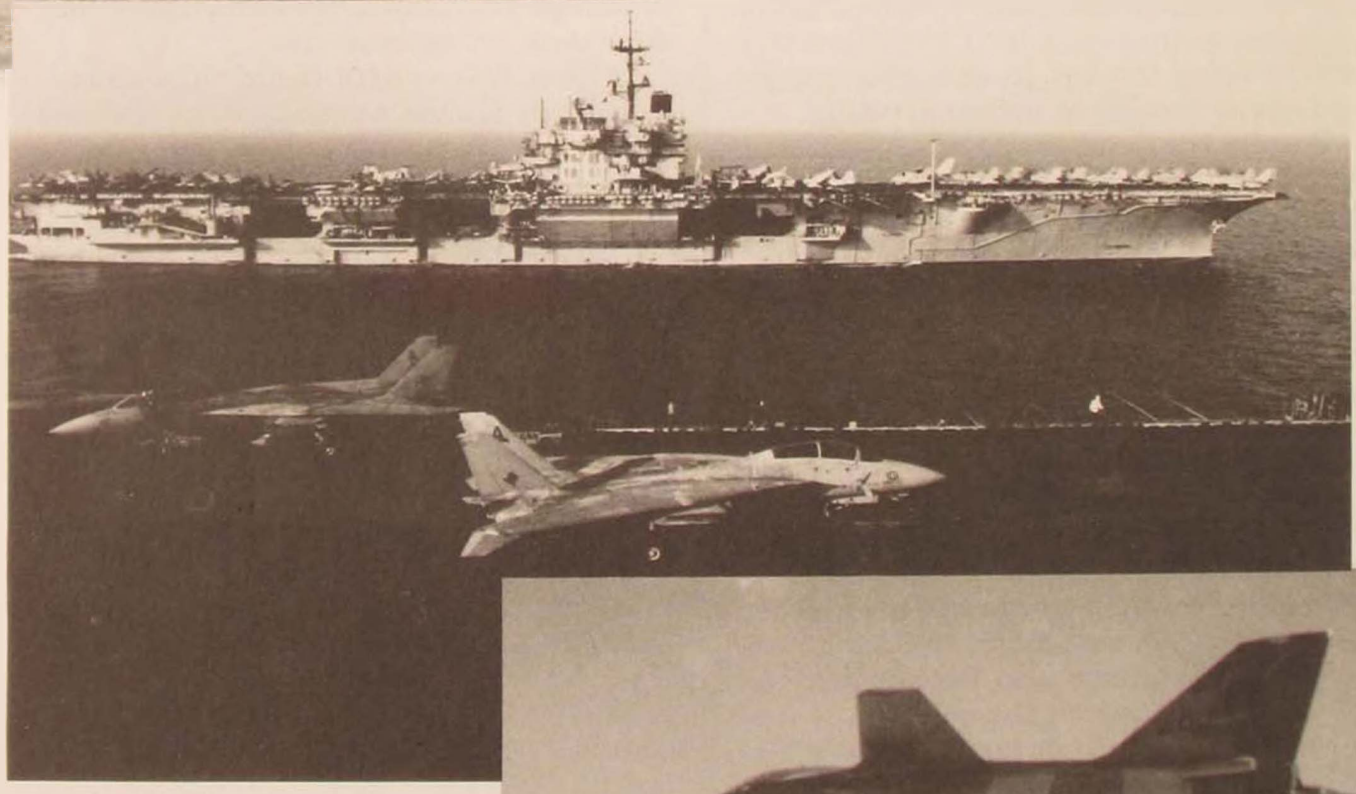
Further, the enemy could take advantage of our airmen's dependence on visual searches to disperse, conceal, and camouflage his land forces much more effectively than he could hide his sea forces. To compensate, our airmen had to search at lower altitudes and airspeeds, which made them more vulnerable to enemy air defenses. When Allied pilots did find land targets such as tanks, they often had difficulty determining whether they were already disabled or decoys. If enemy forces moved at night or during poor visibility, airmen could find no targets at all.

Even when airmen found enemy forces, they still had to hit them. This problem proved less daunting at sea because ships were large and relatively few in number. Although hitting a ship with a bomb or torpedo posed a major challenge—especially if it was maneuvering at high speed—usually only a few hits would put a large ship out of action. For that reason, we were willing to risk the loss of several aircraft in exchange for the destruction of

Budget cuts for our air forces should not be as deep as those for land and sea forces because developments in technology have enabled air power to revolutionize conventional warfare.

a major enemy warship. Thus, air power was able to revolutionize the conduct of war at sea during World War II—as we discovered at Pearl Harbor, Coral Sea, and Midway.

In contrast, if airmen were to have a similar effect on an enemy army, they had to hit many more targets, each of which was much smaller than any oceangoing ship. One can appreciate the magnitude of the challenge by considering the difficulty of hitting a tank with a rocket. During training, when accuracy was not degraded by enemy fighters or antiaircraft fire, the average pilot of the Allies' best tank-killing aircraft—the Royal Air Force Typhoon—hit a tank-sized target with a salvo of eight rockets only 4 percent of the time; accuracy with bombs was even worse. Moreover, to attain even this degree of accuracy, a pilot had to fire from no more than 1,000 to 2,000 yards slant



range, which put him well within reach of German antiaircraft guns.[3] These were the kinds of problems that prevented air power from revolutionizing land warfare as it did sea warfare during World War II.

Although the conditions described above often kept aircraft from destroying much of an enemy army, air power still made an extremely important contribution to the conduct of land warfare. For instance, soldiers—especially inexperienced ones—had an irrational fear of air attacks and were known to abandon their tanks when they were attacked. Further, although aircraft machine guns and cannon were not very effective against a tank's heavy armor, they easily destroyed softer targets such as fuel trucks, infantry, and artillery.[4]

Since armored forces depended heavily on these three elements, air power could thus prevent an enemy army from moving rapidly, a handicap that severely constrained its chances for success in conventional warfare. Hence, the support of air power was often the key to the victories achieved by Allied armies in World War II. Indeed, Field Marshal Erwin Rommel observed that

> a balance of power in the air would have made the *old rules of warfare* [emphasis added] valid again. . . . Anyone who has to fight, even with the most modern weapons, against an enemy in complete command of the air, fights like a savage against modern European troops, under the same handicaps and with the same chances of success.[5]

Air Power and Technology in Operation Desert Storm

Today, Rommel's observation is even more appropriate than it was in World War II because technological developments have dramatically reduced the difficulty of finding and hitting targets such as trucks, tanks, and artillery. The performance of air power in Operation Desert Storm bears witness to the revolutionary impact of these technical developments. For example, the prototype E-8A joint surveillance target attack radar system (JSTARS) aircraft for the first time in the entire history of warfare allowed commanders to see enemy forces over a wide area—even in darkness. This "real-time, god's-eye view" gave our commanders an immense advantage in situation awareness.

In turn, this advantage allowed them to direct devastatingly effective air attacks against the enemy's land forces.[6] The success of these attacks was also due to another technological innovation, the F-15E's low-altitude navigation and targeting infrared for night (LANTIRN) pods, which allowed acquisition of targets as small as tanks. Other developments made possible the delivery of weapons with such accuracy that a single sortie could destroy numerous targets.[7]

Interestingly, JSTARS provides another advantage that was *not* exploited in Desert Storm. Because JSTARS can detect the movement of land vehicles over a wide area, a commander would be able to keep friendly land forces outside the range of the enemy army's weapons. A commander could thereby maneuver land forces—much as a boxer uses footwork—to dance beyond the reach of the opponent's punches but still use air power to deliver a devastating series of blows. It thus becomes a simple matter to maneuver land forces to make the enemy concentrate his forces in the open where they would be more vulnerable to air attacks. This use of JSTARS, then, enhances the effectiveness of our air power, reduces the risk of casualties from enemy weapons, and lessens the chance of fratricide from surface-to-surface and air-to-surface weapons.

Such advantages demonstrate that in many circumstances air power should be the primary tool for destroying an enemy army. Land forces would still be necessary but normally in a supporting role. The need for formalizing this relationship

becomes apparent when we realize that it was more by accident than design that air power was able to demonstrate its ability to defeat an enemy army in Desert Storm.

Because heavy land forces were slow to arrive in the Middle East and because our political and military leaders feared that land combat would claim many casualties, air power began the attack on Iraq while coalition land forces remained on the defensive.[8] Yet, this defensive posture—in and of itself—provided valuable support to air power by "fixing" Iraqi land forces in exposed forward defensive positions, allowing coalition aircraft to inflict terrible punishment. For example, the precision guided munitions used by the coalition in tank-plinking missions were so effective that Iraqi soldiers feared to sleep in their tanks.[9] Air power also demoralized the Iraqis by denying them the supplies, intelligence, and communications they needed to conduct an effective defense—let alone attack—as soon became evident at the Battle of Al-Khafji.

Adding to the demoralization of Iraqi soldiers was their inability to fight back effectively against coalition air power. Employing stealth and other sophisticated technologies, our air forces quickly achieved air superiority by defeating the Iraqis' air force and suppressing their radar-guided, surface-to-air missile (SAM) defenses. Additionally, technologies gave us the crucial advantage of delivering weapons accurately from slant ranges and altitudes that rendered the enemy's short-range antiaircraft guns and shoulder-fired SAMs ineffective.

Despite air power's efficient destruction of Iraqi land forces, many US Army and Marine officers and civilian experts were still surprised when the coalition's land offensive met with virtually no coherent resistance. Unlike Iraqi soldiers, these people evidently were not aware that air power could now destroy the fighting ability of armies—not merely delay their movement. In fact, instead of fearing the coalition's land offensive, many Iraqi soldiers welcomed it as a chance to surrender and escape death from the air.[10]

An Obsolete Theory of Warfare

Our victory in the Gulf War, great though it was, could have been achieved with significantly fewer land forces and even fewer casualties if we had had the proper military leadership and doctrine. Unfortunately, the latter two elements failed to recognize that air power had revolutionized the conduct of conventional warfare on land. As a result, Operation Desert Storm saw the application of the now obsolete theory of warfare found in the Army's AirLand Battle doctrine, which points to land forces as the primary means for defeating the enemy army.[11] Applying this theory, leaders of Army and Marine units requested far more air power than was necessary to attack Iraqi units fixed in exposed forward positions so as to "prepare" the battlefield for the coalition's land offensive. Honoring these requests left too little air power to destroy Iraq's Republican Guard units, which were dispersed and dug in well to the rear.[12]

Instead of trying to defeat the Iraqi army according to the "old" way—by having our land forces close with the enemy's land forces—our military leaders could have exploited their superior situation awareness by designing coalition land maneuvers to make Iraqi units even more vulnerable to air attack. At Al-Khafji, for example, JSTARS's near-real-time, wide-area radar surveillance would have made it easy for our leaders to simulate a panicked retreat—a tactic often employed by history's Great Captains to draw an attacking force into a position from which escape is impossible. In this case, air power could have totally annihilated the Iraqis; as it was, air power allowed only

20 percent of the attacking Iraqi division to escape.[13]

Once the coalition's land offensive began, our military leaders could have continued to use their superior situation awareness to control friendly land maneuver in a way that enhanced the ability of our air power to defeat the Iraqi army. For example, the threat posed by the maneuver of our land forces caused Republican Guard units to concentrate in the open because they could not hope to stop our advance if they remained dispersed and protected. Although the Republican Guard was now an extremely lucrative target for air attack, we did not use our surveillance capability to keep coalition land forces at a safe distance and use air power to destroy the enemy.

