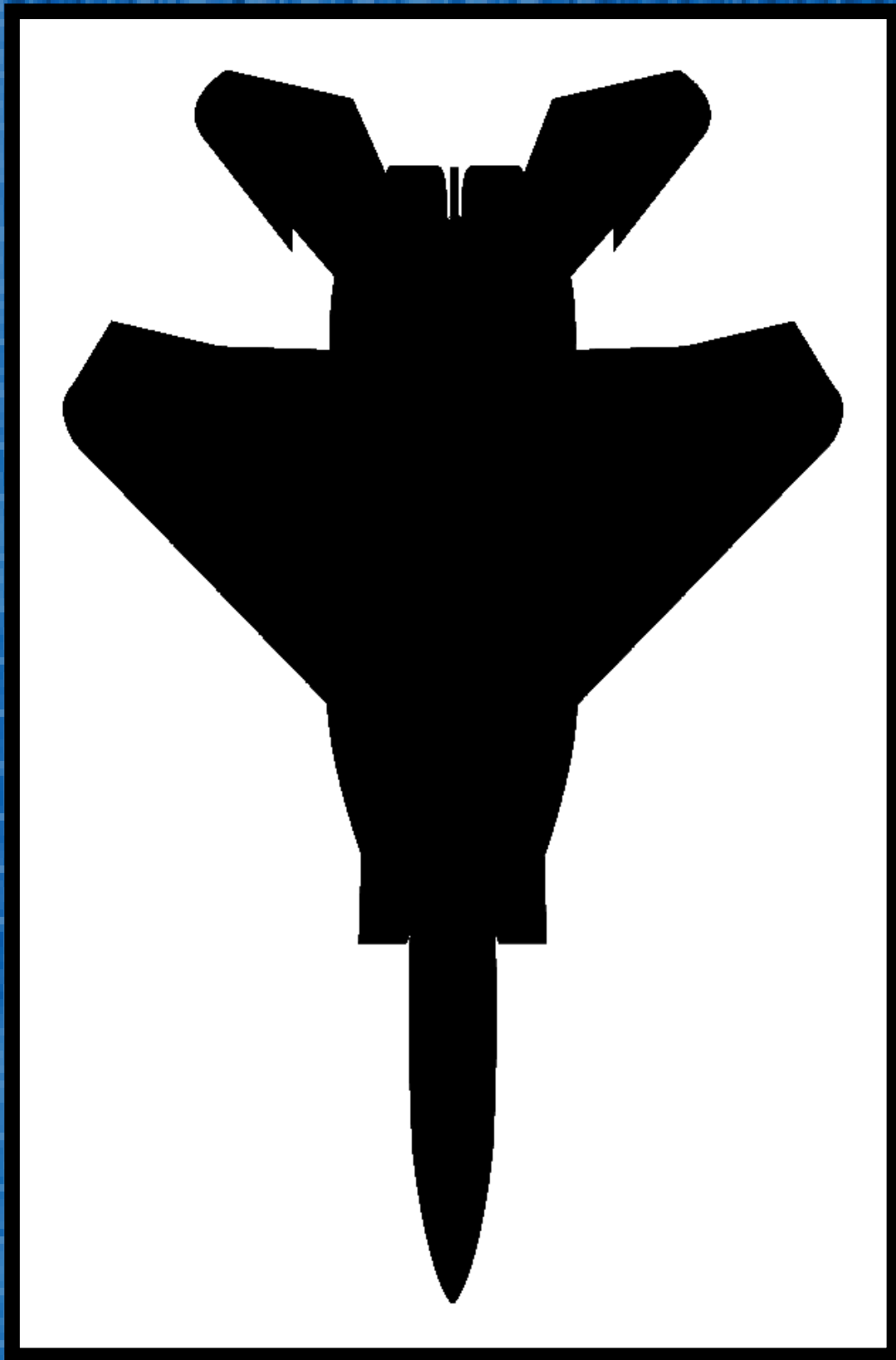


Losing Air Dominance



**A Mitchell Institute Special Report
SEPTEMBER 2008**



Brig. Gen. Billy Mitchell

On September 12, 1918 at St. Mihiel in France, Col. William F. Mitchell became the first person ever to command a major force of allied aircraft in a combined-arms operation. This battle was the debut of the US Army fighting under a single American commander on European soil. Under Mitchell's control, more than 1,100 allied aircraft worked in unison with ground forces in a broad offensive—one encompassing not only the advance of ground troops but also direct air attacks on enemy strategic targets, aircraft, communications, logistics, and forces beyond the front lines.



Mitchell was promoted to Brigadier General by order of Gen. John J. Pershing, commander of the American Expeditionary Force, in recognition of his command accomplishments during the St. Mihiel offensive and the subsequent Meuse-Argonne offensive.

After World War I, General Mitchell served in Washington and then became Commander, First Provisional Air Brigade, in 1921. That summer, he led joint Army and Navy demonstration attacks as bombs delivered from aircraft sank several captured German vessels, including the *SS Ostfriesland*.

His determination to speak the truth about airpower and its importance to America led to a court-martial trial in 1925. Mitchell was convicted, and resigned from the service in February 1926.

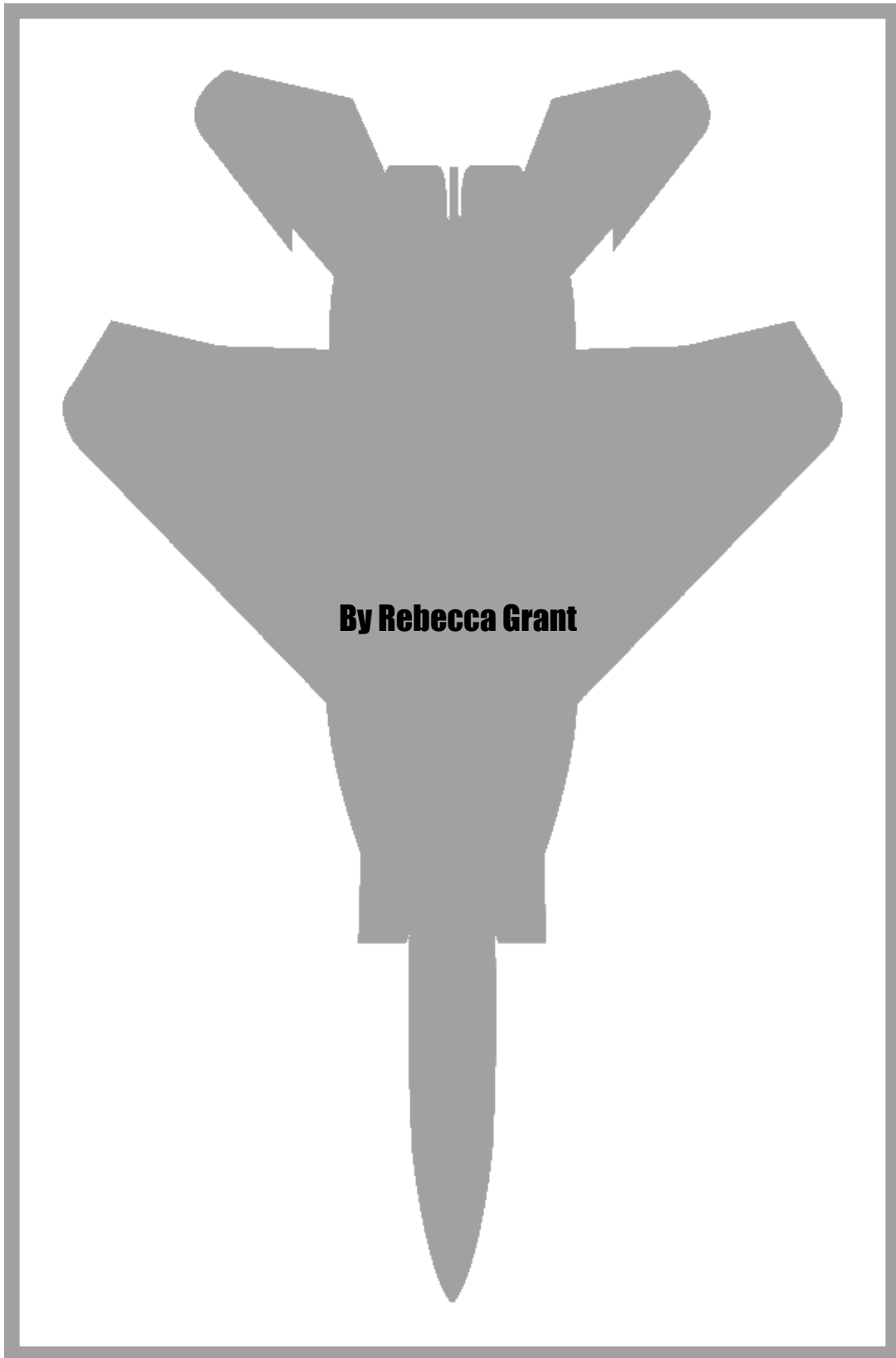
Mitchell, through personal example and through his writing, inspired and encouraged a cadre of younger airmen. These included future General of the Air Force Henry H. Arnold, who led the two million-man Army Air Forces in World War II; Gen. Ira Eaker, who commanded the first bomber forces in Europe in 1942; and Gen. Carl Spaatz, who became the first Chief of Staff of the United States Air Force upon its charter of independence in 1947.

Mitchell died in 1936. One of the pallbearers at his funeral in Wisconsin was George Catlett Marshall, who was the chief ground-force planner for the St. Mihiel offensive.

ABOUT THE MITCHELL INSTITUTE FOR AIRPOWER STUDIES: The Mitchell Institute for Airpower Studies, founded by the Air Force Association, seeks to honor the leadership of Brig. Gen. William F. Mitchell through timely and high-quality research and writing on airpower and its role in the security of this nation.

ABOUT THE AUTHOR: Dr. Rebecca Grant is one of the nation's foremost airpower analysts, with nearly 20 years of experience in Washington, D.C. In the early 1990s, Dr. Grant worked in the operations group of the Chief of Staff of the Air Force, for the Secretary of the Air Force, and for RAND Corp. In 1995, she founded IRIS Independent Research and served as its president, in which capacity she authored *The First 600 Days* (2004), *The B-2 Goes to War* (2001), and *The Radar Game* (1999), among other titles. Dr. Grant since 1996 has written extensively for *AIR FORCE* Magazine, and in 2002 was named a contributing editor. She is a Senior Fellow of the Lexington Institute in Arlington, Va. Dr. Grant is the first Director of the General Billy Mitchell Institute for Airpower Studies, the public policy and research arm of the Air Force Association. Her current research interests include cyberspace, airpower in joint operations, and future defense planning.

Losing Air Dominance



By Rebecca Grant

**A Mitchell Institute Special Report
SEPTEMBER 2008**

OVER the years, critics have complained that the United States Air Force has not been a good steward of the military space enterprise. Others have charged that it has neglected long-range bombers. Some have argued that USAF has been too enamored of manned aircraft at the expense of unmanned systems. Rarely, though, has the Air Force been accused of falling short on air dominance. Yet, just such a situation is developing today.

For the first time since its establishment as a separate service in 1947, the Air Force is in danger of losing its ability to guarantee air dominance. The problem stems not from lapses in technology or tactics. It stems, rather, from the breakdown of a fighter master plan set in motion after the Gulf War of 1991.

