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What I Believe

Gen Hal M. Hornburg, USAF, Retired

THIS ARTICLE CONTAINS what I think is important about leading Airmen. It conveys what I think you, as Air Force commanders, need to know. It is *what I believe*. This message has many instructions and suggestions; take as many as you can, and give as much as you take. When we select our people for command, we do not send them to the hospital for an injection of additional brain cells. There is no infusion of instant knowledge. We used to do that—or at least we thought we did. We would make someone a commander and assume all resident knowledge was installed.

When commanders made mistakes, we asked, "How could this happen?" How do we explain what happened? We did not train our commanders, but we're changing that.

Winston Churchill once said, "If you have an important point to make, don't try to be subtle or clever. Use the pile driver." This article makes several points. Some I touch on only lightly; others I discuss at length. You will find that I place my emphasis—my number-one priority—on *the importance of our people.* Airmen are the gas that makes the Air Force go—not our technology, airplanes, or equipment. Without them, we might as well cut up all the expensive assets on the ramp and make them into razor blades. Certainly, in the last several years, you have read Air Force literature that articulates our desire to attain specific effects. But without our people, there are no effects. So what kind of leader do we need?

Kinds of Leaders

The conference center at Headquarters Air Combat Command (ACC) is named after Gen Bill Creech. When I was a major and lieutenant colonel, I used to go down to the conference room and climb into the audiovisual booth. It was about 700 degrees in there, but well worth enduring the heat because I witnessed General Creech teach leadership firsthand. He said, "The first duty of a leader is to grow more leaders." That is what this is all about.

In my mind, there are three kinds of leaders: people who make things better, those who make things worse, and caretakers who do neither. It is up to you to find your leadership style. Leadership involves movement and decisiveness. In reality, the caretaker who merely maintains the status quo is falling behind because our mission and environment are in constant flux. Keep your units focused on improvement, or they will inevitably start to sag. When you leave, people will say either "Boy, am I going to miss the commander" or "Thank God he or she is gone." It is up to you. I would like to help you become the type of Airman who takes organizations to the next level.

Building Airmen

Americans hold the members of the military in high regard. According to a Gallup poll of June 2004, our military is the most trusted organization in America. This is good news, but such trust comes with no guarantees. We must earn it every day. The important point is that the American people believe in what we do. As we perform our business, craft, and art, we have a responsibility to strive for our best. We need to be good stewards of our assets and resources.

When I became commander of ACC in November 2001, our mission statement called on us to "organize, train, equip, and maintain combat-ready forces for rapid deployment and employment while ensuring that strategic air defense forces are ready to meet the challenges of peacetime air sovereignty and wartime air defense." For me and the rest of the ACC leadership, this statement was too cumbersome and laborious. I felt the need to clarify what I asked my commanders to concentrate on. It seemed that if we just took care of our people, if we were ready to get out of town, and—once at our destination—if we were ready to fight, then our commanders had what they needed to accomplish the mission. So I simplified the mission statement to "develop and nurture Airmen, be prepared to deploy, and be ready to fight." This is all I ask. Although very simple, these three requirements embody a full-time, 24-hour-a-day job.

Our ultimate sight picture calls for producing overwhelming but scalable combat power. That defines ACC's relevance. Making that happen are our Airmen—be they aviators, maintainers, information operators, or the myriad of support Airmen who enable and contribute to our mission. This should be our touchstone. In every decision we make, we should ask ourselves how our actions contribute to producing combat airpower and space power and building the Airmen who make it happen.

Overwhelming combat power is the core requirement, but power is just thrust. Without a vector, power is meaningless. Therefore, command and control is our enabler that di-

rects combat power to the right place at the right time. The rest of us, including the headquarters and me, are in support. Our job is to enable the field to provide combat power and command and control. If you are in the field, we work for you.

In ACC we say, "People first—mission always." No matter what your specialty skill or your position in the Air Force, we are all Airmen. Because we are Airmen, we are best trained and equipped to do things relating to the air. That statement sounds intuitive, but it sets us apart. *When airpower is in the hands of capable and competent people, good things happen. In the hands of amateurs, disastrous things can happen.* If you fly and fix airplanes, cook meals, lay concrete, or nurse our sick, you support our number-one mission—flying sorties. You are all relevant to this mission, and you are all relevant to our Air Force family.

When I came back from my first mission in Operation Desert Storm, we were descending into Al Kharj Air Base, Saudi Arabia, and I was thinking, "How did we get to this point?" As all the airplanes checked in, I asked myself, "How is this possible?" It was possible because we were in a great airplane. I was trained. The weapons systems officer was trained. The load crew did its job. The crew chief did his job. The Airmen in fuels did their jobs. We slept well the night before because the engineers did their jobs. The power worked, the heat was on, and the tent was warm (important, considering it was January). Before we flew, we had a great meal because the Airmen in services did their jobs. We felt confident in our mission because in the back of our minds, we knew our families were fine because the Airmen back home were doing their jobs. We had wills and powers of attorney because the people in the legal office did their jobs. Before we went up the ladder, the chaplain was there to bless everyone. Airmen did their jobs. That is why the mission worked.

Challenges

As leaders, you mold our Airmen's talent to provide distinct capabilities to our Air Force and Nation. Many challenges face us every day: retention, diversity, and perceptions, to name just a few.