Instead, our leaders fought according to the old theory and ordered coalition land forces to close with the Republican Guard units, thereby increasing the risk of friendly casualties. More importantly, because air power had already taken most of the fight out of the Iraqi forces, such close combat operations unnecessarily increased the danger of fratricide from air-to-surface and surface-to-surface weapons.[14] Further, as was the case in the initial phase of Desert Storm, it was more by accident than design that air power—not land forces—became the primary instrument for pursuing and destroying retreating Iraqi units on the road to Al-Basrah.

Despite the terrible destruction that Allied air power was capable of in World War II, early theorists were wrong in their belief that air power alone could win wars. Because of problems with the accuracy of bombing, we still needed ground forces to complete the enemy's defeat.

Exploiting Our Air Power Advantage

Desert Storm should have persuaded all but the most stubborn people that air power now has the ability in many situations to defeat an enemy's conventional army as well as his air force and navy. If the Clinton administration decides to exploit our air power advantage, we will be able to field a much smaller army but still play a key role in helping preserve world stability. In fact, in a crisis in which an aggressor threatens a vital region, air power's ability to respond quickly and effectively could be the key to deterring the outbreak of conventional conflict.

Even if the presence of our air power isn't enough to deter an aggressor, it can ensure his rapid defeat without the high number of friendly casualties normally associated with intense land combat.

Although Japanese aircraft demonstrated their deadly effectiveness against battleships in Pearl Harbor, experts in naval warfare were surprised that aircraft were our primary means of defeating the Japanese navy in World War II. Here, flames engulf the battleship Arizona *as it sinks in the harbor.*

Moreover, because of air power's immense advantage, in many cases simply combining it with allied land forces would be sufficient to achieve victory, even if those land forces were significantly inferior in quality and quantity to the enemy's.[15]

By exploiting its air power advantage, the US could play a balancing role in world affairs similar to the one that Great Britain once played by exploiting its navy. However, unlike the British navy, whose influence extended no further than areas near an ocean, the US Air Force can cover the entire globe and is thus a far more useful tool for maintaining world stability.

Decreasing our dependence on using land forces to defeat enemy land forces has still other important benefits, such as reducing the size of the defense budget and lowering the risk of losing large numbers of American and allied lives if combat proved necessary. Further, it eliminates the economic stress and cultural tension that arises from intermingling a large US land force with the host nation's population. By way of contrast, we could base our air forces outside the host nation's territory or in an area of that territory that is sparsely populated.

The best Allied aircraft of World War II could hit tank-sized targets only 4 percent of the time, but F-15Es equipped with LANTIRN enjoyed near-perfect accuracy during Desert Storm.

Finally, by devoting scarce defense dollars to air power, we will help maintain our position as the world's leader in aerospace technologies.[16] This status, in turn, will help ensure both a strong national defense and a more competitive economy.

Clearly, these are powerful reasons for exploiting the advantage that air power gives us. In view of the limited resources available for defense, the president must make truly dramatic reductions in the size of our active duty land forces if we are to have air forces in sufficient numbers and with superior technical attributes—not an easy task.

Conclusions

Sadly, President Clinton is likely to find that the US military itself is the greatest obstacle to realizing this goal. Too many of our current military leaders still fail to recognize that air power has revolutionized conventional land warfare. Evidence of this failure includes Gen Colin Powell's report on the roles, missions, and functions of the military services, as well as his proposed base force. This report by the chairman of the Joint Chiefs of Staff does *not* identify technological developments as a key factor in providing "the opportunity, the necessity, and authority to address the ways in which all four Services are structured, trained, and employed in combat."[17] It is no surprise, then, that his base force proposal recom-

mends reducing our air, land, and sea capabilities by roughly equal amounts.[18]

Further evidence is provided by the Department of Defense's (DOD) *Conduct of the Persian Gulf War: Final Report to Congress*, which never admits that air power's effectiveness allowed the United States to employ many more soldiers and marines than were actually needed. This omission is surprising in light of Gen Norman Schwarzkopf's admission that he gave President Bush "terrible advice," asking for "five times more force than I ended up getting, and [thinking] that it would probably take about seven or eight months longer than it actually took to do the job."[19]

As has frequently been the case in the past, senior officers who continue to cling to an obsolete theory of warfare can be expected to make a determined effort to preserve the status quo. To overcome such resistance, the president may have to conduct a reform of the American military even more far-reaching than that instituted in the Goldwater-Nichols DOD Reorganization Act of 1986. If this reformation proves necessary, he must begin—as Sen Sam Nunn (D-Ga.) has recommended—by addressing the roles, missions, and functions of America's military services and not allowing these three elements to create artificial barriers that handicap our use of air power.[20] Ideally, he should direct the Army and Air Force to share the role of defeating enemy land forces, emphasizing that—conditions permitting—air power is our nation's preferred instrument for that role.[21] □

Notes

1. Edward Warner, "Douhet, Mitchell, Seversky: Theories of Air Warfare," in *Makers of Modern Strategy: Military Thought from Machiavelli to Hitler*, ed. Edward Mead Earle (Princeton, N.J.: Princeton University Press, 1943), 485–503; and David MacIsaac, "Voices from the Central Blue: The Air Power Theorists," in *Makers of Modern Strategy: From Machiavelli to the Nuclear Age*, ed. Peter Paret (Princeton, N.J.: Princeton University Press, 1986), 624–47.

2. Clark G. Reynolds, *The Fast Carriers: The Forging of an Air Navy* (New York: McGraw-Hill Book Co., 1968), 20–21.

3. Ian Gooderson, "Allied Fighter-Bomber versus German Armour in North-West Europe, 1944–1945: Myths and Realities," *The Journal of Strategic Studies*, June 1991, 212–13.

4. Ibid., 215–17, 220, 223, 226.

5. Erwin Rommel, *The Rommel Papers*, ed. B. H. Liddell Hart, trans. Paul Findlay (New York: Harcourt, Brace and Co., 1953), 285.

6. Richard P. Hallion, *Storm over Iraq: Air Power and the Gulf War* (Washington, D.C.: Smithsonian Institution Press, 1992), 234–35. The prototype JSTARS aircraft used during Desert Storm did not have all of its sensor modes in place. Since then, all modes have been incorporated and fully tested, giving the current system even greater capability. David Hughes, "DAB Review to Determine Future of Joint-STARS," *Aviation Week & Space Technology*, 29 March 1993, 53.

7. Hallion, 234–35, 290–92. It is important to realize that these same improvements in target acquisition and delivery accuracy, combined with the development of low-observable or "stealth" technologies, have also made conventional strategic air attacks a far more feasible option. Now it is possible to destroy a large number of targets deep in enemy territory in a short period of time, while using far fewer aircraft and conventional munitions than were necessary in World War II. The ability to quickly hit a great many targets denies an enemy the opportunity to take measures, previously explained, that will reduce the effectiveness of the attacks. Moreover, the suddenness with which great damage can be inflicted can have a shock effect on the enemy. This shock is further magnified because the destruction of a relatively small number of communications and electrical power nodes has the potential to cause chaos in a modern society and government. At the same time, this damage can be achieved with only a minute amount of *collateral damage*, a term often derided as a synonym for *innocent civilians*—if there are any left. Although strategic attacks conducted in isolation may not be sufficient to achieve desired objectives, World War II and Operation Desert Storm demonstrated that they create a powerful synergy when combined with efforts to defeat enemy military forces directly.

8. For a discussion of the amount of time required for air and land forces to deploy, see James Blackwell, *Thunder in the Desert: The Strategy and Tactics of the Persian Gulf War* (New York: Bantam Books, 1991), 93–102. See also *Conduct of the Persian Gulf War: Final Report to Congress* (Washington, D.C.: Department of Defense, April 1992), 43–51, 103–4; and Lawrence Freedman and Efraim Karsh, *The Gulf Conflict, 1990–1991: Diplomacy and War in the New World Order* (Princeton, N.J.: Princeton University Press, 1993), 283–90.

9. *Conduct of the Persian Gulf War*, 186.

10. Hallion, 232.

11. According to Army doctrine, "The primary strike assets for deep attack are aerial, artillery, and missile weapons." The doctrine then states that "only in rare cases will commanders be able to destroy enemy forces in depth." Consequently, it asserts that close operations, which "at the operational level, comprise the efforts of large tactical formations—corps and divisions—to win current battles, [will]

bear the ultimate burden of victory or defeat. The measure of success of deep and rear operations is their eventual impact on close operations." Field Manual (FM) 100-5, *Operations*, 5 May 1986, 19, 38–39.

12. Only 5,600 of 35,000 coalition sorties attacking land forces in Kuwait targeted the Republican Guard. Hallion, 206–9.

13. Gen H. Norman Schwarzkopf with Peter Petre, *General H. Norman Schwarzkopf: The Autobiography: It Doesn't Take a Hero* (New York: Bantam Books, 1992), 383.

14. Ibid., 467–68. See also *Conduct of the Persian Gulf War*, appendix M.

15. Worth remembering is the fact that over two decades ago, US air power combined with South Vietnamese land forces to defeat a powerful North Vietnamese land offensive. Although it might be a surprise to critics of air power's current capabilities, the technologies we possessed even in 1972 were sufficient for our airmen to find and destroy well-concealed North Vietnamese 122-mm artillery pieces.

16. In 1993 US aerospace sales totaled about $100 billion, just over two-thirds of the world market. Anthony L. Velocci, Jr., "Fewer Players to See Late-Decade Upturn," *Aviation Week & Space Technology*, 15 March 1993, 38.

17. According to the report, the four key factors were "the end of the Cold War, budgetary constraints, the Goldwater-Nichols Act, and the press of new regional crises." Colin L. Powell, *Chairman of the Joint Chiefs of Staff Report on the Roles, Missions, and Functions of the Armed Forces of the United States* (Washington, D.C.: Department of Defense, February 1993), v–vi.

18. Larry Grossman, "Base Force," *Government Executive*, May 1992, 10.

19. Dean Fischer, "Sayings of Stormin' Norman," *Time*, 11 March 1991, 27.

20. One of the primary functions of the Department of the Army is to organize, train, and equip forces "to defeat enemy land forces." In contrast, the primary functions of the Air Force include organizing, equipping, and providing forces for "close air support and air logistics support to the Army." DOD Directive 5100.1, *Functions of the Department of Defense and Its Major Components*, 25 September 1987, 13, 19.

21. Recognition that such a change might be appropriate can be found in the chairman of the Joint Chiefs of Staff's doctrinal guidance for joint war fighting, which supplements the concepts provided in Joint Pub 1, *Joint Warfare of the US Armed Forces*, 11 November 1991. The chairman's guidance recognizes that

> Joint Force Commanders may choose to employ interdiction as a principal means to achieve the intended objective (with other components supporting the component leading the interdiction effort). . . . Indeed, Joint Force Commanders may employ a scheme of maneuver that enhances interdiction operations or vice versa. For instance, actual or threatened maneuver can force an enemy to respond by attempting rapid maneuver or resupply. These reactions can provide excellent and vulnerable targets for interdiction. Moreover, all commanders should consider how their capabilities and operations can complement interdiction in achieving campaign objectives. These operations may include actions such as deception operations, withdrawals, lateral repositioning, and flanking movements that are likely to cause the enemy to maneuver large surface forces in such a manner as to make them better targets for interdiction.