Moreover, the Air Force must contend with Pentagon efforts to downgrade air dominance in favor of increasing US emphasis on ground-centric irregular warfare.

The Air Force's core fighter force has gotten old. In the wake of the Gulf War, the Air Force hatched a plan to thereafter acquire only highly advanced stealth fighters. That plan now has gone badly awry. As a result, USAF confronts the real danger of having insufficient numbers of advanced fighters for future needs.

Just because classical air combat is not in the headlines does not mean there are no prospective challengers. Russia, China and India all are grasping for more and better air dominance capabilities for their own use. Worse, they are developing these capabilities for the international market. This export potential—the power to place advanced systems into the hands of otherwise minor powers—could alter US risk calculation in every phase of war, from routine shaping operations to major combat.

The sagging fighter situation will influence not only the outcome of future air-to-air encounters but also help decide the availability of specialized air-to-ground capabilities needed to attack and neutralize modern surface-to-air missile (SAM) batteries as well as shoot down cruise missiles and other theater missiles that threaten US forces and allies.

Gen. John D. W. Corley, commander of Air Combat Command, recently summed up the situation with these words: "Everybody has figured out that airpower—specifically, from the US Air Force—is America's asymmetric advantage. They want to take that away from us."¹

What is air dominance? There is no official joint definition,



According to Gen. John D. W. Corley of Air Combat Command, "Everybody has figured out that airpower—specifically, from the US Air Force—is America's asymmetric advantage." (USAF photo)

but it can be characterized as that state in which an airpower force is assured of being effective in all its offensive tasks or missions—in the air, on the ground, and in space.

This air-dominance concept extends far beyond either "air superiority" or "air supremacy," which apply only to relative power in the air. Merely defeating an enemy in the air does not ensure effectiveness. The enemy can still prevent effective offensive operations through a variety of means, ranging from ground-to-air attacks to attacks on friendly airbases, from cyber operations to camouflage and dispersal.

One airman defined air dominance as "the highest airpower state, when the requisite effectiveness of airpower is achieved, ... 100 percent of friendly bombs hit enemy targets while no enemy bombs hit friendly targets, ... wars are won quickly, and ... fewer friendly casualties are suffered."²

Although the phrase itself is a post-Cold War construct, most recognize that air dominance is the central pillar of what the United States Air Force does for the nation. At the core, air dominance is built upon the traditional USAF ability to surmount defenses and open any adversary targets to attack from the air.

What air dominance has meant in recent years is an ability to dominate the skies so that all other types of air and joint operations can function at peak effectiveness. Dropping relief supplies on precision coordinates in Afghanistan depends on air dominance. So does providing pinpoint infrared imaging from an F-16 watching a road in Iraq. Since 2001, air dominance

1. Gen. John D.W. Corley, *Defense Writers Group roundtable*, March 27, 2008.

2. Maj. Craig A. Hughes, "Achieving and Ensuring Air Dominance," *research paper for Air Command and Staff College, Air University*, 1998.

has also meant patrolling the skies over America to prevent and airborne attacks such as those seen on Sept. 11, 2001.

Airmen today are doing more than ever to dominate in a range of missions. Unfortunately, legacy fighters retained in the force are already showing weaknesses and will not meet air dominance requirements in heavily defended airspace.

That's not the only problem. Ever since 2004, the Pentagon has focused more and more heavily on the demands of irregular warfare and accorded it a far more prominent place in joint campaign doctrine. The shift has, in turn, forced to the surface the question of what constitutes the right type of air dominance force for irregular warfare, shaping operations, and other relatively new tasks.

Today's air dominance force was structured primarily to accommodate an older concept of joint operations. It viewed major combat operations and dominant maneuver—to use the joint term—as the culminating points of any campaign. The campaign had four notional phases—deter, seize the initiative, dominate, and stabilize. However, Phase 3—dominant maneuver—was the centerpiece.

In the past two years, however, joint doctrine has gone through a major change. The doctrine writers have expanded it; it now comprises six phases of war—i.e., shape, deter, seize the initiative, dominate, stabilize, and enable civil authority. (See box, p. 11). Phasing helps commanders to visualize an entire campaign overall and to define requirements for forces, resources, time, and space. The Joint Force Commander, however, is the final authority on the number and sequence of phases.

The change affects more than the phases of war. Reflecting recent experience in Iraq and, to a lesser extent, Afghani-



Air Force F-16 fighters launch flares during a mission over Iraq.
(USAF photo/TSgt. Scott Reed)

stan, the Joint Staff estimated in a recent update to Joint Doctrine for Operations that irregular warfare in the later phases of a campaign could require a level of military effort as great as—and perhaps greater than—what is needed for so-called major combat operations.

This declaration constitutes a seismic shift in American military thinking. In theory, the power to wage irregular warfare might get the same priority in force tasking as Phase 3 dominant combat operations has received in decades past. It is forcing a re-evaluation of air dominance needs.

This joint doctrine revision, written into Joint Pub 3-0 in February 2008, has not downgraded military preparation for more-conventional type of war. Rather, it has simply created a



An F-22 fighter cruises during a training mission over Colorado.
(USAF photo/TSgt. Rick Sforza)



In a mission over Iraq, this F-15E strike fighter bristles with advanced air-to-air and air-to-ground munitions.
(USAF photo/SSgt. Aaron Allmon III)

need to expand forces in all directions. The doctrine is a campaign planning guide, not a strategic planning handbook, but the basic point is clear enough: The demand for air dominance, and therefore its tasking, has never been broader.

Long before this demand was codified in doctrine, airmen have been exerting dominant power across all of the many phases of war. The bad news is that the Air Force is facing shortfalls in nearly every phase. It is time for rethinking what air dominance really means and how the Air Force should organize, train, and equip to provide it.

THE PROBLEM

Air dominance is the core USAF mission. Its value first stood out in World War I and became a precondition for American operational success in all World War II campaigns. Gen. Dwight D. Eisenhower, the Supreme Allied Commander, wrote that his plan for the June 6, 1944 Normandy landings was based on “the conviction that, through an overpowering air force, numbering its combat strength in thousands rather than in hundreds, the German’s defenses could be beaten down or neutralized, his communications so badly impaired as to make counter-concentration difficult, his air force swept from the skies.”³ After the war, Eisenhower concluded that the conflict’s foremost military lesson was the “extraordinary and growing influence of the airplane in the waging of war.”

Consequently, air dominance was entrusted to the Air Force in the very first assignment of roles and missions after World War II. But it has never been easy to decide how to invest in it. New challenges and debates among airmen have come along more or less regularly, upsetting plans many times.

No sooner had the Air Force gained independence and taken the air dominance assignment than it relegated tactical

aviation to second-class status. Bombers were the backbone of nuclear striking power and deterrence. World War II operations in the Pacific and Europe had honed fighter tactics and cooperation with ground forces. However, much of the fighter force was demobilized rapidly and the famous fighter generals of World War II, such as Gen. Pete Quesada, took a back seat in the postwar force.

Fortunately, research and development of jet fighters continued in the postwar years. The Korean War and the appearance of the MiG-15 fighter signaled the beginning of decades of US-Soviet competition in the design of fighters for air superiority. Fighter forces also relearned lessons about strafing, bombing from 50 feet, and emergency close air support. Many of the same young men who flew in World War II were called up again to fly and fight in Korea.

After the end of the Korean War in 1953, continental air defense took shape as the dominant air defense mission. The late 1950s saw dispersal of more than 2,000 air defense fighters in the United States at various active and reserve component bases. It was the day of the interceptor: fast planes designed to pursue Soviet bombers on a nuclear raid. At the same time, USAF forces in Europe worked to integrate with the NATO plans for facing down the Warsaw Pact.

Continental air defense interceptors required, above all, one thing—speed to close with an enemy aircraft. Maneuverability of fighters waned. The F-4 and F-105 were not designed to maximize this kind of performance.

Airmen paid the price in Vietnam, where another agile Soviet-built fighter, the MiG-21, made its debut. After the early experience of Vietnam, it became clear that the Air Force had to



Gen. Dwight D. Eisenhower in 1944 awards DSCs to Capt. Don Gentile (c) and Col. Donald Blakeslee. Ike was impressed by “the extraordinary and growing influence of the airplane in the waging of war.”

3. Gen. Dwight D. Eisenhower, *Crusade in Europe* (Doubleday, 1948), p. 47 and 452.



The 1991 Gulf War air campaign—featuring fighters such as these F-15, F-15E, and F-16 aircraft—drove the Iraqi Air Force from the skies and badly mauled dug-in Iraqi ground forces. (USAF photo)

upgrade its fighter tactics and training and invest in stronger fighter designs.

The principal result was the F-15. Starting with its earliest test flights in the early 1970s, the F-15 clearly showed the ability to dominate air-to-air engagements. The Air Force bought enough to ensure that older fighters such as the F-4 and multi-role aircraft such as the planned F-16 could perform their missions unhindered.

A 1980s decision added the F-15E as a two-seat air-to-ground fighter. Both the F-15C and F-15E more than proved their worth in the 1991 Gulf war and reconfirmed it in the next 17 years of engagement with Iraq.

Another lesson of Vietnam was that advanced SAMs could seriously hamper achievement of air dominance. One response was priority research on low-observable technology, which led to the F-117 as the first stealth aircraft.

By the early 1980s, the Air Force had in development a highly classified Advanced Tactical Fighter. The objective was a combination, in a single aircraft, of stealthiness, high maneuverability, supersonic speed, and supercruise.

Lockheed and Northrop flew competing prototypes in early 1991. The end result was the selection of the YF-22. Plans called for the F-22 to replace all F-15Cs and F-15Es at a ratio of about 1:2, meaning USAF would be lopping in half its high-end fighter force. Still, it was judged that a force of that size would yield air dominance for 40 years at an affordable price.

The problem is, this never came to pass, and that is a story all its own.

THINGS GO WRONG

In a way, it all started with the Gulf War. The year 1991

seemed like the dawn of a new age for American airpower. Stunning air dominance had provided the vital edge in the international coalition's fight to drive Saddam Hussein's Iraqi forces out of Kuwait. The air campaign that began on Jan. 17, 1991, ultimately drove the Iraqi Air Force from the skies and mauled dug-in ground forces to the point where even the elite Republican Guards beat a hasty retreat up the road to Baghdad as soon as Coalition ground forces rolled into Kuwait. The war was over by March 1.

Not long after, on April 23, 1991, Secretary of the Air Force Donald B. Rice announced the selection of Lockheed's YF-22 as the winner of the ATF competition. Enough design work had been done to guarantee the F-22 could be developed to meet signature, cost, and performance requirements. The Air Force planned to acquire 750 of them. Seemingly, though, the Pentagon and the Air Force were in no hurry; plans called for delivery of the first operational units in 2005.

The F-22 was the key of an immensely important decision for the Air Force. After Desert Storm, the Air Force decided never again to buy a non-stealthy fighter. According to the then-Chief of Staff of the Air Force, Gen. Merrill McPeak, there was no point in buying any more "aluminum" fighters. Stealth was to be the Air Force hallmark from then on.

This was a bold decision, given the strong performance of standard fighters—the F-15s and F-16s in particular—in the Gulf War. F-15Cs posted a perfect combat record. The F-15Es were among on a few aircraft equipped with infrared targeting for precision laser-guided bombing. F-111 fighter-bombers and the F-117 had laser-guided capability already. A handful of Pave Tack pods from the F-111's inventory were rushed to theater

Losing Air Dominance

for the F-15E. For some of the two-man F-15E crews, their first check ride with the Pave Tack was on a combat sortie. However, the F-15Es were new aircraft with exceptional bomb-carrying and fuel capacity for a fighter. They became workhorses for tough air-to-ground missions.