Retention

Right now, we do not have a retention problem, but I think we always need to be concerned about it. Retention is up, but is it because you and I are out there fighting tooth and nail to keep our experienced people in, or is it just because of external issues and circumstances that drive our Airmen to stay with us? Retention is about quality of life, which has nothing to do with how nice your conference room is or how cosmic your cell phone is. It is not even about pay raises, which may put a few more beans in your pot but do not fundamentally alter quality of life. When you wake up in the morning, look at yourself in the mirror, and say, "I'm proud to serve in the United States Air Force"—*that is quality of life.* When this ceases to happen—when our Airmen's DNA and fiber change and they decide to go off base, taking a pay cut to change oil for a living rather than work on our flight line—then we have a major problem.

How can you know what your Airmen are thinking? The best way is to get out among them, but another way is through surveys (table 1). The number-one reason that enlisted people leave our service is the availability of civilian jobs—a factor we do not control. However, since leadership does influence eight of the 10 reasons, it is the best tool to improve retention. Since 2000, satisfaction with current career field, compatibility with spouse's job, and home-station tempo have entered the top 10. Conversely, pay and allowances, promotion opportunity, and number of additional duties have dropped out. Regardless of the factors, *retaining our people is critical to our future.*

In 2000 the Air Force started a war on recruiting. We should have started a war on retention. Our service attempted to mitigate an experience shortfall with increased recruiting. When I went to command Air Education and Training Command (AETC) in 2000, we had a recruiting goal of 34,000 or so. Then it surged to 37,000. Where are these 37,000

Table 1. Top 10 reasons why enlisted people leave the Air Force

RANKING	REASON	LEADER'S INFLUENCE
1	Availability of Civilian Jobs	
2	Satisfaction with Current Career Field	✓
3	Recognition of Efforts	✓
4	Overall Job Satisfaction	✓
5	Leadership at Unit Level	✓
6	Choice of Job Assignment	✓
7	Compatibility with Spouse's Job	
8	Current Base of Assignment	✓
9	Say in Base Assignment	✓
10	Home-Station Tempo	✓

Source: "USAF Careers and New Direction Survey" (Randolph AFB, TX: Air Force Personnel Center, 2003), http://www.afpc.randolph.af.mil/surveys/pages/sreports.htm (report is pending).

going after they leave us? We now have a short respite in recruiting while we downsize to our mandated end strength, but the retention challenge will never lose its importance. Why do we have so many three-levels in our organizations? It is because we have not fought hard enough to retain the five- and seven-levels. It takes 15 years to replace Technical Sergeant Smith if she gets out at the 15-year point. Replacing an experienced senior noncommissioned officer (NCO) with a relatively new Airman is simply not the same. Once, while I was addressing a wing, a technical sergeant asked me, "Why do I have so many three-levels when I really need five- and seven-levels?" My answer to him was, "What have you done to retain your five- and seven-levels?" Another sergeant told me it was wrong to promote 65 percent of our senior Airmen to staff sergeant because they are not ready for that responsibility. Again, I said, "Sergeant, what are you doing to retain more staff sergeants?" He replied, "Huh? That is not my job." The heck it's not! We cannot go out and recruit a qualified person to enter at the 15-year point. We must develop and properly train Airmen. When they leave the Air Force, Microsoft can hire them. When software experts leave Microsoft, I don't want them until they have undergone training, become Airmen, and gained experience in our business. *It is every Airman's job to retain our qualified people.*

Take retention on as a challenge. Enlisted retention is up (fig. 1). You make a difference. Get out of the office and talk to your Airmen. There is no substitute for a hands-on, one-on-one approach. Ensure all levels of leadership mentor their people to aspire to the next level. Airmen should want to become NCOs, flight commanders should want to become squadron commanders, and so on. If staff and technical sergeants are not talking to Airmen about being NCOs and teaching lessons from the school of hard knocks, they are not doing their job. We all have to work retention, and *we retain one Airman at a time.*

Although officers leave for slightly different reasons, as commanders, you still influence eight of the top 10 (table 2). You cannot be inactive and expect everything to be fine. You must be engaged. The retention trend for officers is also up (fig. 2). Note the likelihood of officers from four specific career fields to remain on active duty for 11 years of service.

What does all this mean? *We need to retain our experience—not just our numbers.* I am a firm believer that good leaders who mentor and care for their Airmen have a dramatic effect on retention. Retention comes down to Airmen going home at night feeling good about who they are and the positive contributions they make, as well as knowing they are important, valued members of an organization.

Diversity

We must also consider diversity and perceptions. We come from different places and have different parents, educational experiences, and life experiences. When you come to the

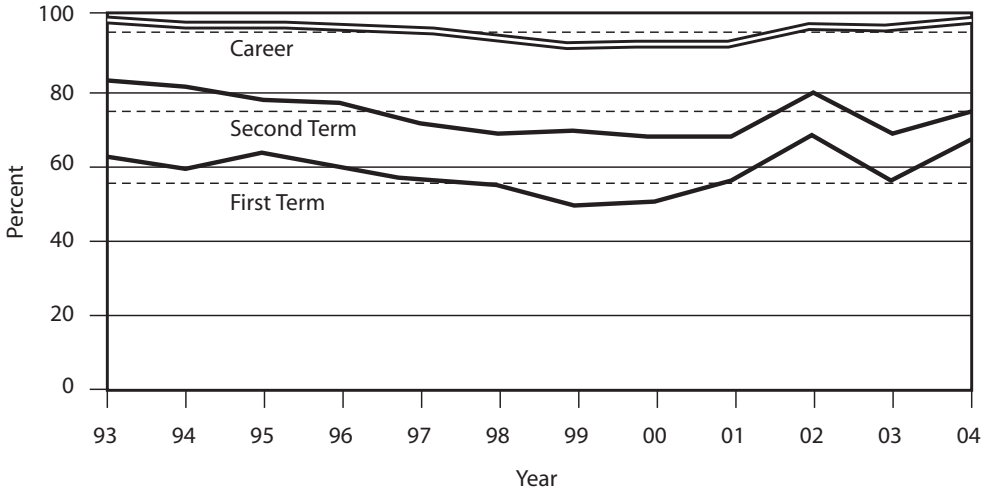


Figure 1. Enlisted retention. (From Air Force Personnel Center, http://www.afpc.randolph.af.mil/afpcsecure/default.asp [requires AFPC secure access].)