Colin L. Powell, *A Doctrinal Statement of Selected Joint Operational Concepts* (Washington, D.C.: Department of Defense, 23 November 1992), 15–16.

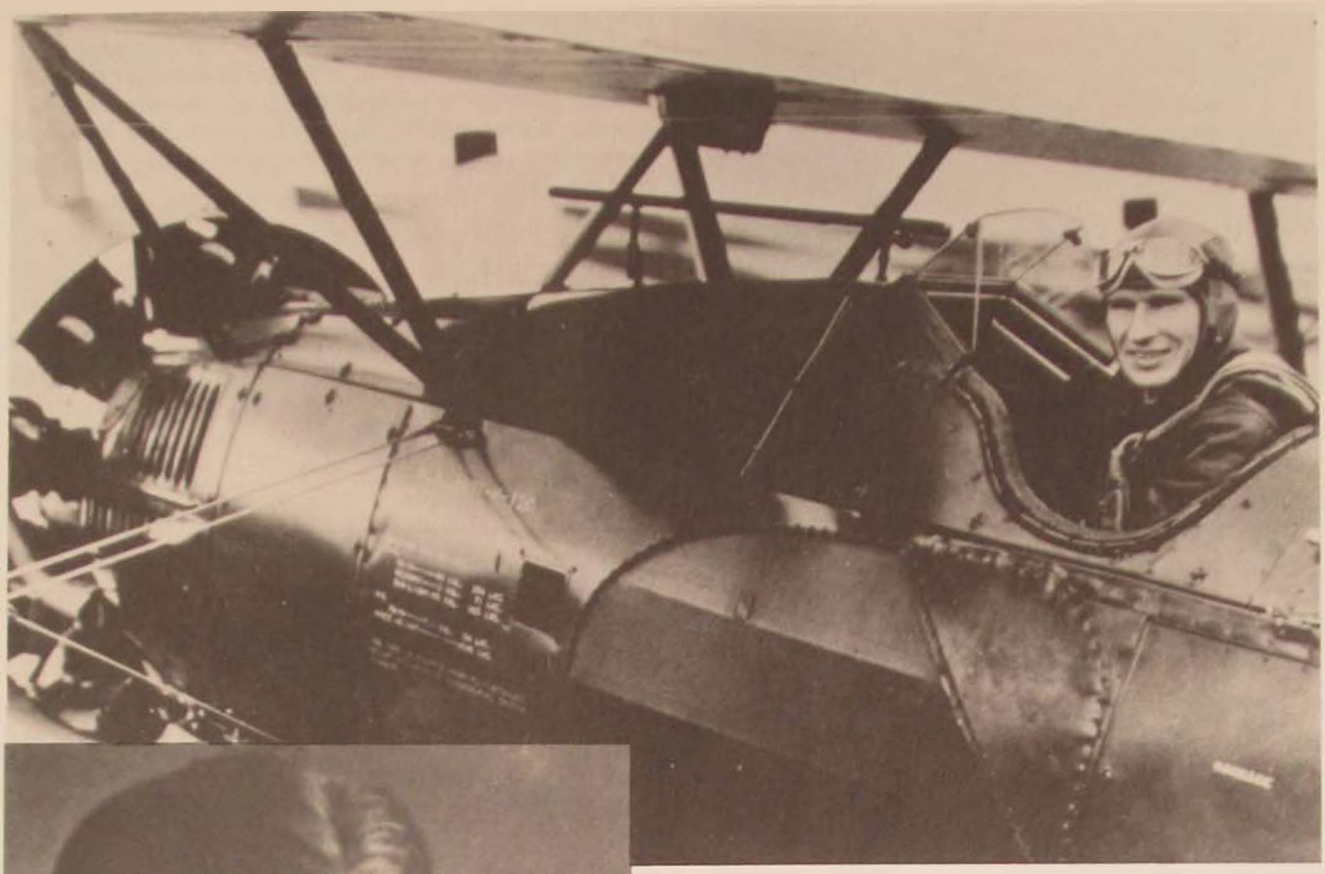
AIR COMMAND AND STAFF COLLEGE AIR CAMPAIGN COURSE

THE AIR CORPS TACTICAL SCHOOL REBORN?

MAJ P. MASON CARPENTER, USAF, AND MAJ GEORGE T. MCCLAIN, USAF

IN MARCH 1991, the US military and coalition forces ended the most successful war in recent history. For 42 days, air power proved deadly and effective. Air Marshal Giulio Douhet's ideas of air power application came true, and for the first time in warfare, air power was equal with the land and sea elements. Three circumstances allowed this revolution in warfare—*opportunity*, *capability*, and *foresight*.

The opportunity occurred when the national command authorities (NCA) pressured for military action six weeks before the ground forces were fully prepared for offensive operations.[1] Gen Norman Schwarzkopf possessed a ready air element and had the foresight to employ it while his ground forces were preparing for battle. The *capability* was made possible by the US military industrial complex and the military-technical revolution.[2] For the first time in history, air power had the tools to effectively attack large numbers of significant targets in a relatively short period of time. However, the key to successful air power employment in Operation Desert Storm was *foresight*—the air



The first US attempt at developing air power strategists and planners was the Air Corps Tactical School (ACTS) of the 1930s. Two of those early visionary instructors were Haywood Hansell (above) and Kenneth Walker (left).

campaign plan. This plan, Instant Thunder, was the product of a group of thinkers that included Brig Gen Buster Glosson, Col John Warden, the "Black Hole" Group, (a group of air campaign planners at Headquarters CENTAF in Riyadh, Saudi Arabia), and Checkmate (a group of air strategy planners at Headquarters USAF). They proved the value of operational air power planning and employment.

The real origins of Instant Thunder came from the experience of a group of air power advocates who, when opportunity came, stepped forward and, with recent air power technological advancements in mind, produced a superior operational air campaign. Although this worked for Operation Desert Storm, there

One tenet of early air strategy was that "precision bombing with suitable weapons was both practical and possible." In World War II, that idea manifested itself in scenes such as this one at Cologne, Germany, where airmen were able to spare religious and cultural monuments while reducing the surrounding area to rubble.

were difficulties and planning was not as smooth as it might have been. Perhaps a formal education system is needed for air power planners to replace the old ad hoc/on-the-job process of developing campaign planners.

The Air Force needs to educate officers who can advise commanders and develop effective air campaigns for the operational level of warfare. A formal method, similar to the Air Corps Tactical School (ACTS) of the 1930s, could be created to produce officers who can act as effective air power advisors to war-fighting commanders in chief. If we were to design a course for this purpose, what attributes would it have? This article offers a basic set of goals or ideas that must be at the heart of any new air power education program, compares these ideas to past efforts such as the Air Corps Tactical School and a recently completed Air Command and Staff College (ACSC) Air Campaign Course,[3] and discusses the 1993–94 ACSC curriculum in light of these requirements.

The Ideal Course

While academic pursuits by themselves will not develop air power visionaries, education is the solid foundation upon which we must base the visionary's expertise. To properly build this academic foundation, a course for air power planners must develop officers who have (1) a broad understanding of air power concepts, (2) a creative, open mind not given to intractability, (3) an ability to look at problems from the top down, and (4) an organized methodology of thoughtful introspection.

Next, on the practical level, these officers must be provided the opportunity to develop an in-depth knowledge of military/aviation history. A thorough examination of the military/aviation past will provide a historical perspective that will allow the individual to gain empathy with the thoughts and feelings of the key thinkers, theorists, and strategists of the past. This understanding will stimulate ideas.

Future air power strategists must be able to deal with the planning and execution of large joint operations. While nothing can replace real-world experience, a properly designed curriculum can provide students the opportunity to gain some valuable vicarious experience. Good tools for this purpose are technical case studies and theoretical problem analyses interspersed with problems/threats that deal with actual world events and possible US courses of action.

Air power planners must have an almost instinctual level of knowledge on the role of the US Air Force. They must also be able to understand *jointness* in the truest sense of the word. The planner/advisor must also understand the roles the other services perform, their capabilities, and their limitations. Finally, the air power planner must be able to effectively meld the different elements of US military might in truly effective, multiservice, multinational operations.

The Air Corps Tactical School

The first US attempt at developing air power strategists/planners was the Air Corps Tactical School of the 1930s. ACTS was strategic in scope. A small group of visionary instructors—Harold George, Haywood Hansell, Kenneth Walker, Donald Wilson, Laurence Kuter, Muir Fairchild, and others—sought to formalize the application of military might to the air.[4] They saw air power as more than a support weapon for the land and sea forces; it had its own technology, doctrine, and medium to operate in. According to Douhet, William ("Billy") Mitchell, and Hugh M. Trenchard, it was strategic in nature. Some on the ACTS faculty sought to make air power an exact science with studies, tests, and data analyzed at Maxwell AFB, Alabama, where its cadre was based.[5] Theories of attack, force size, and weapons to use were developed based on belief in the invincibility of high-altitude, long-range, precision daylight bombing. The appearance of the B-17 and the Norden bombsight in the early 1930s gave substance to their theories.[6]

The Air Corps Tactical School tackled the relevant philosophical issues as well—the nature of war, the object of war, the characteristics of modern military forces and their relationship to national objectives, and the nature of military employment. The ACTS faculty believed the real objective and fundamental purpose of war was to overcome the will of the enemy. They believed air power could break the enemy's will by attacking its industrial grid, thereby avoiding an exhaustive war of attrition. The visionaries of the Air Corps Tactical School summed up the potential of air strategy in three basic tenets:

a. Modern states are dependent upon an interwoven industrial base to produce war and their standard of living.

b. Precision bombing with suitable weapons is practical and possible.

c. Strategic Air Forces could use speed, initiative, deception, altitude, defensive formations and gunfire to penetrate defenses and bomb interior targets with minimal losses.[7]

The "Bomber Mafia" of the Air Corps Tactical School faculty believed that the objectives of war were political, strategic, and tactical. Strikes against the political objectives were generally considered unacceptable because bombing population-type targets was considered "immoral." Attacking the enemy air force (tactical) to gain control of the air was dismissed because the group believed enemy air forces could not successfully defend their nation against high-altitude bombers. They therefore considered strategic target categories. These target categories were as follows:

a. Armed forces
b. War production industry
c. State infrastructure
d. Cities and worker dwellings[8]

From the Air Corps Tactical School, George, Hansell, Walker, Wilson, Kuter, and Fairchild brought a new perspective that pushed past traditional aviation roles by emphasizing the need for a bigger, better, and independent air service. Their direction laid the foundation for the Air War Plans Division-Plan 1 (AWPD-1) in the summer of 1941 and for the great air armadas of World War II. Although not their intent, they ignored some advantages

of joint warfare and in their zeal created a dogma of the air.[9]

How does ACTS measure up against our theoretical ideal air campaign course? There appear to be several shortfalls: (1) the issues of jointness and joint operations with the other services, (2) the depth and breadth of campaign planning, and (3) the sensitivity to flexibility versus standardization in solving problems.[10]

The issue of jointness is a significant area of difference. ACTS focused on strategic air power exclusively. The unofficial objective of ACTS was to establish Air Corps roles and missions, to include supplanting the Navy in the role of coastal defense and dominating the Navy and Army in the role of hemispheric defense of the United States. ACTS had a grudging respect for jointness but did not have its heart set on pursuing it.[11] The ideal air campaign course would possess an enthusiasm for jointness and emphasize the synergy possible among all the services. The course policy would be one of inclusion, not exclusion.