The F-15E was still in production and it would have been easy indeed for the Air Force to make a case for a big new buy based on combat results.

The Gulf War, although it was an airpower walkover, nonetheless taught some disturbing lessons. Nearly every weapon system community lost an aircraft or two, usually to ground fire, and some lost more than a few. Pilots attacking Baghdad



Gen. Merrill McPeak, in the wake of the Gulf War, saw no point in buying more “aluminum” fighters, arguing to go with stealth all the way from then on. (USAF photo)



Stealthy F-117s were the stars of the Gulf War because nobody ever laid a glove on them. Pilots and commanders, pondering the future, concluded they wanted more stealth. (USAF photo)

targets remembered flying through anti-aircraft fire so dense it was like being inside a popcorn popper. In another case, an F-16 in a mass raid on a chemical plant was lost due in part to failures of coordination with electronic attack assets. SAM-killing aircraft were busy constantly. For all that, nobody laid a glove on the low-observable F-117. Pilots and commanders walked away with a very vivid image of what the future might hold, and they wanted more stealth.

A year later, McPeak testified, “The F-15 will be able to win any fight that I can think of out of the turn of the century” but that its days were numbered after that.⁴ “The F-15 cannot get to the fight after the turn of the century,” by about 2010, McPeak judged. As a result, USAF resisted any temptation to beef up its inventory of F-15Cs, F-15Es, or F-16s, pushing instead its long-term commitment to buy stealth.

It was a bold and visionary move that was expected to pay huge dividends, and everyone expected the plan to hold up.

A SMALLER FORCE

The fact that the plan did not hold up explains today’s deterioration of the Air Force’s grip on air dominance. The plan had three parts: shrink but continually update the fleet of current fighters, buying no more of them; develop the F-22; and add a less expensive multirole stealth fighter to eventually replace the F-16 and the A-10.

In the early 1990s, the Air Force had begun a program of deep cuts to the fighter force structure and the overall size of the Air Force. Military forces were cutting people and systems

4. Gen. Merrill A. McPeak, Air Force Chief of Staff, House Armed Services Committee, April 29, 1992.

left and right to produce a “peace dividend” now that the Cold War was finally over.

Still, even by these standards, the Air Force cuts were remarkable. Nothing was spared to put the plan in place. On the cut list was the F-111, a Gulf War superstar. It was retired outright in spite of its excellent Gulf war record of precision bombing and tank-plinking. Soon the last of the F-111Fs were sitting in “the boneyard” at Davis-Monthan AFB, Ariz.

McPeak, in a 1994 speech at the Heritage Foundation in Washington, D.C., said that “our nation has too much tacair. ... The United States has nearly twice as many fighter aircraft as any other nation.”⁵ As a result, the Air Force and the Pentagon agreed to cut the fighter force from 36 fighter wing equivalents in 1990 to 26 fighter wings. Later, that number fell to 20 wings, where it has stayed.

Making possible the cuts of this scope and magnitude was precision. As older aircraft retired, the newer ones remaining in the inventory got precision targeting systems and precision-guided weapons that made them far more capable than ever before. With precision, each fighter became a multi-role platform.

In Desert Storm, only Air Force F-117s, F-111s, and a dozen or so F-15Es had infrared targeting systems that would allow them to self-designate laser-guided bombs. Navy A-6s and some allied aircraft had some limited capabilities for precision, but the Air Force expended 90 percent of the PGMs in that war.

Within a few years, the LANTIRN night-time targeting pods became standard equipment for F-15Es and F-16s. The Navy invested in precision, turning its F-14 Tomcat into a precision-capable “Bombcat” while adding upgrades to the F/A-18C force as well.

Combat results were dramatic. In 1995, just four years after the Gulf War, fighters carried out Operation Deliberate Force, the two-week air campaign against Bosnian Serb targets. The short air campaign was the first in which employment of laser-guided precision weapons superseded that of standard, unguided bombs. In 1999, fighters drew most of the assignments for time-critical targeting in Operation Allied Force, the so-called Air War Over Serbia. Advances were notable. For example, the F-15E had been modified in the mid-1990s so the pilot en route to a target could receive video images of that target after getting airborne.

The laser-weapon mini-revolution was followed by a Global Positioning System mini-revolution. In 1999, the B-2 bomber was the only aircraft able to drop the all-weather, GPS-guided Joint Direct Attack Munition. In Operation Enduring Freedom in Afghanistan just two years later, many other Air Force and Navy aircraft employed JDAMs to great effect.

Unfortunately, the stunning successes of the precision-capable fighter force did not translate into support for long-term funding for air dominance. Though these smart weapons were lauded on television news broadcasts, the nation never really came to grips with the need to provide for such an advanced fighter force. This would have fatal effects on the long-term modernization plan that depended on a consensus stretching across two decades.

In contrast, the Navy opted for a plan it could execute relatively quickly. It could do so because the Navy did not have to shoulder responsibility for air dominance. Instead, it was oriented toward striking power for the carriers.

The Navy moved with stunning swiftness, however. It retired its Vietnam era A-7 and A-6 attack aircraft then put together a successful program to modify the F/A-18 Hornet into the



F-16s were among the first fighters to reach the Gulf. For the Air Force, high-rate buys of 8,000-hour F-16s in the 1980s had provided a deep bench of force structure. (USAF photo)

F/A-18E/F Super Hornet with better range, performance, and other qualities. This gave carrier aviation more flexibility.

In 1999, the Navy moved to cut even deeper by retiring its S-3 anti-submarine warfare/multi-purpose patrol aircraft. It also took the highly controversial step of planning to shelve its top air superiority fighter, the F-14, in order to fund large multi-year purchases of the Super Hornet. When the last F-14 was retired in 2007, those purchases were in full swing.

So, how did the Air Force plan work out?

Part one—the downsizing coupled with precision upgrades across the fleet—was complete by the turn of the century. USAF’s force was smaller but far more capable.

Part two—bringing on the F-22—and part three—developing the cheap, multirole stealth fighter—both took very unexpected turns. In a sense, the Air Force has yet to recover.

5. Gen. Merrill A. McPeak, Air Force Chief of Staff, Heritage Foundation speech, Oct. 13, 1994.

THE RAPTOR ELEMENT

It has been a long time since the Air Force adequately explained why it needed “two new fighters,” the F-22 and the F-35.

Actually, the F-22 was the principal program underwriting the force reductions and justifying decisions in the 1990s not to waste taxpayer money on conventional fighters. The final outcome of the F-35 program was always seen as important, but production of an adequate number of F-22s always was viewed as the pivotal factor. Once in the force in sufficient numbers, the F-22 would enable retirement of the F-117 (already accomplished), all F-15Cs, F-15Es, and many F-16CJs.

The F-22 made its first flight in 1997. Right from the beginning of its test regime, it was one of the least troublesome of aircraft, practically a golden child amongst its peers. Its low observable signature results met requirements. It sailed through supersonic cruise. The development of its software would turn out to be a real challenge, but, considering the Raptor’s technical complexity, it performed much, much better than other aircraft at the same stage of development.

However, the effort to buy sufficient numbers of F-22s became a struggle long before its first flight. The bold decision to not buy any more non-stealthy fighters had put the Air Force’s air dominance at far more risk than anyone anticipated.

Danger signs began appearing right away. The “too-much-tacair” contention, which arose at a time when the Cold War force was still intact, continued to shape defense debates even after the Air Force had carried out extremely deep cuts to the Cold War force structure. The existence of multiple new fighter programs—the F-22, Super Hornet, and what is now the F-35—sparked claims of wasteful overlap and redundancies.



Donald L. Rumsfeld, George W. Bush’s first Secretary of Defense, was fixated on force “transformation,” but his plan collided with the high cost of the Global War on Terrorism.
(DOD photo/TSgt. Andy Dunaway)



The F-111F fighter-bomber was a superstar of the Gulf War, but that didn’t keep it off the cut list when the Air Force began to downsize its fighter force in its quest for stealth. *(USAF photo)*

Moreover, the new fighter programs had by the mid-1990s produced a huge tactical fighter production “bow wave” in the so-called “out years.” Projections held that the Pentagon would be spending some \$10 billion annually on procurement of the three new fighters, as each was projected to be in low-rate or full-rate production in the 2000s. Worries about this “bow wave” dominated discussions and analysis of tacair modernization in the late 1990s. It was not resolved until the early 2000s.

The debate was shaped, to a large extent, by a false perception. The fighter fleet of the 1990s appeared to be, and was, large and healthy. Bulk buys of top-line fighters in the 1980s had left the Air Force, Navy, and Marine Corps well off. For the Air Force, high-rate buys of 8,000-hour F-16s provided a deep bench of force structure.

As shown in the chart on p. 12, USAF fighter purchases tailed off in the 1990s in expectation of a smaller force structure and an influx of more capable F-22 and, later, F-35 replacements. (The chart does not include 54 F-117s purchased in 1981-84.) Proposed annual procurement of all fighter types fell from 104 in 1991 to zero in 1995, with only weak production after that.

The problem is that the Pentagon did not, as had been planned, begin efficient production of the new fighters around the turn of the century. Soon, the wheels began to come off. What once seemed to be a manageable “pause” in fighter procurement lengthened and expanded, turning into a debilitating drought, putting the entire air dominance mission at risk.

The problem had been brewing for years. The F-22 suffered program cuts and delays even before it entered low rate initial production. That is because the Air Force was not successful in

linking its declared F-22 requirement to threat conditions and air dominance requirements.

The George H.W. Bush Administration cut the requirement from 750 to 680 fighters. In 1993-94 the Clinton Administration's so-called "Bottom Up Review" of defense programs reduced the program of record to 442 Raptors. The 1997 Quadrennial Defense Review took the requirement down to just 339 aircraft, or about three wings' worth. The QDR, however, did leave an option to increase the buy to five wings to incorporate advanced air-to-ground capability and replace the F-15E and F-117 fighters.

In 2001, the Pentagon conducted yet another QDR, but it didn't directly address the air dominance programs to the extent of changing numbers. The next year, however, the F-22 and four other major force programs came under harsh scrutiny. The F-22 program survived intact, due mostly to Joint Staff support, but skeptical Pentagon civilian officials were looking to harvest funds from the program and would come back for another try.

ENTER THE JSF

In the 1990s, USAF also cancelled its plans to develop a multirole fighter follow-on for the F-16. Along with the Navy, the Air Force began a new effort called the Joint Advanced Strike Technology program, or JAST. It has led to development of the F-35—the third element of the Air Force's "get-well" fighter plan.

During the 1993 BUR, the Air Force and Navy staffs put their heads together about a way to move forward on research together. The Navy, for all its impressive revamping of tacair, was left without an advanced technology aircraft following the failure of the A-12, which was to be a stealth, carrier-based attack plane. (Secretary of Defense Richard Cheney cancelled it in early 1991.) Other parties such as the Marine Corps and the Royal Air Force were interested in pursuing advanced short take-off and vertical landing technologies.

The Air Force, Navy, and Marine Corps joined up on JAST. JAST was chartered in January 1994 as a technology development program to nourish research without necessarily dictating the final airframe. A handful of other research and development programs were cancelled with the intent that JAST would explore many facets of strike technology, from airframes to sensors and subsystems. Its mission was to define and develop aircraft, weapon, and sensor technology that would support the future development of fighter aircraft.