Air Force, you bring fresh ideas and new approaches. This is diversity. *Rather than fear it, we should embrace diversity as a strength.* The fact that the Air Force officer corps is predominantly a white, male group reflects neither the demographics of our enlisted force nor society at large. This is important because you lead within this context. Diversity necessitates that you assimilate all of your Airmen into one team.

When I commanded AETC, a young African-American Airman asked me, "Sir, where are the black role models?" My first thought was I just succeeded a great one at AETC—Gen Lloyd W. "Fig" Newton. Others that came to mind included the vice-commander, Lt Gen John D. Hopper Jr., and my roommate from Vietnam, Lt Gen Danny James. The more I thought about it, the more I found myself short of names. I began thinking about the essence of the question, so I called Darren McDew, an African-American lieutenant colonel I had met at a luncheon for officers assigned to Secretary of Defense Fellowships. I asked him the same question. Without pause he said, "The next time some-

Table 2. Top 10 reasons why officers leave the Air Force

RANKING	REASON	LEADER'S INFLUENCE
1	Availability of Civilian Jobs	
2	Compatibility with Spouse's Job	
3	Number of PCS Moves	✓
4	Number of Additional Duties	✓
5	Choice of Job Assignment	✓
6	Say in Base Assignment	✓
7	Home-Station Tempo	✓
8	Overall Job Satisfaction	✓
9	Tempo Away (Number/Duration of TDYs)	✓
10	Satisfaction with Current Career Field	✓

Source: "USAF Careers and New Direction Survey" (Randolph AFB, TX: Air Force Personnel Center, 2003), http://www.afpc.randolph.af.mil/surveys/pages/sreports.htm (report is pending).

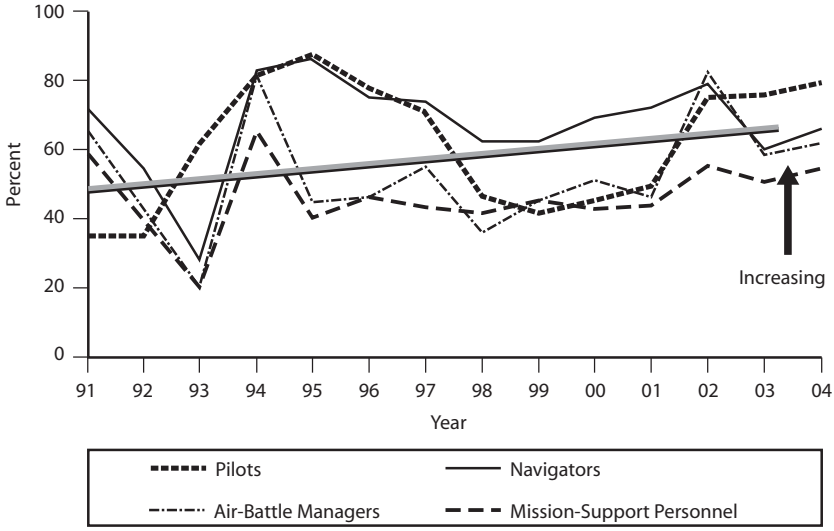


Figure 2. Officer retention. (From Air Force Personnel Center, http://www.afpc.randolph.af.mil/afpcsecure/default.asp [requires AFPC secure access].)

one asks you where the African-American role models are, you say, 'You're looking at one.' "

Some of you fear diversity because you think we are talking about race or gender—and we are to a degree. We are all Airmen, and we have to get out of our comfort zone. White males need to be there for Asians, African-Americans, Hispanics, males, and females. Similarly, Hispanic females need to be there for Asian males, black females for Hispanics, black males for white males and white females, and so on. My wife, Cynthia, and I have two sons in the military who need diverse role models. They both need Airman role models. *We have to be role models for people who do not look like us. Diversity means equal opportunity—not equal outcomes.* At the end of the day, performance counts—not privilege.

You will find Airmen of all races and both sexes. They wear the same uniform that you do—it says *US Air Force* on it. Think about diversity and its strength. Talk about it; do not walk away from it. I can discuss this subject more easily now because I have studied it. I have talked to people, I live it, and I believe it. I am passionate about it, and you should be as well. Do not shy away from it—this is too important.

Perceptions

Today's Air Force leaders have to be students of popular culture. As commanders, you need to appreciate the values, pressures, and concerns of the young people you lead. It is important to know and address perceptions. Remember that *perception is reality to those who believe it.* How do you find out about the word on the street and the "hot button" issues? The best way is to walk around and listen to your people. Reading the *Air Force Times* is valuable as well. The important point is to stay in touch and learn the issues. Next, you must know the facts behind the issues; otherwise, you will be killed by anecdotes. Only with the facts can you address the issues in several forums. Commander's calls offer one great venue.