The scope or depth and breadth of the study of the air campaign is another substantial area of difference between ACTS and the ideal air campaign course. ACTS focused exclusively on a narrow band of campaigning (strategy), while the ideal course would be three-dimensional in its emphasis. This emphasis should start with grand strategy, progress through strategy and campaign operations, and then finish with tactical operations. ACTS focused on strategy and assumed technical capabilities as a given. These assumed capabilities included the ability to deliver weapons and to destroy targets, but ACTS did not analyze these areas well enough to identify potential shortfalls in realizing desired strategic effects. The ideal air campaign course would evaluate the availability of suitable systems, weapons effects, navigational ability, and accuracy of delivery before analyzing the strategic effect. Therefore, the ideal air campaign course is a marriage of the mechanics and the ideas of air campaigning, unlike ACTS, which considered only the ideas for study. The ACTS emphasis on strategy also affected the final area of difference—the sensitivity of air campaigning to flexibility versus standardization.[12]

ACTS was rigid in its doctrine. The result was that ACTS confused centers of gravity (COG) with targeting. They believed a COG was synonymous with a target, and the way to victory was to work through the target set. This assumption was central to the bombing plans of World War II, AWPD-1, AWPD-42, and the Combined Bomber Offensive. The ideal air campaign course would recognize the awaiting pitfalls of rigidity and standardization. It would emphasize the critical importance of strategic intelligence and recognize the part creativity has to play in identifying what is or is not a suitable target. Such an approach would force a reexamination and comparison of results with desired effects during an air campaign. A center of gravity may not necessarily be a legitimate target because striking it may not yield the desired effect.

The Air Campaign Course

Recently, the Air Command and Staff College at Maxwell AFB, Alabama, embarked on a path to recapture the enthusiasm and concept-building atmosphere embodied in the Air Corps Tactical School prior to World War II while avoiding its failings. The pilot project for this new endeavor was called the "Air Campaign Course." Like its predecessor, the Air Corps Tactical School, the Air Campaign Course was strategic in scope; it studied *all* aspects of air and space power employment that might be applied in support of the theater commander's campaign. Its creator was Col John A. Warden III, the ACSC commandant. Implementing Colonel Warden's ideas were sev-

eral ACSC academic instructors who, along with over 100 motivated volunteers from the 1993 ACSC class, attempted to make history in the tradition of the Air Corps Tactical School.[13] This initiative appears successful and with potential benefit to the military. Aerospace capability and power projection are going to play an increasingly dominant role in safeguarding our vital interests. Our nation will need the best educated and most forward-thinking air planners we can provide.

The primary objective of this course was to educate and develop officers who will represent air power as advisors to a war-fighting commander in chief and who one day will lead, maintain, and continue to provide our nation with the most effective air force on the globe. To accomplish this end, the Air Campaign Course sought to educate future air campaign planners and promote freethinking and vision in the field of air and space power employment. Another objective of the Air Campaign Course was to serve as the forerunner of the 1993–94 ACSC curriculum. Additionally, the ACSC faculty critically

Two categories of early strategic targets were enemy armed forces and the enemy war production industry. This emphasis shaped our efforts in World War II, as demonstrated by these impotent German flak guns (above) on a train going nowhere, and this flattened German oil plant, (below) which is out of operation.

Today, cohesive joint-service and often multinational operations are important to conflict resolution. At top, a US Apache helicopter, part of our joint-service effort in Desert Storm, surveys an abandoned Iraqi tank. United Nations troops (below) in Bosnia inspect paperwork and pallet contents brought by USAF C-130s from Rhein-Main AB, Germany. The Air Campaign Course can help develop officers who are competent to work in these environments.

evaluated the Air Campaign Course and was especially receptive to student feedback. Course instructor and student insights are affecting the development of the 1993–94 ACSC course structure and educational methods.

A rigorous regimen of reading and lectures was essential to accomplishing the primary course objective. The air campaigners tackled a challenging academic load of nightly reading, advanced content lectures, and daily discussions. The course had four phases—the air campaign process, contextual issues, operational art, and a series of practical case studies. Students also completed research projects that ranged from the development of an operational level computer war game to the study of chaos theory. The readings included classic studies by Douhet, Mitchell, and Thucydides, and contemporary works by Schwarzkopf, Mark Clodfelter, and Richard Hallion. Guest lecturers not only offered their views but also created a forum in which to challenge the old axioms of military thought. Past mili-

tary conflicts were used as case studies to analyze strategy, doctrine, leadership, technology, politico-military relationships, air power and joint concepts, and their impact on modern warfare. Through these case studies, students learned and developed new thought processes by analyzing problems, asking probing questions, and generating solutions.

Like the Air Corps Tactical School, the Air Campaign Course was an intense effort to develop strategic and operational air power thinking. In their bid for an independent air force, the leaders of the Air Corps Tactical School, in the spirit of Douhet and Mitchell, advocated strategic bombing as the "end-all" of military conflict. The Air Campaign Course emphasized air and space power but recognized that air and space power is not an end in itself. Depending on the nature of the conflict, air power may be the decisive military element or provide a supporting role to land or sea forces. It also might support a psychological or economic strategy. Today, cohesive, joint service operations are important to successful conflict resolution. Under certain circumstances, however, air and space power of all services can be decisive in itself, and we must be able to employ joint aerospace forces in a manner that will bring the enemy to our terms quickly, with few casualties and with minimal collateral damage. Additionally, in other circumstances, air and space power planners must orchestrate air campaigns to best support surface operations. Air campaign planning knowledge is the new course's foundation, but developing vision is its cornerstone.

To develop vision, Air Force officers need to understand the capabilities and the limitations of air and space power in military operations. Only with this knowledge can the military professional gain the expertise and wisdom necessary to properly employ aerospace forces and correctly advise political and military leaders of the need for investment in aerospace power to support national policy. Air campaign planners must also be able to assist the political leadership in the development of clearly defined and attainable military objectives that support national policy through the proper identification of the vulnerable and accessible enemy centers of gravity.

The Air Campaign Course encouraged the development of a new breed of aerospace visionaries and thinkers. The military professional must be a "free thinker" who can conceive new ideas to improve air power applications. The Air Campaign Course pursued this goal through the study of the military-technical revolution and its relationship to the realities of ethnic/religious nationalism, the secular nation-state, and conflicting ideologies. The professional officer must also be on guard against the tendency to allow doctrine to stagnate in the light of broadly defined threats and changing world realities so that the air campaigner, in the final analysis, will be able to correctly identify appropriate centers of gravity and strike the targets that affect them with the proper mix of force and intensity.

"The first and most important point I emphasized to our Air Campaign class was to avoid 'dogma' at all costs," states Lt Col Larry Weaver, the course director. "I did not want a 'school' answer to a given problem. We designed the course to go beyond comprehension of traditional doctrine. Our goal was to inspire creative ideas for aerospace employment." To help accomplish this, the Air Campaign Course workload was raised well above that of past ACSC classes. More responsibility was placed on the students to read, study, and discuss essential aerospace thought, doctrine, and writings. In addition to developing freethinking, the Air Campaign Course emphasized the importance of understanding the political dimension of air and space power.

Realizing that the Air Campaign Course was to serve as the centerpiece for the new ACSC curriculum, the faculty and

students were attuned to learning important lessons during the 1992–93 session. Most difficulties experienced in the Air Campaign Course were related to the course's rapid development. Administrative difficulties included textbook acquisition, problems with scheduling speakers, the limited number of qualified instructors, and delays in organizing course materials. Regarding these problems, instructors responded to student needs.

Student feedback for nonadministrative course improvement was concentrated in four areas: (1) lack of instruction in Air Force basics concerning air power employment (tactical level knowledge), (2) lack of scheduled seminar discussion periods, (3) too little time spent incorporating other branches of the military into the teaching of aerospace power employment (jointness), and (4) poor representation of different disciplines within seminars. The first three criticisms were a direct product of placing a tremendous amount of study material and lectures into a two-month period. The fourth problem was the result of this being an elective course and the type of individuals who volunteered to take it.[14] Special attention was placed on these structural problems, which are planned to be resolved as the campaign course is incorporated into the overall 10-month ACSC curriculum for 1993–94.

The 1993–94 ACSC Curriculum

Based on the experience gained through presenting the Air Campaign Course, Colonel Warden and the ACSC staff have developed a curriculum to begin in the summer of 1993 that will teach officers to deal with conceptual and practical issues involved in mastering the art of air warfare. This new curriculum focuses on 10 areas:

Professional Skills
War, Conflict, and Military Missions
Military Theory
Strategic Structure
Operational Structure
Campaign Concepts
Air Campaign
Campaign Termination
Campaign 2000+
Terminal Exercise

See the sidebar (page 81) for a brief description of these curriculum areas.

Like an inverted pyramid, this new curriculum will begin with large conceptual issues of politico-military operations and end in practical case studies. In these case studies, students will apply their knowledge and practice application of air power to carefully selected case studies at the operational level.

A significant effort is being made for officers to study original military and aviation literary readings. More than 90 books will be issued to each student.

Central to this new curriculum is the understanding that campaigning in general, and air campaigning in particular, is not the sole province of the flyer. A successful campaign requires full participation from virtually every field in the USAF, from public affairs to the logistician.

The new curriculum has been conceived as a whole. Care has been taken to integrate the instructional blocks. As the curriculum progresses, the students should experience an intellectual flow of ideas and at any point be able to relate their current studies to any other concept previously covered in the course. The past division of the curriculum into discrete segments of study with arbitrary boundaries will be removed in favor of a yearlong continuum. Instructors will assist the students by performing multiple functions throughout the course in accordance with their expertise.[15]

There are advantages to this new curriculum. With a single focal point, all instructors can work through issues of

The 1993–94 Air Command and Staff Curriculum

The 1993–94 Air Command and Staff curriculum will focus on 10 block areas:

- Professional Skills
- War, Conflict, and Military Missions
- Military Theory
- Strategic Structure
- Operational Structure
- Campaign Concepts
- Air Campaign
- Campaign Termination
- Campaign 2000+
- Terminal Exercise

The *Professional Skills* block of instruction is specifically designed to teach essential skills in joint operations, quality concepts, and leadership. Staff officer communication training will continue through the academic year. Special emphasis, however, is placed on joint operations education. It is difficult to imagine any future conflict that will not involve all branches of the service. Learning to integrate the aerospace power of Air Force, Army, Navy, and Marine Corps components is essential. Next, students will attend seminars and lectures on the basic terms and procedures necessary to understand and apply the "quality" ideas of organization that are key to agility in a rapidly changing world. The thrust is to introduce students to the resources available to the commander and to procedures and concepts unique to command. This block also provides material and knowledge necessary for officers to continue developing as leaders. The *War, Conflict, and Military Missions* block explores the meaning of war and the motives that lead to armed conflict. It focuses on translating political objectives of war into military operations by means of a military mission. Here the student is introduced to the levels of conflict, the actors in conflict, and the means to classify contemporary wars. The *Military Theory* block looks at warfare in a systematic fashion. Modern warfare is an intellectual as well as a technological phenomenon, and military theorists have long attempted to impose order and rationality on what is considered by many to be an irrational enterprise. The reformation of military theory, and the creation of new paradigms, is the first critical step in integrating new technology into war fighting. A discussion of the strengths, weaknesses, uses, and relevance of such attempts, from Carl von Clausewitz to the most recent aerospace thinkers, will provide the students with the analytical tools for developing military theory that will be relevant for the twenty-first century.