In late 1994, the Pentagon announced the award of 24 contracts, ranging from \$20 million-plus agreements with big prime manufacturers for joint strike weapon system concept design research on air vehicles to smaller contracts for elec-

THE SIX PHASES OF AMERICAN WARFARE

Phase 0 Shape: Continuous operations including normal and routine military activity "performed to dissuade or deter potential adversaries and to assure or solidify relationships with friends and allies." Goals include shaping perceptions, developing capacity for coalition operations, improving information and intelligence exchange, providing peacetime and contingency access. Joint Pub 3-0 also states specifically that shaping activities could be "executed in one theater in order to create effects and/or achieve objectives in another."

Phase 1 Deter: Warding off undesirable adversary action and demonstrating joint force capabilities and resolve. This phase specifically includes preparatory actions for subsequent phases of the campaign, such as mobilization, staging ISR assets, developing logistics and force protection plans, and assisting other government agencies and NGOs. In this phase, military action focuses on "crisis defined."

Phase 2 Seize Initiative: Permitting "rapid application of joint combat power" to "delay, impede, or halt the enemy's initial aggression and to deny their initial objectives." This phase could be preparation for the next "dominate" phase. It could include gaining access to theater infrastructure and operations to "expand friendly freedom of action." In some ways, Phase 2 retains elements of "preparing the battlefield." It also allows for limited strike operations.

Phase 3 Dominate: "The 'dominate' phase focuses on breaking the enemy's will for organized resistance or, in noncombat situations, control of the operational environment," notes Joint Pub 3-0. Phase 3 calls for an overmatch of joint forces against the adversary for two purposes. In conventional operations, Phase 3 would conclude with decisive operations to drive toward culmination and achieving joint objectives. But a second option for unconventional or mixed operations includes possible stability operations, designed to dominate and control the environment. This leaves the door open for surge operations, for example.

Phase 4 Stabilize: Phase 4 occurs in the absence of legitimate, functioning civil government. It is distinct from sustained combat operations, with operational tempo reduced to a "manageable" level. Stabilization might include planning for redeployment of forces or keeping the peace and mitigating the effects of sporadic combat.

Phase 5 Enable Civil Authority: This phase is predominantly characterized by joint force support to legitimate civil governance," states the joint doctrine. Here, the goal of an operating joint force would be to help out legitimate civil authority and support other government agency, intergovernmental organization, and nongovernmental organization activity and "influence the population" toward joint force goals.

tro-optical and infrared sensors, scaleable processors, and on-board, off-board information fusion.⁶

The JAST initiatives quickly added another metric: affordability. The Pentagon wanted to develop a stealthy fighter, yes; however, it had to be a relative cheap stealthy fighter.

In 1997, the name changed to Joint Strike Fighter and two principal teams headed by Lockheed and Boeing began work on demonstrators. The Pentagon added a requirement for an advanced STOVL capability, too. So, the JSF program was now committed to doing the hardest thing possible: building a family of aircraft for at least four principal users with different priorities and requirements.

The cost and technology trades made it a certainty the fighter would face its share of challenges. Still, demonstration phase proceeded apace. Boeing flew its X-32A on Sept. 18, 2000 and the Lockheed Martin team, which now included Northrop

Grumman and British Aerospace, followed with a first flight of its X-35A on Oct. 24, 2000. Both competitors moved on to test other versions of their demonstrators to show carrier suitability and vertical take-off and landing performance. In October 2001, the Pentagon announced the winner: Lockheed Martin.

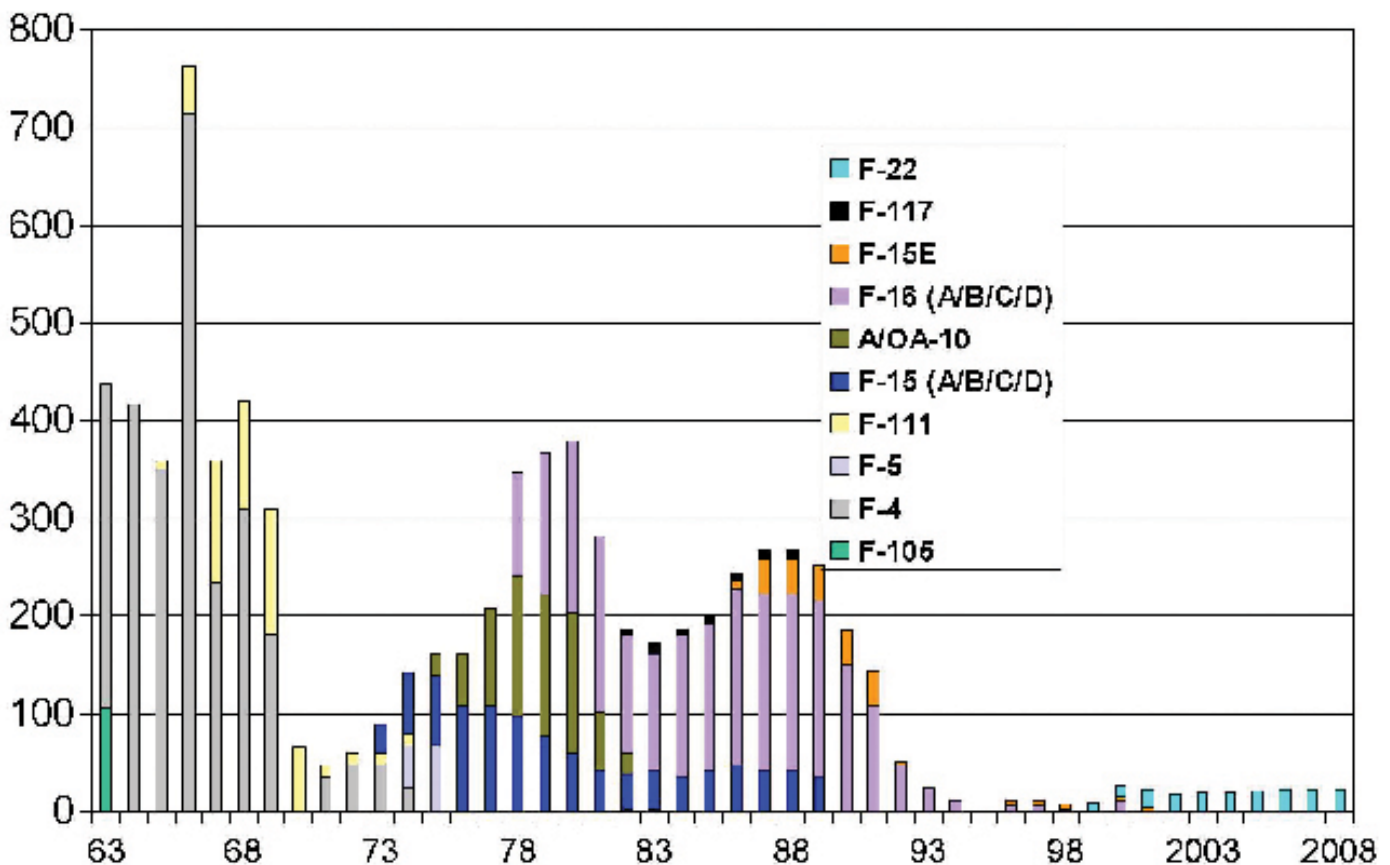
The F-35 down-select struck a positive note, especially coming as it did barely a month after the 9/11 attacks. America was now embarking on a difficult course in dealing with the menace of terrorism but for the time being, air dominance still seemed to be on a sound footing. It was not.

THE PLAN UNRAVELS

In the early years of the George W. Bush administration, transformation was the watchword. What had never been clear was how the Pentagon under Defense Secretary Donald Rumsfeld would reconcile transformation initiatives with looming

6. DOD press release, Dec. 22, 1994.

Major Fighter Aircraft Buys 1963-2008



The Air Force plan contained fewer fighters but more stealth. Thus, USAF slashed procurement of new "conventional" fighters in the 1990s to save money for stealth purchases later on.



Gordon England (r), the Bush Administration's Deputy Secretary of Defense, had a big hand in weakening the F-22 program. In background is Marine Corps Maj. Gen. James Cartwright, JCS Vice Chairman. (DOD photo/TSgt. Adam Stump)

budget bills and the potentially high cost of the Global War on Terrorism. "The Bush administration's much-touted 'transformation' of the United States military has always been something of a faith-based initiative," noted James Kitfield in a *National Journal* article in January 2005.⁷

A review of major programs took place in 2002. But it was not until the wars in Afghanistan and Iraq were well underway that the Pentagon struck, imposing a major funding cut on tacair programs.

In December 2004, the Rumsfeld Pentagon used a technical budget decision known as a program budget directive to yank funds from a range of different programs. The cuts hit primarily from 2006 through 2010. A whopping \$5 billion came out of the Missile Defense Agency's budget while the Navy lost an aircraft carrier, for example. Congress would later have its say on the cuts, but the overall impact was significant.

For the air dominance force, it was devastating. Program Budget Directive 753 broke up the post-Gulf War fighter plan for good.

PBD 753 slashed \$10 billion from the F-22 procurement budget, leaving the program of record at an anemic level of just 183 F-22s. PBD 753's reductions put the fighter force structure into the red. Without doubt, it left unfunded the Air Force's requirement for fighters to meet deployment tasking for war plans under the national military strategy.

Unlike a roughly contemporaneous cancellation of the Army's stealthy Comanche scout helicopter, the PBD 753 action drained future obligation authority out of the Air Force. The Army had been allowed to keep the Comanche's \$14.6 billion in FY 2004-2011 aviation funding.

The purpose of DOD's PBD 753 action was not hard to fathom. Michelle Flournoy, a former Clinton Pentagon official who was at the time working at the Center for Strategic and International Studies, described it this way: "The general philosophical shift you see in PBD 753 and the Pentagon's transformation efforts is away from a military that is over-invested in dealing with conventional threats and underinvested in preparing for unconventional threats."⁸

Only a few truly criticized the Raptor cuts. More prevalent was the attitude of Dov Zakheim, a former Pentagon Comptroller: "If you were only going to go after acquisition accounts, you couldn't go after the Army, which, frankly, is totally enmeshed in Iraq, [and] has itself just cancelled a major acquisition program in Comanche. ... So you look to the services that are more capital intensive, which is the Navy and Air Force."⁹

Even so, some time went by before there was much public recognition of the impact of all of this on the Air Force's air dominance plan. Air Force partisans continued to hope that OSD would relent and permit the Air Force to program funds to extend the F-22 buy beyond the 183 aircraft set by PBD 753.

The Pentagon civilians did not budge, however. Most intransigent of all was Deputy Defense Secretary Gordon England, whose opposition to the fighter had overtones of an obsession. By spring 2008, time was running out. F-22 production was starting to wind down; fresh orders would be needed if the line were to stay intact into the term of a new president. The post-Gulf War plan was now in tatters. Lt. Gen. Daniel Darnell, the Air Force's deputy chief of staff, air, space, and information operations and plans and requirements, testified in April 2008 that the truncated F-22 buy and a major stretch-out in F-35 production would leave USAF short of its force structure requirements.¹⁰

Darnell estimated a gap would open in 2017. By 2024, USAF would be short of its requirement of 2,250 fighters by some 800 aircraft. This would leave USAF with an insufficient number for two major theater wars and other taskings as laid out in the national military strategy completed in 2005.