Commander's calls are not optional events in ACC—we hold them regularly. They are the most visible and effective means for you to communicate with your unit and establish leadership credibility. You should get the word out by touching as many people as you can. It

is important to get in front of your people, let them see you, and give them feedback. By the way, commander's calls are not easy. They take preparation. You have to research the issues. On some occasions, you will not have the answer. When this happens, you have to be strong enough to say, "I don't know the answer to that question. Thanks for asking. I'll get back to you." Then, when you have the answer, make sure you put the word out to everyone.

You must also know about two other psychological matters. I remember from a psychology class on guidance and analysis of Airmen that every one of them needs both change and feedback. Change? Does this mean we need to undergo a permanent change of station every three years? Yes, because we are the type of people who do not wish to stay in the same spot for 10 years. Airmen love challenging environments and have the knack to adapt and overcome. We thrive on change—not ritual. Feedback? Why is it critical to success? If you ask your people if they receive feedback and then ask them their perception of leadership, you will find a direct correlation between perceived feedback and perceived leadership. When Airmen believe they receive little feedback, their opinion of leadership is low. Conversely, when they receive adequate feedback, their opinion of leadership is very high. Whether formal or informal, feedback is important. Officer and enlisted performance reports are just the beginning. Feedback entails more than sitting down with one of your Airmen and saying, "Well, you did this okay, and you did not do this so well. Any questions?" You can give feedback to someone simply by walking up, shaking hands, smiling, and saying hello. If you describe someone's actions, your perceptions, and your feelings about him or her, this is feedback. "Here is what you did, here is what I saw, and here is what I felt." The bottom line is your people need feedback.

Communication

Communication, a prerequisite to good leadership, is vital to building a team. You cannot build a team, working in concert towards your objectives, without clearly telling your subordinates what you hope to achieve, providing a suggested course of action, and letting them know how they are doing along the way. Communication is a two-way street. Be receptive to hearing from your Airmen. You will get many good ideas this way.

In rank order, my preferred modes of communication are (1) face-to-face conversation, (2) phone call, (3) short note, and (4) short e-mail. If you do not hear from me, that means only one thing: you are not hearing from me. It does not mean anything—good or bad. E-mail can be a wonderful thing, but it can also turn into a time-consuming monster. It should be short and to the point. Do not waste time crafting a pretty e-mail when a quick phone call would do the trick. E-mail is a communication—not a leadership—tool. You cannot lead Airmen from behind a keyboard. Most e-mail will wait. Get out and spread your message face-to-face—lead from the front.

Today's society requires analog leadership instead of digital leadership. Some of you are very comfortable with the latter, believing that you can manage and lead by e-mail. I walk around units and see people in their offices in a figurative three-point stance, mouse in hand, ready to pounce on the next e-mail that arrives. *I want them away from their desks, performing analog leadership—full-body contact, person-to-person and face-to-face.* This is what it takes and what our people are starving for. It is so easy to get distracted. I asked my executive officer to build three e-mail folders for me: once-an-hour, once-a-day, and once-a-week. I told him, "You are in charge of my e-mail." If I really must see it, put it in the once-an-hour folder, which I check regularly. By the end of the day, I will have cleaned out this folder—and, usually, my once-a-day folder. When I go home on the weekend, I will address the rest of the correspondence. That is, I try not to be a slave to e-mail. I get out often and spend time with people because they make the world go around—not e-mail, staff packages, or staff summary sheets.

Communicating bad news is part of being a leader. I recognize that bad things happen and leaders have their share of crises to resolve—some of their own making. *Bad news does not get better with age.* Senior leaders do not like to learn about problems from sources other than you. Communicate early and often.

Communicating singularly is not enough; you must teach across the chain of command. When I was a fighter squadron commander, I learned that if I wanted people to understand what was going on, I had to *communicate and teach three levels deep.* First, if you are a squadron commander, meet with your flight commanders and operations officers. Second, in a flying squadron, meet with the instructor pilots. Third, have the same meeting with all the pilots. Soon, the pilots will hear your message from the instructors, and the instructors will be saying the same thing to the flight commanders. All of your people will have the word, and they will see you care for them as individuals. You must be persistent. Once you have talked about it and driven the point home until you are blue in the face, then you are only beginning. You must talk the talk, and you must get out and walk the walk. *Leaders must teach, teach, and teach.*

Balance

When you are a commander—and for the remainder of your Air Force career—prepare yourself mentally, physically, and spiritually every day. As a leader, you must maintain this balance. We have a new Air Force physical fitness program—"Fit to Fight." Does this mean you need to be a gym rat or look like Arnold Schwarzenegger? No, because you may be lacking in the other two vital elements. Our Air Force needs balanced individuals.

I hope all of you have a chance to attend something similar to the great executive-training course I recently completed. We learned a person's productivity depends upon his or her maintaining a balance among family, community, job, and spirit. Choosing an entity to anchor your spirit is your decision. Some people call it God; others have some other name. Whatever it is, you had better have something bigger than yourself, because your life is not going to be rich enough without it. Make sure you strike a balance, and when you visit your people, try to make them understand what it is and how to achieve it. Many people will look to you as a personal example, based both on your principles and your presence.

Accountability

Next, accountability is fundamental to our line of work. Clearly outline your expectations to your unit, and set high, achievable standards. If your goals are unreachable, you are setting your people up for failure. After you set your standard, never apologize; instead, enforce it and differentiate between a mistake and a crime. Listen carefully to the advice of your staff, but don't abdicate your disciplinary responsibility to anyone. Leadership has two absolute standards: (1) you will not succeed if you exploit your people; you need to inspire them and take them to new heights, but not at their expense and (2) you must neither practice nor tolerate prejudice or harassment. We owe our people an environment free of bigotry.