Building on this base of knowledge, the *Strategic Structure* block teaches students about centers of gravity and organization at the strategic level. It applies strategic organization theory to states, substate, and criminal entities and shows the exploitable similarities among all of them. This block also teaches coalition theory and introduces the instruments of power projection. It reviews the process of making security assessments, analyzes hostile and friendly centers of gravity, and explores the role of intelligence in the national security process. This block allows the student the opportunity to look at the basic power relationships of the civil/military leadership in both state and nonstate entities. Students are introduced to illustrative case studies which serve as examples of center of gravity analysis. The *Operational Structure* block shifts the focus of study to an adversary's operational centers of gravity and the process of identifying and targeting them as part of a cohesive campaign plan. This block continues the threat analysis and role of intelligence capabilities. It also introduces basic challenges of logistics and resources. The *Campaign Concepts* block introduces basic service and joint doctrine as well as fundamental US military capability and force structure. This block introduces the student to campaign options selection. It also provides the opportunity to begin developing courses of action.

The *Air Campaign* block initially explores the military technological revolution critically examining the concept, the technological and operational reality behind it, and its effects on warfare. It develops an appreciation of the synergistic contributions of air power to the combat commander's campaign plan. It sets the foundation for mastering operational art in the aerospace domain and for the exploitation of air power in support of US national objectives. Its goal is to produce students who can plan and execute an air campaign. They need to understand and integrate the diverse parts of the modern air campaign. These parts include political objectives, air operational art, deception, logistics, public affairs, psychological operations, morality, technology, and humanitarian operations. Students will be able to develop the master attack plan and be familiar with the air tasking order process. The *Campaign Termination* block of instruction explores the concepts of ending conflicts. This block of instruction will bring air power study beyond the moment marking the end of hostilities. Campaign termination is a phase of military operations that must be planned in full coordination with diplomatic, political, and war-fighting functions. As confrontation diminishes, diplomacy takes on an added dimension. The students will understand the role of US military forces in the transition to peace. The students will analyze case studies to highlight the importance of matching termination objectives to the military means used in the campaign. *Campaign 2000+* focuses on Department of Defense long-term resource allocation, as well as acquisition and logistical issues. The block applies analysis of the lessons of history to our need to stay a "technological revolution" ahead of the rest of the world. Finally, the *Terminal Exercise* provides a chance to achieve higher levels of learning through simulations, case studies, and computer war games inserted throughout the curriculum.

academic preparation and execution. The corporate nature of this new relationship will replace the former compartmentalization of tasks within divisions and improve faculty communication. This new perspective on education at the Air Command and Staff College is, of course, still in its infancy. As of this writing, lesson plans are being reviewed and course organization refined. Nevertheless, the college staff approaches its task with the confidence that, by implementing this new vision with all judicious speed, there will be an improvement in the study of aerospace power. By learning from shortfalls in the Air Corps Tactical School and the initial Air Campaign Course, planners will make a concerted effort to keep the new ACSC curriculum from being trapped in narrowly focused thought. The new curriculum will review a broad spectrum of military conflict, studying in depth the role air and space power will play in unilateral and joint/combined/coalition warfare.

Conclusion

The Soviet threat may have diminished, but it has been replaced by other threats that may appear smaller but in reality are no less lethal. Today the world is involved in more armed conflicts than any other period in modern history. The disappearance of the single, well-defined threat of the former Soviet Union complicates the problem. There are those in political leadership positions who clamor for a *much*-reduced emphasis on military forces. Many perceive a safer world environment. In reality it is not clear that the world is a safer place. The breakup of the Soviet Union/Warsaw Pact, ethnic/religious nationalism—which transcends traditional Westphalian boundaries—and a growing number of third world powers with weapons of mass destruction have resulted in a very unstable international community. While many argue that today's threats to our nation are minimal and not well defined, others argue differently. Today's threats are still significant, and although broader in scope, are well defined. What is harder to define is how to effectively counter these evolving new world problems. But, we must be prepared.

One of many problems facing today's and tomorrow's military professional is the effective interaction between themselves and political leaders. Military professionals cannot afford to be thought of as "technotwits" driven by the desire for better toys. They must be able to convince political leaders of the necessary force levels, training, and hardware required to support national interests with air power. Today's officers must be able to understand political leaders' intent at all levels in order to help develop cogent objectives. To do so, political and military leaders must also establish criteria for terminating each conflict or contingency we enter. Educating our future air campaign planners to deal with all aspects of aerospace employment is critical to future success. Next year's ACSC core curriculum will emphasize this aspect of aerospace power planning and execution.

The new ACSC curriculum will extend air power thought past the Air Corps Tactical School, dealing with a broader spectrum of military conflict in which air and space power can either be the key power-projection tool; play a supporting role; and execute independent, parallel, and supporting operations simultaneously. The new curriculum will teach professional officers of all services to think both inside and outside of the traditional Douhet/Mitchell air power employment concepts.

A nation that wins a conflict is often set up to lose the next one. If it is satisfied with the status quo of its forces and doctrine, it is apt to fight future wars in a predictable manner. Conversely, losing nations often become innovative, rebuild-

ing and rethinking warfare to ensure victory in the next conflict. To avoid the trap of living in the past, the US Air Force needs officers who not only can create successful air campaigns but who are also visionaries who can look past the most recent conflict and into the next one.

The ACSC staff has set ambitious goals for the 1993–94 curriculum. We endorse these goals and their efforts to educate freethinking professionals. ACSC is seeking to institutionalize excellence in the officer corps so as to create a living, constantly renewing group that is sensitive to the lessons of history but not impeded by the dogma of past victories. It is imperative that we continue to advance the study of military aerospace applications and modern force projection.

Does this new curriculum meet the goals of our theoretical "ideal course"? This new course has been designed to instill in the air planner (1) a broad understanding of air power concepts, (2) a creative, open mind not given to intractability, (3) an ability to look at problems from the top down, and (4) an organized methodology of thoughtful introspection. On the practical level, these officers will be provided the opportunity to develop an in-depth knowledge of military/aviation history and empathy with the thoughts and feelings of the key thinkers, theorists, and strategists of the past. Ideas will be stimulated by this understanding. Case studies, some real world, will help to develop air campaign planners who can advise and orchestrate operational-level air operations. Finally, efforts are being made to instruct officers on effectively melding the different elements of US military might in truly effective, joint operations. So, in design and plan, the new ACSC curriculum meets the standards of the "ideal course." We await its implementation.

The United States won its last conflict, but we must keep looking ahead and not attempt to fight our next conflict as if it were a pure replica of Operation Desert Storm. Enhancing the United States military's execution of operational campaigns through successful air and space operations in future conflict should be the ultimate goal of any air power education program. The new ACSC curriculum is a step in the right direction. □

Notes

1. H. Norman Schwarzkopf, *It Doesn't Take A Hero* (New York: Bantam Books, 1992), 393.
2. Andrew F. Krepenvich, Jr., "Military-Technical Revolution: A Preliminary Assessment." Office of the Secretary of Defense, 1992 (unclassified version); and Maj Gaylord Liby, briefing, Air Command and Staff College, Maxwell AFB, Ala., subject: The Military-Technical Revolution, 5 January 1993.
3. In the fall of 1992 at Maxwell AFB, Alabama, the Air Command and Staff College effected such a concept with the creation of the Air Campaign Course. This course was of limited scale (100 volunteers) and was the forerunner to the 1993–94 ACSC core curriculum.
4. Haywood S. Hansell, Jr., *The Air Plan That Defeated Hitler* (Washington, D.C.: Government Printing Office, 1975), 12–24.
5. Ibid., 6.
6. Ibid., 24.
7. Ibid., 40.
8. Ibid., 47–48.
9. Ibid., 1–57.
10. Maj Peter R. Faber, School of Advanced Airpower Studies, Maxwell AFB, Ala., interview with author, 1993.
11. Ibid.
12. Ibid.
13. Instructors Lt Col Albert Mitchum, Lt Col Larry Weaver, Dr Earl Tilford, and Dr Richard Muller designed the Air Campaign Course. The initial instructor cadre includes Lt Col Tom Falconer and the following majors: John Pardo, Sy Caudill, Rick Cosby, Gaylord Liby, Gary Burg, Doug Goebel, and Larry Key.
14. The Air Campaign Course was made up of approximately 60 percent aircrew members, and many key disciplines were underrepresented on the seminar level.
15. Lt Col Albert Mitchum and Dr Lewis B. Ware, "The New ACSC Curriculum" (unpublished paper, Air Command and Staff College, Air University, Maxwell AFB, Ala., 1993).

Ricochets

continued from page 3

Nevertheless, Hurley's article touches on only one cause of the IQAF's failure (i.e., Saddam Hussein's efforts to politicize the Iraqi military) and neglects two others that have equal explanatory value: (1) the operational constraints placed upon the IQAF's development by the exigencies of the Iran-Iraq War and (2) the impact of social, political, and economic modernization upon third world armed forces. Both of these factors were as important to ensuring the IQAF's defeat as Hussein's meddling with the professionalization of the officer corps and his capricious exercise of power over the IQAF's employment in battle. In combination with the political interference succinctly described by Lieutenant Hurley, they provide a more complete explanation for the disaster that befell the IQAF in early 1991.

One cannot underestimate the impact that the Iran-Iraq War had upon the growth and development of the IQAF. During this eight-year conflict, battlefield conditions forced Iraq's leaders to make crucial (and generally rational) operational and purchasing decisions which, in other circumstances, might have been reconsidered. In other words, the IQAF that emerged from the Iran-Iraq War was, in certain respects, designed to fight that war. Since, in most every respect, Operation Desert Storm was far different from the first Gulf War, one could expect that the IQAF was unsuited to deal with the new conditions thrust upon it in so short a time.

Due to its uncertain relations with the various superpowers, Iraq was forced to diversify its sources of aircraft supply to ensure that a cutoff of any one source need not cripple the entire air force. It also tended to keep large numbers of older designs on hand as an operational reserve in case such a cutoff should occur. Thus, by 1991 the IQAF operated five types of fighters (MiG-21/23/25/29 and J-7), at least eight attack and bomber types (MiG-23, Su-7/20/24/25, J-6, Tu-16, Tu-22), and the multirole Mirage F1-EQ. With relatively small numbers of each type on hand, supplying this force must have been a logistics nightmare. Hence, inoperability rates were extremely high, reducing the numbers of possible combat sorties during wartime, while simultaneously depressing the number of training flight hours possible during peacetime. In fact, during that war, massed air power was used sporadically because it took quite some time for logistics to bring the force up to an operational level at which a massive sortie surge was possible. Since this represented quite an effort, the air war was fought in fits and starts: a series of large-scale attacks was followed by a bombing lull and a period of rebuilding.

These systemic or "rational" factors that explain Iraq's defeat are compounded by more general problems related to political, economic, and social modernization found throughout third world military establishments. While more abstract, such arguments are essential for understanding the magnitude of Iraq's defeat and expand greatly upon work done by Maj Ronald E. Bergquist (USAF), as outlined in his book *The Role of Airpower in the Iran-Iraq War* (Air University Press, 1988). They generally revolve around the nature of "nonmodern" or traditional societies, the things upon which value is placed in such societies, and the dynamics of political and social action within them. In essence, the way in which the leadership and the populace view military power in such societies explains a great deal about the state of the IQAF at the time of the Gulf War.