The startling conclusion was not so much the shortfall itself, but the fact that financial decisions of the early 2000s had been made without regard for reconciling requirements and

7. James Kitfield, "Defense Cuts Compel Military Transformation," *National Journal*, Jan. 28, 2005.

8. Kitfield, *NJ*, Jan. 28, 2005.

9. Dov Zakheim, former Pentagon comptroller, American Enterprise Institute forum "The Pentagon Budget Cuts," Jan. 13, 2005.

10. Lt. Gen. Daniel J. Darnell, Deputy Chief of Staff for Air, Space, and Information Operations, Plans, and Requirements, Senate Armed Services AirLand Subcommittee, April 9, 2008.

strategy. The Pentagon did not present supporting analysis for the decisions in PBD 753. There was no announcement that the future threat had changed—just that the future should stop being such a problem for Pentagon planners.

Secretary of Defense Robert Gates perfectly encapsulated this “I’ll-think-about-it-tomorrow” attitude with his new term of derision—“next-war-itis.” In a May speech in Colorado, Gates remarked: “I have noticed too much of a tendency towards what might be called ‘next-war-itis’—the propensity of much of the defense establishment to be in favor of what might be needed in a future conflict.”¹¹

Saddled with Rumsfeld’s decisions and Gates’ view of the problem, the air dominance plan could not be deader than it is at this moment.

NEW PHASES OF WAR

It is time, then, for the Air Force to begin redefining its air dominance requirements. The debate needs to go forward in the context of joint operations. Moreover, the Air Force must fulfill its roles, missions, and functions tasking by providing air dominance across all of the phases of war.

The expanded phases of war were codified in Fall 2006 when the Chairman of the Joint Chiefs of Staff, Marine Corps Gen. Peter Pace, released a new joint doctrine for operations. That is important because, in the mid-1990s, joint doctrine was made “authoritative” and binding on commanders.

The new Joint Pub 3-0 significantly changed the military’s pre-existing concept of phases of war. It expanded their num-

ber from four to six—Phases 0, 1, 2, 3, 4, and 5. Moreover, it revised the definition of each.

One of the new intervals, Phase 0 Shaping, both opens and closes a sequence, providing “book-ends” for a particular warfighting episode. The other new category is Phase 5 Establishing Civil Authority—a clear reaction of the war in Iraq.

Phase 4 Stability Operations was adopted in the 1990s. However, its definition has changed. It now includes more metrics on reducing threats and monitoring security levels.

In February 2008, doctrinal revisions beefed up the potential force commitments required for Phase 4 and Phase 5. For the first time, these phases were depicted as engaging forces equal to or potentially greater than Phase 3’s decisive operations. The discussion of stability operations was spread throughout the phases, as well as receiving central treatment in Phase 4.

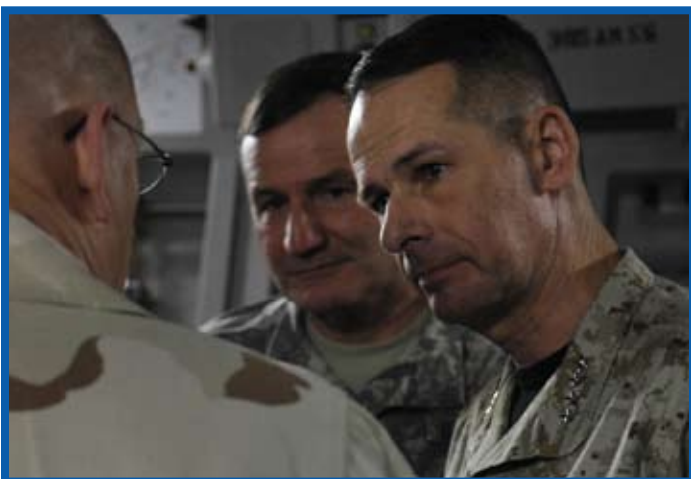
When applied to airpower, this new spectrum of war graphically illustrates potential problems. Air dominance turns out to be important to all the phases and even critical in most of them.

Air dominance is based upon forces directly engaged in finding and striking targets for a joint force commander. In USAF parlance that is the Combat Air Forces—the CAF—and it includes everything from A-10s to MQ-9s. The CAF, under leadership of Air Combat Command, takes in all fighters, bombers, attack aircraft, and ISR systems, ranging from Predator UAVs to the E-3 AWACS and E-8 Joint STARS aircraft.

Here are the ways that air dominance plays into the newly established list of war phases:

Phase 0 Shaping. Shaping means, in effect, influencing the state of affairs in peacetime. The newest of the phases of war, it is one where lines between routine activity and deliberate shaping can be hard to draw. According to the joint doctrine document, “JFCs [joint force commanders] establish and maintain access to operational areas where they are likely to operate, ensuring forward presence, basing, freedom of navigation, and cooperation with allied and/or coalition nations to enhance operational reach.”¹² Space capabilities also have a role to play in shaping the environment.

Exercises such as Cope India and the many Red Flag, Maple Flag, and other flag-named exercises of warfighting forces are part of Phase 0 Shaping. So are initiatives such as exchange tours, where, for example, an RAF pilot might be trained to fly the F-22 fighter and return to his unit with valuable knowledge. In Phase 0, air dominance might also have a homeland security component. The RQ-4 Global Hawk UAV taking pictures of fires in Alaska provides one of many forms of Phase 0 action.



Then Chairman of the JCS, Marine Corps Gen. Peter Pace, released a new joint doctrine document in 2006. It codified a major shift in the so-called “phases of war.”
(DOD photo/Cherie Thurlby)

11. Robert M. Gates, Secretary of Defense, speech for Heritage Foundation in Colorado Springs, Colo., May 13, 2008.

12. Joint Pub 3-0, Sept. 17, 2006, with Feb. 13, 2008 change, p. xxi.

The single biggest mission for Phase 0 shaping is guarding US airspace. Air sovereignty came to prominence within moments of the 9/11 attacks on New York City. Over the past seven years, it has evolved into a major commitment for air dominance. As of June 2008, fighters had flown more than 36,000 sorties as part of Operation Noble Eagle. Noble Eagle is the basis for another Phase 0 task, the interception of unidentified aircraft. Phase 0 often focuses on protection of Washington, D.C. and other cities and constant combat air patrols for the President when the chief executive travels in the United States.

Phase 1 Deter. This phase is marked by the advent of a crisis or other potential military action. Flexible deterrent operations are mentioned in Joint Pub 3-0 along with actions to isolate enemies by denying them sanctuary. Deploying B-2 bombers to Guam, for example, creates a flexible deterrent option. So does the positioning near a trouble spot of extra ISR assets. An example was the initial move to establish US and NATO E-3 AWACS patrols over Yugoslavia as internal tensions escalated there in the early 1990s. With current forces, it is easy to picture force options such as a deployment of Global Hawk and other ISR assets along with fighter forces to signal resolve in a Phase 1 crisis.

Phase 2 Seize Initiative. Phase 2 air dominance can range from the imposition of no-fly zones to limited strikes. Assuring access is part of taking the initiative, and not for nothing did airmen in the 1990s and early 2000s fly hundreds of thousands of sorties to hold the initiative over Iraq. The 12-year duration of

Operation Southern Watch was a case of continued holding of the initiative through constant combat air patrols. On occasion, joint force commanders launched limited strikes to suppress key Iraqi targets. From 1999 onwards, there was acceleration of attacks on Iraqi surface-to-air missiles found to be in violation of UN resolutions. The pace of operations quickened in 2002 as coalition forces completed objectives to seize the air initiative prior to the start of Operation Iraqi Freedom. In Phase 2, there is every prospect of a “shooting war,” meaning enemy aircraft or SAMs may try intercepts or shots, and US aircrews will employ weapons, too. The demands on ISR collection increase in Phase 2 as the need for targeting data joins the need for strategic overwatch. Further, Phase 2 usually is characterized by threats to airpower projection bases in theater.

Phase 3 Dominate. This phase of war, which tended to preoccupy military planners until recent years, is also the one with the best-articulated doctrine for operations, from strategic attack to close air support. In Phase 3, air dominance moves to center stage as forces achieve air superiority through attacks on airfields, air defenses, and enemy aircraft. At the same time, air forces carry out strikes designed to provide everything from close air support to interdiction of enemy forces deep in the battlespace and attack of strategic targets. ISR forces fulfill demands for overwatch and data on fixed, mobile, and high-value targets.

Phase 4 Stabilize. These operations take many forms, but their broad aim is to reduce the threat in an area to levels that



F-16s flying over US cities became a common sight after 9/11. Defense of air sovereignty came to prominence within moments of the massive terrorist attacks in the United States. (USAF photo/MSgt. Dean Kuhlman)

can be managed by the civil authority. The F-16 circling over a ground patrol with tightly focused ISR duties is on a Phase 4 mission. Stability operations differ from the dominate phase, but may require equally large force levels. As years in Iraq and Afghanistan have shown, the roles for air dominance may change in important ways in Phase 4 but still entail a considerable level of activity. Just as important, the presence of surveillance and fire support greatly expands the operating area for land component forces and Special Operations Forces, enabling them to do more with less. The surveillance and on-call fires are integral to the concept of nonlinear operations, which was underscored in the 2008 revision of joint doctrine. For air dominance, the task assumes blanket air superiority. Combat air patrols make on-call fire support available and engage in missions from strafing and “presence” flights to direct support of troops in contact.

Phase 5 Enable Civil Authority. In Phase 5, the joint force provides support to legitimate civil authorities. Depending on the situation, this may include some of the tasks of overwatch, surveillance, and fire support found in Phase 3 and Phase 4. Building the capacity of the Iraqi air force is an air dominance mission in Phase 5. In addition, Phase 5 may come with an expectation of sophisticated forms of assistance, particularly in providing ISR of a nature beyond the capabilities of an emerging government. Beyond this, the Phase 5 air dominance mission may include advice on foreign military sales and continued training and exercises designed to strengthen civil authority. At some point, Phase 5 then loops back to Phase 0 shaping operations.

As is readily apparent, the need for air dominance pops up everywhere in these new phases of war. This is not to say that air dominance is always the major tool in any given situation. The quest for full-spectrum dominance requires the use of many other capabilities in the joint force “toolbox.”

The concept of the phases of war diagram was developed as an aid to campaign planning, not for strategic planning. However, it is as good a guide as any to the expanded tasks for military forces. The emphasis on shaping, dominating, and irregular warfare stands out clearly. Strategic plans have generally been done by force structure replacement in categories and with a close eye on key threat capabilities and promising technology developments. Current assessments raise the question of whether Air Force force structure and strategic plans can meet this tasking in years to come.

WAR IN THE EARLY PHASES

Given the size and strength of today’s Air Force air dominance force, what threats could possibly emerge in Phase 0, 1,

or 2 that would be of serious concern? Many would say, “none,” but, in fact, real-world events already are lapping ominously at the edges of our air dominance.

Recent military exercises by several nations already have demonstrated multipolarity in the new world order. Underlying it all, the changing export market opens the door for new challenges to air sovereignty and Phase 2 access to seize initiative. While the US has been turning its focus to irregular warfare, other nations have laid plans to transform their air force capabilities at the high end.