Developing Leaders

Your first duty as a leader is not to lead your team to victory or get an "outstanding" on the operational readiness inspection. It is to develop more leaders—to bring people up in your organization (table 3). Make them better than they were when they first joined it. Make your organization better than it was when you assumed command.

Some people excel at building followers. The adage "You have to be able to follow before you can lead" is true. But to build only followers is to be too comfortable in an entourage. Leaders who develop followers need to be needed. Leaders who develop leaders want to be succeeded. Leaders who develop followers focus on weakness. Leaders who develop leaders focus on people's strengths. Leaders who develop followers treat people

Table 3. My charge to every leader

Leaders Who Develop Followers	Leaders Who Develop Leaders
Need to be needed	Want to be succeeded
Focus on weaknesses	Focus on strengths
Treat people the same	Treat people differently
Hoard power	Give power away
Spend time with others	Invest time in others
Grow by addition	Grow by multiplication
Affect only the people they touch personally	Affect people beyond their own reach
THE FIRST DUTY OF A LEADER IS TO BUILD MORE LEADERS	

Adapted from John C. Maxwell, *The 21 Irrefutable Laws of Leadership: Follow Them and People Will Follow You* (Nashville: Thomas Nelson Publishers, 1998), 210.

the same. Leaders who develop leaders treat people differently because they are different. Why would anyone treat everyone the same? When commanders attempt to sound fair, I sometimes hear them say, "I treat everyone the same." If you do, in my book you are a failure as a leader. If you are a builder of followers, you likely hoard power. Leaders who develop leaders delegate power. Leaders who develop followers spend time with others. If you develop leaders, you will invest your time in others. When you build leaders, your investment grows not by addition but by multiplication because you will not only affect the people you touch, you will also affect people you will never meet. Again, *the first duty of a leader is to develop more leaders.*

Armed with this first duty, my priorities, based on the letter *U*, are as follows: (1) USA, (2) USAF, (3) unit, and (4) "U." Our country is our first priority, followed by our service, unit, and ourselves. Placing the *U* last does not diminish the sanctity of the individual. However, when we are talking about pieces and parts, the individual is subordinate to the good of the unit, the USAF, and the country. We expect you, the commanders, to make tough calls. Strive to attain others' respect; if you are also popular, that's great. When it comes to your people, I expect you to claw and fight for their well-being, but balance it with what is best for the unit, the Air Force and, ultimately, the Nation. Unit cohesion is more important than the squeaky wheel. I encourage you to *listen to the sound of the entire orchestra—not just the sound of the out-of-tune oboe.*

Mentoring

Do not just spend time with others; invest time in them. This is mentoring—really another word for leading. As we advance to positions of greater responsibility, the Air Force demands more of us. However, many times it does not properly prepare us. *I would rather have someone teach me lessons learned than go through the same school of hard knocks.* It would have been helpful to me if my leaders had said, "Hornburg, I see what you are trying to do. I used to do the same thing you are doing, and I made mistakes 18 different ways. Let me show you the right way to do this." This is a form of mentoring. I do not necessarily want someone to tell me what to do and how to do it. Instead, I want commanders and supervisors to pass on their Air Force experiences and examples of responsibility to subordinates. *I want to see commanders make a concerted effort to sharpen their subordinates.* However, mentoring does not need to be a touchy-feely, *kumbaya* experience. In my view, all mission-driven mentoring involves love—sometimes tough love, which is nothing more than doing the right thing even when it is not easy for both parties. Sometimes you must tell people the way things are whether they want to hear it or not. Treat others as you would have them treat you. Create an environment in which people can succeed. This is mentoring.

Coaching

Good coaching is an intimate process, a unique and cooperative effort that often changes the course of a person's career and sometimes his or her life. Remember, every person is different. There is no cookie-cutter approach to coaching. Don't try to be like George C. Scott in the movie *Patton.* If you aren't like General Patton before the change

of command, you won't be like him afterwards. Be yourself. After all, the Air Force placed you in command. According to an old saying heard in Texas, "When you go to a dance, you dance with the one that brung you." As commanders, you should have confidence in the coaching attributes that brought you this far. It is too late to look for a way to change your DNA.

Quality of Life

Everything discussed to this point combines to simultaneously produce an effective mission and a positive working climate, as we see from the results of the Air Force's *Quality of Life Survey* of 2002 (table 4). Possible explanations for these numbers include the large pay raise in October 1999, improvements in the military retirement system, a soft economy, and patriotic fervor. More pilots and second-term Airmen reported that their families support their Air Force careers. Even a large percentage of those who plan to leave the Air Force responded that our service is a good place to work. We are making great strides in housing, but health care remains a challenge. Overall, the Air Force is a good place to be.

Those of you who are squadron commanders bear an incredible amount of responsibility and know your people better than you will at any other time or level of command. By the time you become group or wing commanders, people will distance themselves from you because you will have become unattainable. That means you will have to work harder and harder to get to your people's realm and understand what makes them tick. As squadron commanders, you must dedicate yourselves to your new "families."

What most impressed me about the results of ACC's *Climate Survey* of 2003 is our ability to sustain high levels of satisfaction among Airmen (fig. 3). Since 1999 our command has focused on people first, and positive results are evident in all 13 factors depicted. Nonetheless, *we need to pay more attention to recognition.*

We all remember going through the Quality Air Force movement. Although well intended, it produced some bizarre behavior for military organizations. The process became more important than the product—accomplishment of the mission. Some even misunderstood

Table 4. Satisfaction with the Air Force

Factors	Officers	Enlisted Personnel	Civilians
Good place to work	91	89	89
Family supportive of career	83	81	91
Good quality of life	87	83	87
Compensation fair and equitable	67	44	60
Retirement fair and equitable	56	33	64
Satisfactory educational opportunities	41	57	52
Satisfactory health care	71	65	
Satisfactory housing	82	75	
SATISFACTION INCREASED AMONG ALL GROUPS IN 2002			

Percent

Source: *Quality of Life Survey* (Randolph AFB, TX: Air Force Personnel Center, 2002), 3–4, 14, 34, 39, 46, http://www.afpc.randolph.af.mil/surveys/pages/sreports.htm.