Traditional societies frequently attempt to appear modern by possessing the outward signs of modernity without actually understanding the process of becoming modern. As Major Bergquist's writings have hinted, Iraq saw the IQAF's fleet of combat aircraft as representative of a modern nation: *the fleet's most important function was to act as a symbol of modernity*. But as Max Weber and other scholars have pointed out, modernity is a mental process—not a terminal goal. A significant part of being modern is the realization of the need for constant improvement, driven by rational thought. This perception was lost on the Iraqis, who attempted to purchase modernity without internalizing its structures and norms. This may seem like an abstract—or merely academic—argument until one realizes that many arms purchases by third world states (the transfer of Chinese CSS-2 ballistic missiles to Saudi Arabia, for example) have been interpreted by many serious defense analysts (such as Anthony Cordesman) as primarily symbolic in nature.

The symbolic nature of such military power leads to some strange results. Since the possession of the military asset is perceived as more important than its combat effectiveness, a

"preservation ethic" often emerges. In this case, the preservation of the IQAF became far more important than any actual successes it scored in combat. The tremendous—and sometimes puzzling—efforts to preserve the force (e.g., dispersing, hiding in aircraft shelters, fleeing combat, flying to Iran, etc.) demonstrate the truth of this interpretation.

Of course, political interference in military operations is nothing new. Any cursory analysis of Operation Rolling Thunder would show that the Iraqis have no monopoly on misguided executive intervention in military affairs. Undoubtedly, Saddam's extreme methods and pervasive influence served to substantially weaken the Iraqi military, but this alone cannot explain its catastrophic defeat at the hands of the US-led coalition. The impact and intersection of modernization and circumstantial factors had a great deal to do with shaping the force that confronted the allies and are just as important in explaining that force's ultimate demise. With the potential for US involvement in third world military conflicts on the rise, it is extremely important to understand how such factors contribute to the development of third world air forces, what the US can do to exploit such weaknesses during wartime, and how the US can overcome such hurdles in building the air forces of its third world allies (such as Saudi Arabia and Egypt).

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KUDOS TO THE AUTHORS

Capt James H. Patton's article on "Stealth, Sea Control, and Air Superiority" (Spring 1993) did an excellent job of holding my interest. Keep these kinds of articles coming.

SrA Julie A. Knapp, USAF
Battle Creek, Michigan

apj NET ASSESSMENT

AUTOBIOGRAPHY, BIOGRAPHY, AND MEMOIRS

Storm Center: The USS *Vincennes* and Iran Air Flight 655 by Will and Sharon Rogers with Gene Gregston. Naval Institute Press, US Naval Institute, Preble Hall, 118 Maryland Avenue, Annapolis, Maryland 21401, 1992, 288 pages, $21.95.

Storm Center is "a personal account of tragedy and terrorism" by Will Rogers—the captain of the USS *Vincennes*, which brought down an Iranian commercial airliner on 3 July 1988—and his wife, Sharon, a target of a car bombing in March 1989. Unfortunately, their story does not add substantially to the resolution of nagging issues that surround the tragic shootdown of the A300 Airbus. The work is primarily autobiographical since it concentrates less on the causes of these incidents than on the outcomes to the writers' personal and professional lives. The authors do give their view of events surrounding the downing, subsequent investigation, intrusive media attention, sabotage of Sharon's van on her way to work, and the upheaval that this caused their family.

The book begins with Persian Gulf action that sets an important context for the launching of missiles on a suspected hostile aircraft. Taking fire from the enemy in combat with Iranian Revolutionary Guard "Boghammer" boats, the *Vincennes* was keyed up and ready for an even more deadly engagement. Such a raid was, of course, not coming. Since then, the central question has always been, How did one of the US Navy's newest and most technically advanced ships, an antiair warfare (AAW) cruiser equipped with the world's finest battle management system, Aegis, and a so-called supership, misidentify and press home an attack on an airliner mistaken for an aggressor F-14? Captain Rogers defends that action as a necessary response to protect his ship and crew. Though quick to accept responsibility for their reaction, Captain Rogers places blame

for the tragic outcome squarely on the circumstances that existed that day.

In this way, the author maintains a distance from the event and the large loss of civilian life in a situation requiring defensive action by the ship. Captain Rogers's expressed regret for the outcome—"but not the decision"—might be judged even more closely today by Americans who demand unprecedented precision in targeting weapons, especially after they consider the loss of Korean Air Lines Flight 007, the friendly fire mishaps in Operation Desert Storm, and the proven precision of strikes and lack of collateral damage in the Gulf War. The loss of noncombatants (or friendly forces) can no longer be excused, as it might have been not very long ago, under the cause of "military necessity."

The other side of this story is told by Sharon Rogers. With the exception of the terrorist bombing of the family's van (of which very little is still known), her details of family background run slightly too long. That incident and other fallout from the media's invasion of their lives portray the Rogerses themselves as victims whose private and professional lives have been forever altered.

Storm Center is at its best in a few exciting, well-written chapters that give the feel for operations on a complex warship and of the surface action preceding the downing of Iran Air Flight 655. The value of this book is that its message reminds modern warriors that they can be suddenly put under battle stress, thrust into a fast-paced, life-and-death action in which boundaries between peacetime and war are anything but clear. It contributes to the literature on how people react amid the fog and friction of conflict, and it adds the dimension of terrorist retaliation to family members thought safe in our homeland.

Regrettably, the book fails to live up to its promotion as "epic in scope" or, in Will Rogers's words, "a full accounting of what happened." Due to the event's sensitivity, the likely classification of some evidence, and the uncooperative position of Iran, a full exposition will either be a long time coming, or never known.

In an article on "friendly fire" incidents, military historian Charles Shrader noted in the Autumn 1992 *Parameters* that "in many respects modern weapons have outstripped the ability of their human users to control them." Such seems to have been the case for the USS *Vincennes* on 3 July 1988.

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GULF WAR

George Bush vs. Saddam Hussein: Military Success! Political Failure? by Roger Hilsman. Presidio Press, Lyford Books, 505 San Marin Drive, Suite 300B, Novato, California 94945, 1992, 273 pages, $21.95.

"Instead of heading off Hussein by midwifing a settlement, the Bush administration indicated that the United States would not interfere if Iraq seized the two islands and the Rumaila oil field, and was outraged when Hussein understood the message to be that he had permission to take all of Kuwait." The war in the Persian Gulf was an avoidable conflict in which President George Bush failed to investigate all possible options thoroughly before resorting to force.

Hilsman divides his book into three sections: a brief history of the Middle East, a detailed narrative of the Persian Gulf War, and an analysis of George Bush and Saddam Hussein. Each section supports the author's contentions that the Persian Gulf War was avoidable and President Bush was personally responsible for the "headlong rush to war."

Given Hilsman's background (he is a West Point graduate and World War II veteran), the antiwar tone in the book is somewhat unexpected. The author skillfully narrates antiwar positions before, during, and after the Persian Gulf conflict while failing to point out flaws in those themes. He also fails to present any points of view supporting military action. Hilsman comes just short of legitimizing Iraq's invasion of Kuwait by pointing out Kuwaiti provocations and a US "green light" for Iraqi military action. Hilsman also criminalizes the US role in the conflict, pointing out that Bush repeatedly violated international law and manipulated the United Nations (UN). The book suffers from a clear lack of objectivity.

Hilsman describes several courses of action available to President Bush that could have prevented Iraqi aggression before the invasion of Kuwait. They include placing some Kuwaiti territory under UN supervision as well as iso-

lating Kuwait until it ceased drilling in Iraqi territory. However, in a prior chapter, the author describes talks between Iraq and the Arab League during which these same ideas were discussed and rejected. He never explains the apparent contradiction. Hilsman lists several other options available to President Bush after the Iraqi invasion that could have kept the United States out of the conflict. Central to these options were an Arab-led economic embargo and an Arab-led military buildup. Minimal involvement by the United States was necessary. By not discussing the importance of global leadership in these options, Hilsman builds little credibility in them. Arabs could not unite themselves in the wake of the invasion; there was little hope they could unite the whole world.

A lack of definition also leaves the reader frustrated. Hilsman never defines military success or political failure. The reader has the notion that Hilsman is saying Bush failed politically because he resorted to war much too soon. This contrasts sharply with the conventional concept of political failure in the Persian Gulf. This view states that Bush did not significantly change the unstable Arab world after the conflict was over. By not clearly defining such an important part of the book, Hilsman loses much of the impact of his arguments.

There is, however, no lack of facts. The book is an excellent narration of the Iran-Iraq and Persian Gulf wars. Hilsman is meticulous in describing the political processes during crises. Details of the lives of both Bush and Hussein are interesting and occasionally revealing. The reader is much more informed about the Arab world in general and the war in particular afterward.

The book ends with a psychological analysis of Bush and Hussein. This allows Hilsman to define the Persian Gulf War as a clash between personalities instead of a clash between national interests. By trivializing the conflict and stating that the global impact of Iraq's actions was inconsequential, Hilsman's intense criticisms focus on Bush's actions instead of the war. This reduction causes the Gulf War to become secondary to Bush the man, which Hilsman describes as "driven" and determined "to prove to himself and the world that he was a tough guy."

George Bush vs. Saddam Hussein is not a discussion of the Persian Gulf War. Rather, it is an analysis of two men and their actions. While factually sound, this book does little to shed light on the conflict as a whole. Hilsman attempts to enter the minds of Bush and Hussein. The result is a convoluted description of war, politics, and personalities.

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HISTORICAL

The Age of Battles: The Quest for Decisive Warfare from Breitenfeld to Waterloo by Russell E. Weigley. Indiana University Press, 601 N. Morton Street, Bloomington, Indiana 47404, 1991, 602 pages, $35.00.

This book is exactly what its title indicates: a survey of the major battles in military history from the early seventeenth to the early nineteenth centuries. The survey of the battles is accompanied by an analysis of the place of battle in the conduct of war during the same period. The author, professor of history at Temple University, is familiar to the readers of *Airpower Journal* for at least two of his previous works. *The American Way of War* (1977) has been used in both the Squadron Officer School and Air Command and Staff College curricula, and *Eisenhower's Lieutenants* (1981) has become one of the foremost accounts of the World War II campaigns in northwest Europe. Weigley thus brings to this present work a lifetime of teaching and writing about military history, mostly from the American perspective, but this is his first major attempt to interpret the European military experience.

Weigley's central argument is that from the Battle of Breitenfeld on 17 September 1631, in which Gustavus Adolphus's Swedish army defeated the imperial forces of Count Tilly, until the Battle of Waterloo on 18 June 1815, in which the combined forces of Wellington's Anglo-Dutch army and Blücher's Prussians defeated Napoléon's *Armée du Nord*, commanders consistently sought major battles as the preferred instrument to achieve decisive results in war, and that the results consistently fell short of expectations. Weigley refers to the latter phenomenon as "the persisting, recalcitrant indecisiveness of war," which he believes makes most wars evidence of the "bankruptcy of policy" rather than the extension thereof.

An additional argument is that military professionalism, which Weigley traces to the reforms of Gustavus Adolphus, has generally acted as a restraining influence on depredations against noncombatants.

The Age of Battles is characterized by three great strengths. The tactical descriptions of the battles are concise and illuminating, bringing to bear insights into the leaders' personalities, analysis of the terrain, and informed commentary of combined arms tactics. The research is impeccable, reflecting Weigley's close attention to historical detail. These attributes make the book a very useful place to start for anyone needing an overview of the major military actions of two centuries of European warfare. And, as a bonus, Weigley's style is active and engaging, making the book an easy read.