Note, for example, the comment last fall by Air Chief Marshal Fali Homi Major, Chief of Staff of the Indian Air Force, reported in several news outlets: “The air staff requirements for the fifth generation fighters have been made.” He added, “It will take five years for development and it will be 8-10 years before the first fighter takes to the skies.” In other words, the job will take only a decade.

It has been nearly two decades since the West paid much attention to developments in air superiority fighters and systems outside its sphere. Now, names like Sukhoi and Phazotron are cropping up again. In the last two years, Russia, India, and China all have announced or further explained major programs that include development of fifth-generation fighters and superior models of fourth-generation fighters like the Su-30. They seek a much higher degree of air capability than they possess today.

The market focus is not Europe, but Asia. “It’s not quite right to say an arms race, but there is an arms jog in Asia,” commented analyst Robert Fisher with the International Assessment and Strategy Center.¹³ At issue is how many nations will emerge with fifth-generation fighters and how this may reshape risks from Phase 0 to Phase 4 around the globe.



Robert Gates (l), Bush’s second Secretary of Defense, viewed USAF’s planning for major war to be a case of “next-war-itis.” At right is Adm. Michael Mullen, now Chairman of the JCS. (DOD photo/Cherie Cullen)

13. “US, Russia, China in Fierce Battle to Sell Fighter Jets in Asia,” Agence France Presse, March 23, 2008.



In the 1999 Air War Over Serbia, the stealthy B-2 bomber was the only aircraft able to drop the GPS-guided Joint Direct Attack Munition. Two years later, many aircraft were so equipped. (USAF photo/SSgt. Tia Schroeder)

Another aviation analyst, Reuben Johnson, said, “What is really the challenge is we have two very large countries, China and India, whose economies are booming and who are buying lots of hardware and we are looking at a situation down the road where they are going to have very, very sophisticated air forces.”¹⁴

RUSSIAN AVIATION

Russia is hoping to benefit from those hardware buys. It has been nearly 30 years since the debut of the sensational MiG-29, and probably at least 15 years since anyone worried overly about Russian air force modernization.

Of course, the Russians in these years were watching the airpower gains of America and its allies. Rand Corp. scholar Benjamin Lambeth studied Russian reactions to the 1991 Persian Gulf war and concluded that, even as the Soviet Union collapsed, Russian military leaders were paying close attention to the value of precision and stealth in air dominance.

Not that they could do much with this newfound knowledge. After the collapse of the Soviet Union in late 1991, the Russian aerospace industry came apart at the seams. Export sales and equipment refurbishment carried on, but there was no money for starting major new programs. Conflicts in Chechnya and elsewhere absorbed much of the funding and attention of the Russian military.

Fast forward past the economic debacle of the 1990s to the resurgence of Russia under Vladimir Putin. In 2006, Russia approved a defense modernization plan that emphasized retiring old force structure and developing quality for both the Russian air forces and the export market. The Russian aerospace

industry is reviving itself. It is committed to building and selling fifth-generation fighters.

The Sukhoi design bureau is developing a fifth generation fighter under the name PAK-FA. Work began after a Russian government down-select in April 2002.¹⁵ Engines and avionics have been displayed, and the latest reports suggest the first demonstrator is under construction. Its reported take-off weight of 20 tons puts it in a class somewhere between the F-35 and F-22. Wags have named it “Raptorski.”

It is unlikely that US Air Force operators of real F-22 Raptors are losing much sleep over PAK-FA just yet. Many analysts are skeptical that the Russians can pull together all elements of a fifth generation fighter so soon. Still, the Russians have insisted they will try. “The deadlines have been set—it must take to the skies in 2012 and enter service in 2015,” declared Russian Vice Air Chief Lt. Gen. Igor Sadofyev in October 2007. (A later report says test flights are to begin in 2009.) Note that the occasion for Sadofyev’s remark was the signing of an agreement between Russia and India to produce the fighter.¹⁶ The dispersal of fifth-generation technologies widens the risk of exports creating a tougher air defense environment during Raptor’s service life.

Whatever the fifth-generation prospects, the sales of superior fourth-generation fighters are strong. Sukhoi exported 50 Su-30s in 2007 to Algeria, India, Malaysia, and Indonesia. Venezuela wants 30 of the advanced fighters. Military sales are very much a part of the picture as the company moves toward a greater global market share.¹⁷

The Russian air force itself may acquire up to 72 new multirole Su-35s. With a stronger government customer at home, Sukhoi and others are investing in revitalization of the Russian

14. “US, Russia, China in Fierce Battle to Sell Fighter Jets in Asia,” Agence France Presse, March 23, 2008.

15. Down-select for PAK FA [Perspektivnyi Aviatsionnyi Kompleks Frontovoi Aviatsyi], GlobalSecurity.org.

16. “Indo-Russian PAK-FA Will Hit the Skies in 2012,” *Times of India*, Oct. 30, 2007.

17. “Russian Air Force May Receive Fifth-Generation Fighter in 2013,” RIA Novosti News Service, July 7, 2008.

aerospace industry. That could change the air dominance balance in a way that hasn't been possible for the last 20 years.

The development of discrete air dominance subsystems like radar and missiles are another concern. Russian industry has a remarkable ability to use advanced radar technology to upgrade older airframes in the hands of many customers. Russians "were never as far behind in radar," pointed out defense analyst Dr. Daniel Goure.¹⁸

Russia appears to be signaling a newfound willingness to challenge American air dominance at the low levels of shaping and deterrence—Phase 0 and Phase 1, respectively. After a 15-year absence and in response to an order issued by Putin, the Russian Air Force began sending Tu-95 Bear bombers and IL-78 tankers on patrols in the Pacific, Atlantic, and near the Arctic Circle. The USAF F-22 squadron at Elmendorf AFB, Alaska, already has intercepted Bears. Moscow, however, appears careful to observe the established rules of the road. "All Russian Air Force flights are performed ... in strict accordance with international rules on the use of airspace over neutral waters," said a Russian Air Force spokesman.¹⁹

In further shaping and deterrence moves, Russia evidently wishes to raise the specter of bomber deployments close to US soil. The newspaper *Izvestia* in July 2008 printed a claim that the Russian Air Force would base strategic bombers in Cuba as a response to US deployment of missile defense radars and systems in Poland and the Czech Republic.²⁰

It is hard to know whether to attach much importance to

this flurry of operational activity. However, it is a distinct change in the environment, and one which shows how rapidly risk calculations even for Phase 0 and Phase 1 can fluctuate.

INDIA'S NEIGHBORHOOD

Russia is not the only nation that may vie with the US in shaping and deterrence missions. India, long a Soviet arms client in the Cold War, now blends purchases from different sources with indigenous development. As a regional economic power, India may also aspire to wield influence "from Socotra to Sumatra," as the phrase goes. Scholar Ashley Tellis has pointed out that the task for India would involve focused modernization and development of more advanced military capabilities to operate throughout its "extended neighborhood."

More ambitious operations would "require India to develop capabilities that provide it with increased endurance and increased reach," said Tellis. "You cannot be a serious claimant to providing extra-regional security if you have, for example, a hundred-ship navy with two underway replenishment vessels. You cannot be a serious aerospace power if your fighters are so short-legged that they cannot move from a rear base of operations to a forward facility abroad."²¹

India is a classic example of a power with strong economic growth and multiple security challenges. Predicting the outcome of policy and modernization trends is next to impossible. What is clear is that the potential for increasing Indian air dominance capabilities is definitely there.

The Indian Air Force dates to 1932. Soviet-made MiG-21s entered service in the 1960s and from then onwards India acquired all the new Soviet or Russian offerings. The Su-30 flanker came into the picture in the late 1990s. In the past decade, the IAF has built an admirable record of professionalism and achievement. India is clearly seeking to continue to acquire the tools of air dominance in the region. Its relationship with Pakistan remains contentious. Other borders present challenges, too. What is most striking, however, is the desire for air dominance even in the absence of a glaring immediate security threat.

"One isn't suggesting that the Bangladesh or Myanmar Air Forces are necessarily hostile, but one must take cognizance of their enhanced capabilities," said Indian Air Force analyst Rupak Chattopadhyay.²² "Nor is one suggesting that conflict with China is imminent, but the PLAAF's changing profile is shifting the balance (if it hasn't already)." The PLAAF is China's People's Liberation Army Air Force.



An F-15 enforcing the no-fly zone over Iraq. Imposition of such no-fly zones could prove to be one of the steps taken during so-called "phase two" operations. (USAF photo)

18. Dr. Daniel Goure, author interview, June 2008.

19. "Russian Bombers Patrol Over Atlantic Ocean," RIA Novosti News Service, April 23, 2008.

20. Peter Finn, "Russian Bombers Could Be Deployed to Cuba," *Washington Post* Foreign Service, July 22, 2008.

21. Ashley Tellis, "Future Fire: Challenges Facing Indian Defense Policy in the New Century," speech in New Delhi for the Carnegie Endowment for International Peace, March 13, 2004.

22. Rupak Chattopadhyay, "Buying an Interim Fighter," *Security Research Review*, Dec. 6, 2004.



Airmen prepared this F-15 fighter to launch during a sandstorm in the early days of Operation Iraqi Freedom in 2003. By that time, F-15Es had been modified so the pilot enroute to a target could receive video images of that target after getting airborne. (USAF photo/SSgt. Matthew Hannen)

Consider India a potential user of any new air dominance technologies. With its growing economy, India is one to watch if the Asian arms “jog” turns into a race.

CRUISE AND BALLISTIC MISSILES

There is a major and growing regional market for cruise and ballistic missiles. Under certain circumstances the appearance of these missiles in the wrong place at the wrong time could raise true challenges to shaping in Phase 0, deterrence in Phase 1, and even to gaining access and seizing the initiative in Phase 2.

A potentially great challenge to air dominance is the need to defend against short and intermediate range missiles targeted at cities or bases. In World War II, both the RAF and the USAAF regularly had to break off other operations to target V-1 and V-2 production and launch sites on the European Continent. The diversion of thousands of sorties from strategic targets or land component support was a major factor in campaign planning.

Future scenarios could also require a hunt-and-find element. The Scud hunt of the 1991 Gulf War was an unexpected interruption in campaign plans. The main lesson was that it quickly absorbed high-end resources, namely F-15Es. The total Scud hunt consumed more than 900 sorties.

Hunting for mobile missile launchers requires the most survivable platform with the most advanced targeting systems

and communications links. This is a niche scenario but one that USAF air dominance forces must be able to address in deployed locations. If advanced SAMs and any Red air are in the area, the job will fall to the F-22. Likewise, if the mission requires rapid closing speed, as with inbound cruise missiles, the F-22 is the right platform.

PHASE 3 CHALLENGES

Not since the night of Jan. 17, 1991—the opening round of Operation Desert Storm in Iraq—has the United States Air Force faced a major battle for air superiority. Does that mean, as some say, that there never will be a need to fight for the control of the skies? For those in the strategic planning business, there is an obligation to assess risk and plan against it. Risk in air dominance depends mainly on equipment and doctrine, and there one formidable state comes to mind.

Setting its own timetable is Asia’s top economic and military power, the People’s Republic of China. Washington and Beijing have a complex and mostly positive relationship. Still, the Pentagon acknowledges that China “has the greatest potential to compete militarily with the United States and field disruptive military technologies that could over time offset traditional US military advantages.”²³

It might surprise many how much the world’s most ancient power and most populous state gives pride of place to air dominance concepts. China is an avid customer for air dominance

23. Quadrennial Defense Review, February 2006, p. 29.



F-16s, such as this one, are losing ground fast to some widely marketed foreign fighters and air defense systems. China has bought advanced fighters such as the Russian-designed Su-27.
(USAF photo)

technology in every form, from missiles to aircraft carriers. Especially attractive are deals that come with boosts to indigenous manufacturing.