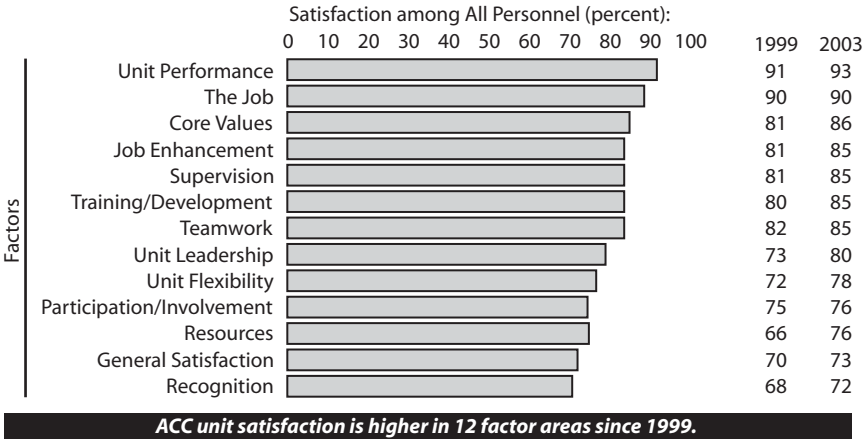


Figure 3. Air Combat Command climate survey. (From Air Force Manpower Agency, 2003, https://csafsurveyadmin.randolph.af.mil/index.cgi/RMPF=LEzR=10274.0.653.2097155.34.2729.86.54578.29383310.)

empowering subordinates to the detriment of regulations and checklist compliance. A leader's touchstone is to do what's right. You must fight for resources to go with taskings; talk three levels deep to your people; and mentor, coach, and lead—all this other stuff will take care of itself, and you will have a quality organization. The product is more important than the process. But if the product is deficient, we have to look at the process. We must develop metrics that measure what we do and then compare ourselves to a benchmark—but I'm not advocating mindless adherence to numbers. Use them as the analytical tool they were intended to be. *In reality, "quality" is simple: measure, compare, and reward. Recognize all Airmen for their contributions, and be sure to reward superior performers.* Finally, I leave you with several points to consider and one last example that illustrates the importance of leadership.

Parting Shots

Commanders are a force multiplier. As I have discussed, command style affects every aspect of how units operate, so make the effect positive.

Readiness includes strength of character. Being prepared involves more than having the proper equipment and training. It means being mentally and emotionally ready to endure war and hardship. Don't just memorize our core values—live them. We intentionally say, "Integrity first."

As a leader, your life should reflect spiritual, physical, and mental balance. You should not have too much of one without the others. If we had this right, our suicide rate would be declining. Make sure you strike a balance, and when you visit your people, try to make them understand what this balance is and how they can achieve it. Stay balanced and fit to fight.

It is better to wear out than to rust out. Leadership requires movement. The static leader who merely maintains the status quo is actually falling behind. Keep units focused on improvement. Leadership involves decisiveness. Although delegation is fundamental to good leadership, the abdication of responsibility is its anathema. Know the difference between the two. Make a difference wherever you go; do not rust in place. Remember, people are our greatest assets.

If you don't shoot, you can't score. Commanders have to take chances and encourage their people to do likewise. Take calculated risks. Remember the benefits of chance: (1) if you do fail, you learn what does not work, and (2) it gives you an opportunity to try a new approach. Strive to develop a climate that rewards creativity, not one that compromises safety or encourages unnecessary risk. If a decision could hurt people or equipment unnecessarily, that's risk, not chance, and it is unacceptable. However, if you are giving everything you have and trying to do your job in an honest and straightforward way, then you are covered in my book.

Family is the most important thing you have. You must nurture and sustain your family with vigor and passion. When we ask you to go to war, we trust that you have taken care of your family. Why? Because by taking care of themselves in your absence, they will be taking care of you. If conflicts exist between your family and your career, put the career aside and save your family. One day your family will end, and one day your job will end. Make sure your job ends before your family does. When you are at home, make time to spend with your family. You may not have time to coach a team, but you should have time to watch your children practice. Taking time to go to their games on Saturday is more important than playing golf. Golf will be there when your kids are not—trust me.

Quality of life is more than new furniture. New furniture and air-conditioning have to do with quality of living, but I'm talking about quality of life. How Airmen feel about their jobs and the pride they have in accomplishing the mission—that's quality of life. Our Airmen deserve to know we appreciate what they do.