In my opinion, however, the main argument is not proven. The book fails to convince because it ignores two major bodies of evidence: first, the frequent times commanders in the era under consideration sought to *avoid* battle, particularly in the period 1650–1790; and second, the less than decisive results that commanders expected from battle when they did employ it, particularly in the same period. When one looks at the campaigns of the Duke of Marlborough and Frederick the Great, one does find a great many battles: Blenheim, Malplaquet, Rossbach, and Leuthen are examples of these great captains using major field engagements to further the political purposes of their sovereign in Marlborough's case, or of the Prussian state in Frederick's case. Yet we just as often find them using other military instruments to achieve their purpose, the siege and maneuver on one's adversaries' lines of communications being the most frequent. For example, after his victory at Oudenuarde (11 July 1708), Marlborough attempted to pursue Vendôme's defeated French forces, but was repulsed at Ghent. Rather than continuing this pursuit, Marlborough proposed invading France by way of the Channel coast and the Somme River. The Dutch, however, were unwilling to participate in this bold maneuver and convinced Marlborough to lay siege to Lille instead. Vendôme, unwilling to risk battle but concerned over the adverse consequences of the fall of Lille, blockaded all the crossings of the river Scheldt between Lille and Brussels, severing the allied communications. Marlborough countered by organizing overland convoys from Ostend to Lille and was ultimately able to capture Lille and give the allies significant access to northeastern France for the campaigns of 1709. And for all of Frederick's willingness to seek battle during the early campaigns of the Seven Years' War, after Torgau (3 November 1760) he became increasingly eager to avoid major engagements and gratefully accepted the salvation offered by Tsarina Elizabeth's death in 1762. And in the War of Bavarian Succession, the effectiveness of Austrian artillery and the deterioration of his own army convinced him that engagement would be futile. Instead, he was content to allow the depleted Austrian coffers and the mediations of France and Russia to secure the withdrawal of Austria from Bavaria that he could not achieve on the battlefield. In short, there is a major period in Weigley's analysis (roughly 1650–1790) in which battle was usually not the preferred method of achieving political effect but frequently was a last resort. And it was one in which commanders and their political superiors recognized that the issue at hand would usually not be decided by battle alone but by a complex amalgam of diplomatic maneuvering, financial bargaining, dynastic intrigue, military action, and—to quote Frederick the Great—chance. The French Revolution and Napoléon changed all that, but Weigley's argument for continuity rather than discontinuity in this regard is misleading.

There is also a definitional problem with Weigley's argument. What does "decisive" mean? Weigley implies that decisiveness must entail the toppling of a regime. However, this does not seem to be a useful standard since such an extreme measure was normally not the object of the wars of this period. Rather, one needs to think of strategic decisiveness as whether or not the war settled the political issue at stake. In this sense, it is possible to argue that the War of Spanish Succession and the wars of the Quadruple Alliance that followed it did settle the issue: France and Spain would not be united. The War of Austrian Succession and the Seven Years' War decided the issue that Prussia would include the province of Silesia in its realm and would remain a major European power. The War for American Independence was certainly decisive in detaching England's most significant North American colonies from the mother country. And the Napoleonic Wars were decisive in putting a check on the extent to which French revolutionary idealism would influence the

rest of Europe and whether the Napoleonic imperium would be allowed to continue to reign in France. In short, while wars in the period under investigation did not always accomplish the more extreme objectives of the belligerents, this does not mean that nothing significant was decided by the wars.

The other argument in the book—that military professionalism has a restraining influence on the impact of war upon noncombatants—suffers from the fundamental deficiency that throughout the period under investigation war was not a profession. It was a craft, practiced with more or less success depending on a wide variety of factors, only one of which was the effectiveness of military education. Although there were attempts to study war in a systematic manner and apply the lessons of this study to the battlefield as early as Gustavus Adolphus's military reforms, it is misleading to speak of military professionalism in European military institutions of the seventeenth and eighteenth centuries in anything other than a protean sense. Professionalism required the development of a systematic body of knowledge and the lifetime study and application of that knowledge that was not evident in European armies until the midnineteenth century. And while I find some comfort in the notion that military professionalism acts as a brake on the effects of war spreading to noncombatants, the experiences of World Wars I and II, admittedly outside Professor Weigley's scope of investigation, may argue to the contrary.

In short, Weigley's informed and engaging accounts of the major battles in European military history from Breitenfeld to Waterloo make the book well worth reading. One must, however, accept with a great deal of caution the interpretation of those battles' place in the overall context of the era.

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INTELLIGENCE

Soldier Spies: Israeli Military Intelligence by Samuel M. Katz. Presidio Press, 505 San Marin Drive, Suite 300B, Novato, California 94945-1309, 1992, 320 pages, $21.95.

Israeli military historian Samuel M. Katz has written an entertaining, documented history of A'man, the intelligence branch of the Israeli Defense Forces (IDF). Despite some obvious patriotic overtones, *Soldier Spies* provides a comprehensive political and military history of Israeli military intelligence, comparing and contrasting A'man to the more glamorous and better known Mossad foreign espionage agency and the Shin Bet counterintelligence agency. Written in Israel, *Soldier Spies* underwent scrutiny and censorship of the IDF Censor's Office (itself a part of Israel's military intelligence).

Politics and intelligence can never be separated, and the State of Israel—born of war and surrounded by a ring of Arab states dedicated to its destruction—epitomizes the intertwining of politics and the military. In its short history in the modern era, Israel has survived six major wars and 40 years of terrorism, due in no small part to its superior intelligence operations. Israeli leadership has always considered intelligence the first line of defense against established military powers such as Egypt and Syria and revolutionary/terrorist groups such as the Palestine Liberation Organization. Interestingly, many of the key figures in the early days of Israeli intelligence and the Haganah played significant political roles later in life; they include David Ben-Gurion, Menachem Begin, Yitzhak Shamir, and Moshe Dayan.

Although unapologetically pro-Israeli throughout, *Soldier Spies* documents the failures and the dark side of military intelligence operations as well. For example, the success of the Six-Day War of 1967 is balanced by the failure to correctly interpret Arab intentions in 1973. Further, the account of the kidnapping and murder of suspected informers by Israeli agents during the formative years of the country indicates that the practice was tolerated if not endorsed.

The Israeli intelligence organization grew out of the Jewish Brigade, which supported British operations during World War II. At the end of the war, a group known as the Avengers sought out and executed hundreds of German SS officers without benefit of trial, although the Avengers did require proof that these Germans were involved in war crimes. In another instance, an Arab identified as the rapist of two young Jewish girls was summarily castrated by an elite commando force as an act of retribution and as part of the psychological warfare against the Arabs.

The book alludes to the relationship between Israeli and US intelligence over the years but does not go into detail because of a lack of unclassified information. For instance, without providing detail or documentation, Katz speculates about the use of American aircraft and aircrews to fly photoreconnaissance missions during the 1967 war and about a relationship with the Central Intelligence Agency that has grown closer over the years. Whether due to a lack of documented information or severe editing by Israeli censors, little is said about the Israeli attack on the USS *Liberty*. In this incident, forces of the IDF navy and Israeli air force followed the US ship for six hours before launching an attack that killed or injured several sailors. Considerable discussion of the incident has appeared in the press for years, but no satisfactory explanation has been forthcoming.

Katz also discusses some of the key exchanges of intelligence information with the United States relating to hostage taking and other terrorist activities. According to Katz, in exchange for invaluable human intelligence resources and information on terrorist organizations in the Middle East, the US has provided Israel with sophisticated technical intelligence on its neighbors.

Soldier Spies makes for easy reading but suffers from a lack of original research, depending almost exclusively on magazine articles and the works of other authors. Further, whether due to censorship or patriotic bias, Katz goes out of his way to always portray the IDF in the best possible light.

Maj Jim Marshall, USAF
San Antonio, Texas

LEADERSHIP, MANAGEMENT, TOTAL QUALITY, PERSONAL AFFAIRS

We Are All the Target: A Handbook of Terrorism Avoidance and Hostage Survival by Douglas S. Derrer. Naval Institute Press, US Naval Institute, Annapolis, Maryland 21402-5035, 1992, 112 pages, $12.95 (paper).

With the release of the American and European hostages in Lebanon in 1991, the plights of the captives and their families receded from the headlines in the world press. But with the continuing outbreaks of ethnic and religious violence, the disintegration of the former Soviet Union, and the erosion of the borders of Western Europe, one can anticipate that hostage taking will not decrease. Moreover, it could increasingly become a weapon of choice by both states and nonstate actors who will employ the seizure of individuals to dramatize their causes or as a means of very profitable extortion. Faced with this reality, Douglas S. Derrer has written a very readable book that should be must reading for members of the military and their families since their duties may place them in harm's way. The book should also be read by those in the traveling public who are willing to recognize that carrying an American passport in troubled areas could be a potential invitation to disaster.

The author brings unique experience to his study of hostage behavior and survival. As a commander in the Medical Service Corps who holds a PhD in psychology from Yale University, Derrer is a pioneer in the systematic study of how hostages react to their seizure and captivity. Furthermore, he has been able to refine and apply his research as a result of his involvement in the Navy's very demanding Survival, Evasion, Resistance, and Escape (SERE) School, where the students experience highly realistic simulations of being held prisoners of war.

After providing a good brief overview on the nature of the terrorist threat, Derrer presents a series of chapters that cogently address how potential hostages can avoid capture and, failing that, adjust to their seizure and captivity. His first chapter, "Personal Protection and Security," provides a good discussion on the basic principles of security as well as a checklist that should be used by a family whose husband or wife is to be assigned to an area of potential or actual strife. While the author covers familiar ground, the chapter is a well-organized guide for predeparture security arrangements.

Chapter 2, "Military Policy and Peacetime Captivity," should be required reading for military personnel. Derrer engages in an excellent discussion of how the Code of Conduct can be used as guidance by the captive in both peace and war. Furthermore, he analyzes how Department of Defense (DOD) Directive 1300.7, *Training and Education Measures Necessary to Support the Code of Conduct*, provides excel-

lent guidance for service personnel in various types of detention ranging from seizure by hostile governments to captivity by terrorists.

In chapter 3, "Crisis Stages and Hostage Survival," the author provides a tightly written guide to the three stages of hostage taking—"the intimidation," "custodial," and "resolution" stages.

Chapter 4, "Coping with Captivity," makes the telling point that "there are no superheroes in captivity" despite the penchant of the American public to often place the victims on a pedestal (page 57). The author presents in chronological order the stages of adjustment to captivity and suggests a coping mechanism that can be readily learned and used by those who might experience either short- or long-term imprisonment.

Chapter 5, "History and Geopolitics of Terrorism," and chapter 6, "Social Issues of Terrorism," provide good general analysis on the evolution of the terrorists' strategies and capabilities that have been presented in great detail in numerous articles and books. While of interest, one can question whether this familiar ground really adds to the book. Nevertheless, in his conclusion, Derrer is to be particularly complimented for candidly taking the following position. In regards to governmental response to hostage taking, he notes the following: "But, if they voluntarily risk their own lives by going into dangerous zones through personal choice and are taken hostage, we should not allow our government and the rest of us to be held hostage" (page 116). The author has therefore effectively addressed the issue of personal responsibility and accountability that is often lost in the understandably emotional debates surrounding the fate of hostages.

We Are All Targets is an excellent book that should be in the library of those in or out of uniform who must carry out their responsibilities in an increasingly dangerous international environment. It is a book that can make a difference—a difference between death and a life of psychological well-being in the face of terrorism.