While the US thinks of projecting power abroad in different scenarios, China's military battlespace is in and around China itself. Chinese military doctrine focuses on campaigns—the series of battles for local objectives. To the Chinese, local (or regional) war under high technology conditions can be defined as “a limited war, fought in a restricted geographic area, for limited objectives, with limited means, and a conscious effort to curtail destruction.”²⁴ Rapid defeat of the enemy is the main objective and the preferred method is to inflict strategic and operational paralysis or even defeat the enemy with one strike. The Chinese do not much worry about global power projection, stability operations, or major land campaigns.

China has not fought an airpower war in decades. Despite this, the air battle is absolutely central to China's campaign plans. According to China expert Kenneth Allen, “the PLA's writings have always stressed that the most important element of China's airpower doctrine is gaining air superiority.”²⁵ Proof positive can be discerned in the deep cuts applied to China's ground forces. In 2004, China's Defense White Paper stated bluntly: “The Army is streamlined by reducing the ordinary troops that are technologically backward while the Navy, Air Force, and Sec-

ond Artillery Force [China's nuclear weapons unit] are strengthened.”²⁶

Put another way, China plans to wage “non-contact warfare” and avoid land war in favor of air, space, and cyber attacks.²⁷

China has the doctrinal luxury of preparing to wage a vigorous, defensive battle in its own airspace. A Chinese term for this translates as “active defense in coastal waters.” China's position is not unlike that of Britain in 1940, when home airfields gave the RAF the ability to mount a successful offense-based campaign for air superiority against the Luftwaffe. Although Britain started with fewer aircraft and pilots, natural advantages of defending home territory helped out.

With that in mind, China has bought advanced fighters such as the Su-27 and is in the process of acquiring more. The Chinese force is a lethal combination of advanced fighters and highly effective long-range surface-to-air missiles and the surveillance and command and control needed to integrate them all. China completed radar coverage of its borders in 2007. In addition, it has aggressively pursued capabilities in cyberspace.

The trend is toward more, not less, capability for air dominance. The PLAAF currently is undergoing a conversion from being an over-land, limited territorial defense force to a more flexible and agile force able to operate offshore in offensive and defensive roles, using the US and Russian air forces as models, noted the Pentagon's March 2008 statutory report on Chinese military capabilities.²⁸

Various analyses conclude that the prospective combination of the J-11B, a Chinese-built variant of the Russian Su-27, and China's PL-12 active radar guided missile (reportedly equal to or better than USAF's Advanced Range Air-to-Air Missile) with its nearly 50-mile range produces a significant boost to the PLAAF's air-to-air capability. China has been rumored for years to be working in stealth technology. Previous indigenous fighters left expert USAF observers unimpressed, but the Chinese technology march goes on. Their F-12 fighter program is reported to be not far behind Russia's PAK-FA, with ambitions for stealth and supercruise.

While there is still an element of speculation about the fighter programs, China's surface-to-air missiles are a reality. Their ranges and capabilities go a long way toward creating just the defensive shield that China's doctrine favors. “Over the

24. Lt. Col. Thomas R. McCabe, “The Chinese Air Force and Air and Space Power,” *Air & Space Power Journal*, Fall 2003.

25. Kenneth W. Allen, quoted from Air Commodore Ramesh V. Phadke, “People's Liberation Army Air Force (PLAAF): Shifting Airpower Balance and Challenges to India's Security,” a paper for the Center for International Security and Cooperation, February 2002, p. 11.

26. China's National Defense in 2004, December 2004.

27. “The Military Power of the People's Republic of China 2005,” DOD Annual Report to Congress, p. 19.

28. “Military Power of the People's Republic of China 2008,” DOD Annual Report to Congress, p. 18.

last decade, the Chinese have done a really good job on surface-to-air defenses," one analyst told *Aviation Week & Space Technology*.²⁹ This analyst went on to describe how the indigenous HQ-9 was thought to have a range of about 50 nautical miles but turned out to have a range comparable to the SA-20, or roughly 100 nautical miles. The HQ-9, said the analyst, "will become something even beyond that, like the SA-21" or S-400, with a range more than 250 nautical miles.

China already has an air force formidable in numbers. The Pentagon estimates that China has a total of 2,250 fighters (Air Force and Navy) with a thousand more older types for training.³⁰ That is close to the Air Force's own fighter force structure number. By packing large numbers of these fighters into so-called "active defense of coastal waters" guarded by advanced SAMs, China produces an environment that poses great operational problems.

If this is the near-peer battlespace, USAF air dominance will be put to a stern test. The Air Force must be certain that it can prevent Red air and missile defenses from creating lock-out in the Taiwan Strait, for example. To do this, F-22s will have to hunt and kill SAMs, some of which will be on coast of China, while others may be aboard ships. The tracking of SAMs will take place with Red air attempting to find and attack both F-22s and any other aircraft in the area. Tankers and vulnerable ISR support aircraft orbits will have to be placed well back from the

battle area or defended by dedicated combat air patrols. Non-stealthy fourth generation fighters such as the F-15, F-16, and F/A-18EF will be used only in limited circumstances.

There is a Russian angle, too. Russian radar manufacturer Phazotron (which has been in the aviation instruments business since 1917) has in the works a powerful radar upgrade sufficient to challenge US technology. "The Flanker-sized Zhuk ASE radar with existing Russian transmit receive module technology will deliver around 60 percent higher raw power aperture performance compared to US APG-79 (F/A-18E/F) and APG-81 (JSF) class radars," found Dr. Carlo Kopp, an Australian engineer.³¹ Kopp estimated that a modified, large radar for the Flanker "will outperform the N035 Irbis-E (Su-35BM) and all currently deployed US fighter radars other than the APG-77(V)2 (F-22A Raptor)." According to Kopp, the Zhuk ASE might appear on the Flanker as early as 2010.

Radars that can outclass all but the F-22 in power and search volume present a serious challenge—especially if that radar appears on fighters laden with air-to-air missiles.

THE INSURANCE POLICY

This is why the Air Force has prioritized F-22 in deriving the rest of its force structure. More than any other stakeholder, the Air Force is dependent on the F-35 as the foundation of its future force. However, the Raptor is the key.

29. David A. Fulghum and Douglas Barrie, "Broad-Spectrum War," *Aviation Week & Space Technology*, July 21, 2008, p. 55.

30. "Military Power of the People's Republic of China 2008," DOD Annual Report to Congress, p. 52.

31. Dr. Carlo Kopp, "Phazotron Zhuk AE/ASE: Assessing Russia's First AESA," *Air Power Australia*, July 19, 2008.



The rugged A-10 attack aircraft, shown here over Afghanistan, already is a key player in today's irregular campaigns. However, the US military has never had a long-term planning strategy with irregular warfare as its centerpiece. (USAF photo/MSgt. Andy Dunaway)

Many think that the platforms are interchangeable, but that is not true. In fact, the F-35 alone is not capable of handling the mission. Reluctance to make comparisons or to disturb the joint and international F-35 program has led to profound confusion about the Air Force's program. Senior OSD officials have testified that the F-35 will be adequate to fill out the Air Force force structure.

From its earliest inception, the F-35 program was designed on the assumption that there would be a robust number of F-22s in the force. For that reason, it was possible to take out many air dominance capabilities from the design of the F-35 and save money. F-35 stakeholders accepted the premise that F-35 would not be the top-line air dominance fighter for air-to-air and specialized attack of SAMs.

Specific areas of difference included:

- **Signature.** The all-aspect signature of the F-35 in key bands against certain threats is not as survivable as the F-22.
- **Speed.** The F-22 is faster in the flight envelope with a top-rated speed of Mach 2. Its speed increases its survivability and its weapons effects by a factor of 3 over the F-35.
- **Supercruise.** The F-22 has the ability to achieve mid-Mach 1 speeds in military power without afterburner. This major technology stretch requirement was specifically written into the ATF requirements document and became a major discriminator in the competition in 1991.
- **Altitude.** The F-22 is designed to operate in combat profiles at 50,000 feet where the F-35 combat operational altitude is 30,000 feet. This generates a considerable advantage in survivability and in weapons release speed and range over the F-35.
- **Weapons Carriage.** The F-22 can carry four air-to-air weapons with full air-to-ground payload, whereas the F-35 carries only two AIM-120s under those circumstances. The F-35 carries only half the air-to-air missiles leaving it more vulnerable to fourth generation enemy fighters, which may carry more missiles than the F-35.
- **Tactics.** F-22 tactically employs at nearly twice the altitude and at 50 percent greater airspeed than the F-35A. This gives air-to-air missiles a 40 percent greater employment range and increased lethality. It also substantially reduces the F-22's vulnerability.
- **Radar Battlespace Coverage.** The F-22 can control more than twice the battlespace of the F-35 and therefore establish air dominance more quickly. The F-22 AESA radar also has more transmit and receive elements than the F-35's radar, thereby upping the power brought to bear.
- **Maneuverability.** Pure air-to-air features show a striking difference. Only the F-22 features vectored thrust, giving it twice the maneuverability of an F-35. In addition, the F-22 can turn at twice the rate of an F-35.

Many of these attributes could make a vital difference in a near-peer battlespace. Simply put, there are mission profiles which the F-35 is not designed to carry out under any circumstances. There is no way to "buy" the Air Force's way out of a failure to complete F-22 production.

If production halts at 183 aircraft, which is today's approved target, F-22s will begin to retire soon. The first jets may reach their planned service life hours in 2020, at the time when enemy fifth generation fighters could become abundant. Once the F-22 retirements commence, there is no going back to air dominance.

The basic message is that Russia, India, China, and others don't need to build or sell vast fleets to pose a threat to US air dominance. Given the requirements for global operations, low casualties, and irregular warfare, a threat could emerge if only half or a quarter of these programs come to fruition. If steadfast allies like Japan and Australia can buy F-22s at some point with Congressional blessing, so much the better.

PHASE 4 AND IRREGULAR WAR

As recent events have made only too clear, it is no longer enough for planners to consider major combat operations only in planning for air dominance. The expansion of joint operations to include irregular warfare opens up a major question: Should irregular warfare become a co-equal to major combat operations in sizing the air dominance force? It is an inevitable question to ask, but a difficult one to answer.

The fact is, the US military has never had a long-term planning strategy with irregular warfare as its centerpiece. If the Air Force loses its air dominance edge, one of the culprits may be a well-intentioned effort to give irregular warfare pride of place in today's military planning.

Airpower experts have dealt with irregular warfare for a



Airmen load weapons on a B-52H in the early weeks of the war in Afghanistan. The massive B-52 and its B-1B and B-2 stablemates have major roles to play in all five phases of war. (USAF photo/SSgt. Shane Cuomo)



Indian Air Force Su-30 fighters such as these two have infused that military service with plenty of punch. Advanced Soviet-made aircraft entered the picture in the late 1990s. New Delhi clearly seeks to acquire the tools of air dominance in the region. (IAF photo)

long time. From the famous British use of airpower in Iraq after World War I to the daily overwatch in Afghanistan today, examples abound. Some of the best came from the China-Burma-India theater in World War II. Two decades later, the Vietnam War provided a double case of peer-level defensive systems and conventional forces interwoven with irregular warfare. Many other nations have used airpower in irregular warfare to great effect.