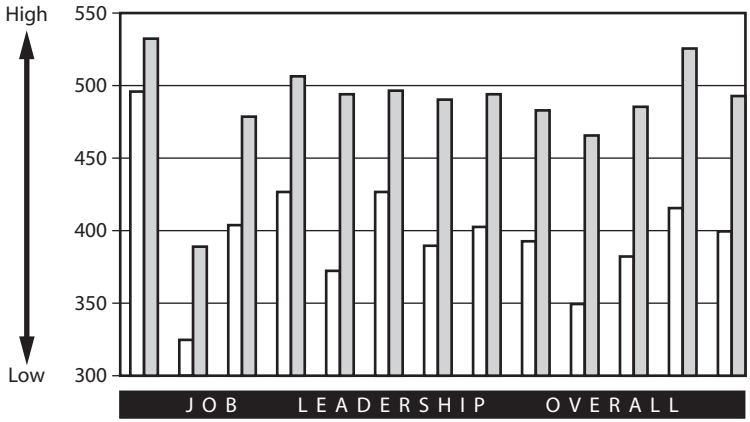
Take your leave. There's no excuse for losing leave unless you are involved in long-term combat operations. Operations Enduring Freedom, Iraqi Freedom, and Noble Eagle make it difficult for some people to take leave. We will take care of those situations. Combat operations come first, but do not view ongoing contingency operations as a free pass to ride your people unnecessarily. Leave is an entitlement; if we do not use it, we will lose it. Besides, our people need to take leave. Have a plan for rest and recuperation.

Don't walk past a problem. We are in the mode of minding our own business, which is fine sometimes. However, when you see something wrong, correct it—do not just walk by. Do not forget to back-brief the chain of command or anybody who needs to know. Merely ignoring a problem will not make it go away—nor will simply recognizing it. Get out your crowbar and use your leverage to fix those trouble spots. We should not ignore something just because it is "not our problem."

Lead, mentor, and coach your Airmen. Love and take care of them. That is the first thing I would like you to worry about. Get away from the office and look around. Visiting the dorm areas may be more important than sitting in your office reading staff packages. Your Airmen will take their cue from your attitude. Be an enthusiast. Staying upbeat, confident, and enthusiastic is positively infectious. You will have bad days, but share them only with your dog.

Command is a marathon, not a sprint. Command tours last about two years, so I advise you not to sprint the first month and burn out. Because you can do only a certain number of things, prioritize the areas where you need to put your energy. Build a program and pace yourself. Staying late in the office also keeps your people late. You will wear them out and possibly ruin their family lives. If you must work late, bring it home where no one has to notice and no one has to stay and support you. If you must work at home, try to do it after you put your children to bed.

One last example best illustrates the importance of leadership. In ACC's *Climate Survey* of 1999, we compared two squadrons: Unit A and Unit B (fig. 4). The higher bars indicate more positive responses. Unit B rated quite a bit higher in every category. Why? Look at what the B squadron members said about leadership versus what those in A had to say. You might think these squadrons were at different bases, but they were right across the street from each other. *Leadership made all the difference.*



Typical Responses: Unit A

"They never ask us what we think."

"If the commander weren't so busy, he would have time to recognize people in a timely manner."

"I believe that service before self is overabused because it is all we hear when we work constant 13-hour shifts without lunch breaks, plus weekends."

Typical Responses: Unit B

"The best squadron in the Air Force."

"Nobody works harder than my commander to teach us—the smartest person I have ever met."

"My leadership not only knows me by name, but also knows my strengths and weaknesses."

Figure 4. Level of satisfaction in two fighter squadrons. (From Air Force Personnel Center; proprietary data provided by Air Force Manpower Agency.)

The American people have entrusted you, our Air Force commanders, with an incredible amount of responsibility. Early in the Second World War, Gen George C. Marshall was asked if America had a secret weapon to win the war. "We do indeed," he replied, "the best damn kids in the world." He was right. Today's heroic Airmen are those secret weapons, and commanding them is a great honor and privilege.

I hope that some of these thoughts will help and be of interest to you. They are all of interest to me. After 36 years of service, *these ideas, principles, and values are what I believe.* □

LT COL PAUL D. BERG, EDITOR

Vignettes, Doctrine NOTAMs, and the Latest *Chronicles* Articles

AIR AND SPACE Power Journal has long published a variety of feature articles and shorter pieces known as PIREPs and Vortices. Recent additions to our repertoire include items we call "Vignettes" and "Doctrine NOTAMs."

Vignettes briefly describe air and space power topics—such as key leaders, aircraft, and historical events—that define our heritage as Airmen and shape today's Air Force. Typically, each offers a "To Learn More" list of sources that readers can consult for more detailed information. This issue of *ASPJ* features vignettes about USAF special operations, the 35th anniversary of the Son Tay raid in North Vietnam, the 30th anniversary of the *Mayaguez* incident in Southeast Asia, and the 25th anniversary of the Desert One hostage rescue attempt in Iran. These events not only appeal to our interest in historical matters, but also influence our current airpower capabilities in the area of special operations.

Just as the Air Force's "notices to Airmen" (NOTAM) tell aircrews about important flight-related information (e.g., "runway X at base Y is closed"), so do *ASPJ*'s doctrine NOTAMs succinctly inform Airmen about important changes or concepts and explain their relevance, thus keeping Airmen up to date on our service's constantly evolving doctrine. See, for example, the NOTAM "New USAF Doctrine Publication: AFDD 2-2.1, *Counterspace Operations*" in our winter 2004 issue (p. 100). Since the Air Force Doctrine Center is producing numerous revisions to Air Force doctrine documents, expect to see in future editions of *ASPJ* a steady stream of NOTAMs that cover those developments.