Stephen Sloan
Norman, Oklahoma

REFERENCE

International Military and Defense Encyclopedia edited by Col Trevor N. Dupuy. Brassey's (order through Macmillan Publishing Company, Front and Brown Streets, Riverside, New Jersey 08075), 1993, 3,132 pages, $1,250.00.

Remember when you were in elementary school and the teacher assigned "the research report"? If the task of writing a whole page on your assigned topic was not scary enough, the prospect of finding information among all those books in the school library was positively daunting. Then somehow you found out about THE ENCYCLOPEDIA. Suddenly you had all the information you could ever want about your topic in one place. Remember the elation? The relief? We on the *Airpower Journal* staff had a similar reaction when we unpacked the six-volume set of the *International Military and Defense Encyclopedia* (*IMADE*), published by Brassey's. Although we no longer consider an encyclopedia the pinnacle of research, most of us still find it useful as a starting point. An encyclopedia places general topics in historical context and interweaves related concepts throughout a variety of subjects—as does *IMADE*.

The dearth of a single source of information on military and defense issues led to Brassey's publication of *IMADE*, which—the publisher claims—is the "first and only definitive and comprehensive English-language encyclopedia of international military and defense information." Brassey's implies that its secondary goal is to educate the general public on defense and national security issues. Therefore, *IMADE* is designed for a primary audience of faculty and students within a variety of civilian and military educational institutions and for civilian and governmental personnel working in the US and abroad.

Focusing on American, Soviet, British, and French systems, the encyclopedia includes 798 articles—all with supplemental bibliographies—in 17 topic areas:

Aerospace Forces and Warfare
Combat Theory and Operations
Leadership, Command, and Management
Countries, Regions, and Organizations
Armed Forces and Society
History and Biography
Land Forces and Warfare
Logistics
Manpower and Personnel
Materiel and Weapons
Naval Forces and Warfare

Technology, Research, and Development
Military Theory and Operations Research
Defense and International Security Policy
Military and International Security Law
Military Intelligence
General Military

IMADE does have its weaknesses, however. First, the honorary advisory board and the editorial boards are composed entirely of a distinguished and credentialed group of *men*, the overwhelming majority of whom come from Army backgrounds. This weighting towards a particular military experience leads to a strong Army emphasis and a perceived bias.

In addition, the above list of subject areas emphasizes some issues at the expense of others. For example, I read an article entitled "Electronic Warfare Technology Applications," which devoted three of its eight pages to radar equations. Although the subject of the article may be important, I don't think it deserves eight pages, especially when we consider that I couldn't find even one paragraph devoted to total quality (TQ) anywhere in *IMADE*, despite the fact that TQ is changing the way the entire Air Force does business. As a whole, the encyclopedia seems to deemphasize such areas as personnel and leadership—a questionable practice. Certainly if one of *IMADE*'s goals is to educate the public, it should cover some of the issues that receive so much public attention. In the preface, however, Brassey's does mention the problem of keeping the encyclopedia current; it's doubtful that a satisfactory solution to this problem is possible.

Overall, *IMADE* is a major publication worthy of any public, private, or professional library. Although few of us could afford to buy *IMADE* for our personal libraries, we should work at procuring it for our base or unit libraries.

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VIETNAM

We Were Soldiers Once . . . and Young: Ia Drang—America's First Battle in Vietnam by Lt Gen Harold G. Moore and Joseph L. Galloway. Random House, 201 East 50th Street, New York 10022, 1992, 412 pages, $25.00.

This book is a superb account of the Battle of the Ia Drang (Valley) in October and November 1965—the first major battle of the Vietnam War between US and North Vietnamese Army (NVA) troops. One of the coauthors, Lt Col Harold Moore, commanded the 1st Battalion, 7th Cavalry, which—after being dumped off by "slicks" (helicopters)—found itself immediately surrounded by more than 2,000 North Vietnamese soldiers. The other coauthor, Joseph L. Galloway—a journalist—was also at the battle. With about 250 troops at landing zone (LZ) X-Ray, Moore had thoughts about Gen George Armstrong Custer at the Little Big Horn some 89 years earlier. Moore was determined that history would not repeat itself at the Ia Drang.

He knew that he had one thing that Custer didn't—firepower—which he credits for saving the day. Artillery from nearby fire-support bases walked rounds down the mountainside to the surrounded Americans' established perimeter. Army helicopters attacked with 2.75-inch rockets while Air Force fighter-bombers dropped 250- and 500-pound bombs and let loose destructive napalm canisters. In addition, Moore credits the A-1 Skyraider, "the antiquated single-engine propeller plane of Korean War vintage," with providing some of the best air support during the fray.

The battle was tense and bloody:

> Never before had the Vietnamese enemy carried the fight to an American Army unit with such tenacity. None of the common wisdom born of the American experience in Vietnam to date applied to this enemy. We were locked into a savage battle of fire and maneuver, a battle for survival, which only one side would be permitted to win. (Page 113)

During the first night, an Air Force C-123 flare ship dropped parachute flares nonstop, enabling US troops to see and place small-arms fire on the enemy, thus preventing penetration of the American line. The tally for the fight at LZ X-Ray was 834 confirmed enemy dead and an estimated 1,215 killed and wounded by artillery, air attacks, and rocket attacks. The Americans tallied 79 battle deaths, 121 wounded, and none missing.

This battle marked the first time that B-52 strategic bombers were used in a tactical role in support of American ground troops. Indeed, an anticipated B-52 attack on the area around LZ X-Ray prompted moving US troops from that location to be picked up at LZ Albany. Moore questions the rationale behind the six-mile march to LZ Albany, especially for a divi-

sion that had over 400 helicopters at its command. It was the misfortune of the 2d Battalion, 7th Cavalry, commanded by Lt Col Robert McDade, to run into the 550-man NVA reserve force of the 8th Battalion, 66th Regiment. The latter unit had been bivouacked to the northwest of the American column, which was spread out on a line 550 yards long in triple-canopy jungle. The units in the middle of the column were immediately overrun. Soon, the entire 2d Battalion, 7th Cavalry, was reduced from a full battalion in line to a small perimeter defended by a few Alpha Company survivors, the recon platoon, a handful of stragglers from Alpha and Delta companies, and the battalion command group at LZ Albany. The details of this encounter are gruesome. Hand-to-hand combat was the norm at various positions. The horrors and screams of wounded troops being massacred by NVA patrols and the cheers of US troops when the brutal napalm canisters landed directly on the enemy bring to light the awesome, savage reality of war. As was the case at LZ X-Ray, the authors point to firepower as the deciding factor at LZ Albany, particularly the old, slow A-1 Skyraiders that maneuvered magnificently around the tree lines, dropping napalm and 250-pound bombs and unleashing deadly accurate 20-mm cannon fire. Total US casualties at Albany were 151 killed, 121 wounded, and four missing, while enemy estimates were 403 killed and 150 wounded.

The reader will be impressed with the fighting spirit of the American troops, most of whom were draftees, some with only a few weeks left on their Army tours. Stories of their heroic deeds fill the book. The will and staying power of the enemy soldiers also deserve admiration. Even though they didn't have the firepower of the Americans, they continued to fight, charging US lines with ruthless determination at a tremendous loss of life.

Moore was particularly perturbed that he could not pursue the NVA into Cambodia, a US policy that continued at least until the spring of 1970. Both sides learned some lessons, although not the correct ones. US leaders believed that they could beat the enemy through attrition—trading one American life for 11 or 12 North Vietnamese until the enemy gave up. This thinking was erroneous because the Vietnamese accepted that ratio and were willing to sacrifice more lives to win. Further, because they had sanctuary in Cambodia, they could choose to fight when they were ready and leave when they wanted to. The NVA learned that they could cope with American technological superiority no matter how serious their losses.

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

WORLD WAR II

Battle of the Bismarck Sea by Lex McAulay. St. Martin's Press, 175 Fifth Avenue, New York 10010, 1991, 226 pages, $19.95.

The Battle of the Bismarck Sea has been long overdue for a serious historical examination. The details of this epic battle have been largely forgotten by everyone except the surviving participants and a few historians. During the first four days of March 1943, American and Australian land-based bombers and fighters smashed a 16-ship Japanese convoy that was bringing vital reinforcements to Lae, New Guinea. Had the Japanese successfully landed their troops, the course of the New Guinea campaign probably would have been very different.

Lex McAulay, an Australian, has done an admirable job in writing *Battle of the Bismarck Sea*, perhaps the most detailed account of this battle ever produced. By the time we finish reading it, we know everything we could conceivably want to know—the meticulous Allied preparations and plans, an almost hour-by-hour account of each unit involved in the fighting, and the aftermath of the battle. The account is also remarkably balanced, including both Allied and Japanese viewpoints.

Although McAulay is to be praised for such a thorough piece of research, his very thoroughness contributes to the book's only weakness. So many Allied units were involved in the action at any one time that McAulay's "you-are-there" technique sometimes makes it difficult to figure out who did what to whom. Perhaps inadvertently, he has re-created the very "fog of war" that existed during the battle itself. This is best exemplified by a diagram of the attack routes of Allied aircraft, which resembles a plate of spaghetti. The movements of large numbers of high-speed aircraft attacking multiple targets within a fairly small area do not readily lend themselves to diagramming.

Having said this, I would still recommend this book to serious air power scholars. The Battle of the Bismarck Sea is one of those World War II battles that everyone has heard of but few know much about. Yet in almost textbook fashion, it illustrates the successful application of some of the most important principles of war—surprise, security, flexibility, mass, and offensive action, to name just a few. It still represents one of the greatest victories of land-based aircraft over naval forces. Lex McAulay is to be commended for making this epic struggle accessible to contemporary students of air power history.

Maj James C. Ruehrmund, Jr., USAFR
Richmond, Virginia

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B-48

The Future of Air Power in the Aftermath of the Gulf War by Richard H. Shultz, Jr., and Robert L. Pfaltzgraff, Jr., 1992, 386 pages, public release.

This collection of essays includes the proceedings of a 1991 conference on "The United States Air Force: Aerospace Challenges and Missions in the 1990s" sponsored by the Air Force and Tufts University. The 20 contributors—including academics, high-level military leaders, government officials, journalists, and top executives from aerospace and defense contractors—comment on the pivotal role of air power in the war with Iraq and address issues and choices facing the Air Force. These include factors that are reshaping strategies and missions, the future role and structure of air power as an element of US power projection, and the aerospace industry's views on the Air Force's future acquisition priorities and strategies. The authors agree that aerospace forces will be an essential and formidable tool in US security policies into the next century.

B-45

Conflict, Culture, and History: Regional Dimensions by Stephen J. Blank et al., 1992, 370 pages, public release.

Five specialists examine the historical relationship of culture and conflict in various regional societies. The authors use Adda B. Bozeman's theories on conflict and culture as the basis for their analyses of the causes, nature, and conduct of war and conflict in the former Soviet Union, the Middle East, Asia (China, Japan, and Vietnam), Latin America, and Africa. Stephen J. Blank, Lawrence E. Grinter, Karl P. Magyar, Lewis B. Ware, and Bynum E. Weathers conclude that non-Western cultures and societies do not reject war but look at violence and conflict as a normal and legitimate aspect of sociopolitical behavior.

apj CONTRIBUTORS

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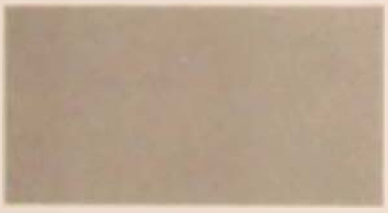

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