It is important to realize that irregular warfare in the American experience tends to wax and wane. The experience of others such as Britain and France runs differently, in part because the two had many post-colonial retreats, retrenchments, and occupations in their irregular warfare histories.

Even in the Cold War years, the US experienced surges in irregular warfare operations and doctrine. Sizing conventional and nuclear forces for global conflict could hardly be neglected in the 1960s or 1970s. Moreover, the Vietnam fiasco and other episodes such as the 1980 Operation Eagle Claw, the failed attempt to rescue US hostages held by Iran, soured many on the whole concept of irregular or unconventional warfare. By the early 1980s, defense thinkers were preoccupied with improving conventional forces in Europe. New doctrines such as the maritime strategy and the Army and Air Force work on AirLand battle did not delve into irregular warfare.

The current cycle of the debate on irregular warfare is very situation-specific. It dates back not much farther than 2004.

That was the year when US forces fought two major ground battles for the Iraqi city of Fallujah. Neither the war in Iraq nor the American military have been the same since.

On April 5, 2004, marines launched an operation intended, in part, to retaliate for the murder and mutilation of four American private contractors and an American soldier at the hands of insurgents. The marines fought well, but were withdrawn on May 1, 2004. There followed a period of intensive surveillance, reconnaissance, and preparation. In November, a force of marines with Iraqi troops attacked in a far more successful second offensive.



The Russian Air Force may acquire up to 72 new multirole Su-35 fighters such as this one. Sukhoi and other arms makers now are contributing to a revitalization of the Russian aerospace industry. (Sukhoi photo)

Fallujah I was important, in part, because it marked the beginning of a true insurgency, one that would stretch on and on, ultimately giving rise to the so-called US “surge” of 2007-08. From 2004 onwards, there was little doubt that US forces and coalition partners were fighting often intense irregular warfare battles as they strove to meet the objectives of stabilization in Phase 4.

Theories of irregular warfare have flourished in joint circles and among airmen over the last few years. They are so popular, in fact, that there is a real question about whether the Air Force should concentrate mainly on air dominance for Phase 4 irregular warfare operations as the core of its future strategic plans. It is time for a note of caution.

all of the phases of war. Air Force Doctrine Document 2-3 (August 2007) notes that “IW and traditional warfare are not mutually exclusive and both are often present in the same conflict.”³² Case by case analysis leads to furious debate. For example, defense scholar Colin Gray wrote recently of “the regular war” to depose the Taliban from rule in Afghanistan.³³ Others see OEF as a classic of irregular warfare. And so on.

Third, there always seems to be a crying need for articulation of irregular warfare concepts. The problems posed by irregular foes are usually so acute that many innovative solutions are needed.

Fourth, irregular warfare sparks great airpower innovation. Faced with weak or non-existent air opposition, virtually



USAF F-22 fighter from Elmendorf AFB, Alaska, intercepts a Russian Tu-95 Bear bomber near US airspace. By reviving bomber patrols, Moscow is signaling a newfound willingness to challenge American air dominance at the shaping and deterrence levels. (USAF photo)

THEORIES OF IRREGULAR WAR

From a strategic planning perspective, irregular warfare theory is seductive. There are many ways that this is so.

First, there is the novelty of it all; irregular warfare debates in the past have tended to run their course within a few years, so most entrants are new to the field.

Second, there is no generally accepted definition. Joint doctrine acknowledges this by making room for IW in nearly

all air platforms can play. Inventions like ROVER and precision air-drop get quick results.

Fifth, as with all things airpower, there is usually missionary work to be done. Someone has to remind the land forces that the air component has some neat tricks up its sleeve. This usually doesn't happen until the first major slip-up, which in this epoch was Operation Anaconda in 2002.

In sum, the entire joint community gets a reminder that,

32. Air Force Doctrine Document 2-3, Aug. 1, 2007, p. 8.

33. Dr. Colin S. Gray, “The Airpower Advantage in Future Warfare: The Need for Strategy,” Airpower Research Institute, Maxwell AFB, Ala., 2007, p. 31



The stealthy F-35 multirole fighter, meant to be produced in large numbers, was always a key part of USAF's "get-well" fighter plan. Dominance, however, will require a strong core of both the F-35 and F-22. (Lockheed Martin photo)

as AFDD 2-3 says, "the Air Force provides valuable and unique capabilities in IW. In many cases, these capabilities provide flexible and persistent options for dealing with the IW challenges by providing a less intrusive force that can respond quickly and improve commanders' overall situational awareness."

BACK TO DOMINANCE

Intellectual challenge aside, for airmen, the most crucial theory about irregular warfare is the assumption it will be waged in permissive airspace.

For example, the air dominance environment determines to what extent C-17s can drop relief supplies or perform precision airdrops to resupply SOF forces and allies. The air dominance environment will affect use of many ISR platforms and unmanned aerial vehicles. For all the dependence on Predator and Reaper, these platforms cannot operate in defended airspace.

Irregular warfare can be tough on friendly air forces when the enemy has strong air defenses. In Vietnam, the US lost 2,448 fixed-wing aircraft of all types from all services. Helicopter losses were more than 5,500 of all types. It would take only a few modern or advanced SAMs for a low-capability force to stymie full air operations in irregular warfare, including regular air transport and cargo. America's asymmetric advantages in irregular warfare lose their edge in the absence of air dominance.

Put another way, Phase 4 can go back to Phase 3 in a flash.

What happens when irregular warfare suddenly isn't? The air defense environment has become a function of technology development and global arms sales. The latter variable can swing within a few short years. The rumblings of Venezuelan President Hugo Chavez form a case in point. Venezuela has oil money to spend in the arms market and is doing so with purchases of Su-30s, other aircraft, and equipment such as tanks and rifles. A retired Russian general recently speculated that Venezuela could protect its oil fields with surface-to-air missiles. "Needless to say, should S-300s be delivered to Venezuela, they would effectively strengthen its defense capability, and it would not be easy for its possible adversaries to punish the country by striking at its oil fields," said former Russian Air Force commander Gen. Anatoly Kornukov.³⁴ Kornukov figured 10 S-300 battalions with six launchers each "should be enough" to do the job.

Taken in isolation, the idea of SAMs blanketing the Venezuelan oil fields sounds far-fetched, as does the notion of Russian bombers setting up shop in Cuba. The larger point, however, is that nations can change their capabilities in the air dominance sphere relatively quickly. New weapons can come into play almost overnight in irregular warfare. The IED is the most searing current example. But Vietnam-era servicemen re-

34. "Russian S-300 Missiles 'Would Ensure Venezuelan Oil Security,'" RIA Novosti News Service, July 24, 2008.



F-22s on patrol. Dominating all of the phases of war is the airman's task. Not much else in joint operations works well without air dominance. (USAF photo/TSgt. Ben Bloker)

member the impact of the SA-7 anti-aircraft missile. Beware, too, of hidden cultural snobbery in assuming that everyone is content to practice irregular warfare and hope for the asymmetric best.

In the final analysis, forces sized and equipped for irregular warfare run a real risk of being useless if a regional threat environment suddenly changes.

BALANCED PLANNING

The problem is not some sort of irreconcilable conflict between the utility of fifth generation fighters and of low-tech counterinsurgency type aircraft. The real issue is how to assess the risk of heavy investment in specialized irregular warfare capabilities at the expense of spending the marginal dollar on a balanced force capable of winning across the phases of war.

The key point in the risk assessment is the need to nail down what it takes to create the conditions for waging irregular warfare in the way that America must—with full air dominance. The technology timelines for high-end air dominance forces are measured in decades with billions of dollars of investment. Time is running out to make decisions about achieving a modernized force structure. That force may well have to be smaller, but it can hardly be equally or less advanced than today's.

Technology contributions for irregular warfare tend to cluster around modifications of existing systems or innovative upgrades to communications, networks, and weapons. Combat-urgent improvements in irregular warfare capabilities can be carried out in a relatively short period. To be sure, there are some exceptions, but, for the most part, irregular warfare forces gain much from pre-existing air dominance.

There are exceptions, of course. The difficulty in expanding the ISR force is one. The highly reliable Predator with its up-

graded geo-location and weapons abilities came along very recently. Operation Iraqi Freedom began with just nine Predators deployed. Only one Global Hawk—heroic AV-3—was in flyable condition and it spent nearly all its time airborne. It would have taken time to fill out this force structure regardless of whether irregular warfare or something else was the guiding light.

From an operational perspective, the duel between major combat operations and irregular warfare is a false one for airmen. Irregular warfare unquestionably has its own unique set of requirements. Yet for air and space operations, it is not hard to adapt a balanced force structure to accommodate them. The history of airpower in irregular warfare shows that there is remarkable utility to be gleaned from a balanced, conventional aircraft force.

Some may still convincingly plead the case that a “low-tech” or “right-tech” aircraft should be developed and fielded by the Air Force and sold to foreign partners. The main reasons cited are to reduce cost and provide tailored capability. Rarely contemplated is what those American or allied aircrews would do given the sudden introduction of even an SA-6 into the battle space—much less those S-300s in Venezuela.

CONCLUSION

Dominating the phases of war is the airman's task. Not much else in joint operations works well without air dominance. From the skies of America to regional conflicts anywhere, air dominance is essential.

It is hard to say how American military power will fare with the ongoing challenges of the 21st century. Gray wrote recently that “interstate war, including great-power conflict, is very much alive and well” but hedged by saying that irregular warfare with non-state foes “may well be the dominant form of belligerency for some years to come.”³⁵

America's security commitments are broader and more complex than at nearly any time in the post World War II period. The Joint Staff's expansion of the phases of war adequately captures the essence of the new tasks facing the nation's military forces. In all of these, air dominance is central. Yet to minimize risk, it is essential to follow the Joint Staff's conceptual guidance. Dominance is ultimately judged by success against the toughest of adversaries. It will take a strong core of F-22s and F-35s to deliver on that task.

Air University Commander Lt. Gen. Allen Peck wrote last year that irregular warfare adversaries typically “lack and cannot effectively offset unfettered access to the high ground that superiority in air, space, and cyberspace provides.”³⁶ It goes without saying that the Air Force must keep it that way.

35. Dr. Colin S. Gray, *Another Bloody Century: Future Warfare*, April 2007.

36. Lt. Gen. Allen G. Peck, Commander, Air University, “Airpower's Crucial Role in Irregular Warfare,” *Air & Space Power Journal*, Summer 2007.



About the Air Force Association

The Air Force Association, founded in 1946, exists to promote Air Force airpower.

We educate the public about the critical role of aerospace power in the defense of our nation, advocate aerospace power and a strong national defense, and support the United States Air Force, the Air Force family, and aerospace education.

AFA is a 501(c)(3) independent, nonpartisan, nonprofit educational organization, to which all donations are tax deductible. With your help we will be able to expand our programs and their impact. We need your support and ongoing financial commitment to realize our goals.

AFA disseminates information through Air Force magazine, airforce-magazine.com, the Gen. Billy Mitchell Institute for Airpower Studies, national conferences and symposia, and other forms of public outreach. Learn more about AFA by visiting us on the Web at www.afa.org.

**1501 Lee Highway
Arlington VA 22209-1198
Tel: (703) 247-5800
Fax: (703) 247-5853**