More than just a Web site that hosts electronic versions of *ASPJ*'s print editions, *Air and Space Power Chronicles* includes a separate electronic journal in its own right. Not subject to a fixed publication schedule, the *Chronicles Online Journal* can publish timely articles almost immediately. Furthermore, while *ASPJ* focuses narrowly on air and space power topics of concern to today's Air Force, *Chronicles* boasts a much broader range, offering articles too lengthy for its printed counterpart. Additionally, the Spanish, Portuguese, and Arabic editions of *ASPJ* often publish translated *Chronicles* articles; authors routinely include them as book chapters; and professors at civilian universities use these pieces for instructional purposes. Recent *Chronicles* articles available at http://www.airpower.maxwell.af.mil/airchronicles/cc.html include the following:

- Col Stephen R. Schwalbe, "A Statistical Analysis of the House of Representatives Vote on Base Closures"
- Col Morris D. Davis, "Effective Engagement in the Public Opinion Arena: A Leadership Imperative in the Information Age"
- 1st Lt Justin Giovannettone, "Airlifts in Time"
- Lt Col Michael J. Masterson, "Using Assessment to Achieve Predictive Battlespace Awareness"
- 1st Lt Antoine C. McNeal, "Information Assurance: Structure from the Fog: A Dynamic Information Defense Solution in a Dynamic World"

The *ASPJ* editorial staff is always seeking insightful articles and book reviews. We offer both hard-copy and electronic-publication opportunities. To submit an article for publication, please refer to the submission guidelines at http://www.airpower.maxwell.af.mil/airchronicles/howto1.html. To write a book review, please refer to the guidelines at http://www.airpower.maxwell.af.mil/airchronicles/bookmain.html. □

Ricochets and Replies

We encourage you to send us your comments, preferably via e-mail, to aspj@maxwell.af.mil. You may also send letters to The Editor, Air and Space Power Journal, *401 Chennault Circle, Maxwell AFB AL 36112-6428. We reserve the right to edit the material for overall length.*

BOYDMANIA

Dr. Dave Mets's article "Boydmania" (fall 2004) sparked considerable controversy among our readers. Clearly, we are still debating the proper way to interpret the late Col John Boyd's legacy—OODA loops and all. We detected no neutral comments. Readers either loved the article or hated it. Most loved it. Here are some samples of the reactions we received:

I thoroughly enjoyed Dave Mets's article. He did an outstanding job of debunking Boyd and his acolytes. My hat is off to Dr. Mets.

Gen Bennie L. Davis, USAF, Retired

I found Dr. Mets's article on John Boyd excellent. John was a friend—passionate and brilliant in many ways but not perfect. The acolytes who would immortalize him were often "too close to the flame." Dr. Mets brings reason and objectivity to the subject without disparaging the memory. John's Aerial Attack Study, Energy Maneuverability Study, and Patterns of Conflict briefing were important contributions to the body of knowledge. There were others—the Red Baron Reports, TAC-85, the Fighter Force Modernization Study Group Report, TCMs 3-1, and AIMVAL/ACEVAL, to name a few. John's contribution was important and recognized by the secretary of the Air Force.

Lt Gen Robert E. Kelley, USAF, Retired

I am a fan of Colonel Boyd's work—his insight and perspective deserve discussion at every level of force planning and application—but I absolutely agree with the points made by the reviewer. His article is very thoughtful and well worth the time spent reading it.

Capt Bill Johnson, US Navy

As far as I can tell, Dr. Mets has no idea what he's talking about. Does Mets even understand that the OODA loop theory stresses the vital importance of situational awareness and intelligence gathering/analysis (without a doubt the number-one culprit behind every US military blunder in the last 75 years)? Just doing your loop "faster" as measured by a timeline is one of the classic misunderstandings of Boyd's theory, and Mets fell right into it.

Maj John Lance, USAF

Regarding the outstanding review by Dr. David Mets of Robert Coram's *Boyd: The Fighter Pilot Who Changed the Art of War*, Dr. Mets laments that he is "alone looking into the mirror and coming away with a negative view." He's not as alone as he believes. Admittedly, my Air Force career is still quite young, and I have yet to see an assignment in "the Building." However, it took only a few chapters of Coram to realize that the author's cynicism regarding the entire Air Force establishment clouds any real lessons he wanted the reader to take away. I think Dr. Mets's implied skepticism about the thoroughness of Coram's research and his uncritical use of interview sources is entirely warranted. Also, Dr. Mets's more evenhanded treatment of issues like missiles versus guns and the Fighter Mafia versus "Goliath" was refreshing compared to Coram's decidedly one-sided view.

Capt Brian D. Smith, USAF

US Air Force Special Operations

Charles Tustin Kamps

CONSISTING OF PERSONNEL known as "the quiet professionals," Air Force Special Operations Command (AFSOC) provides units and expertise to US Special Operations Command and to theater combatant commanders. As a force multiplier, it contributes to joint operations in five mission areas: precision employment/strike, information operations, special operations mobility, shaping the battlespace, and agile combat support.

Air Force special operations began in World War II, in both major theaters of war. In Europe in 1943 and 1944, several separate units assisted partisan activity in France, Italy, and the Balkans, and supported agents of the Office of Strategic Services. On the other side of the world, the 1st Air Commando Group transported and supplied the British "Chindit" raiding force and the US unit known as "Merrill's Marauders." All of these units disbanded after the war, and not until 1951 did air resupply and communications units form to conduct psychological operations and agent-infiltration missions during the Korean War.

The "Jungle Jim" program, begun in 1961 in response to communist insurgency efforts, soon became the birthplace of air commandos employed in the Vietnam War. Air commando squadrons (later renamed special operations squadrons) conducted aggressive personnel-rescue missions with a variety of aircraft, as well as interdiction/fire-support operations with a new platform—the fixed-wing gunship. After Vietnam, Air Force special operations units remained in the order of battle and have taken part in all major contingencies to date. A major change occurred in 1987 with the creation of US Special Operations Command, which manages—and sometimes commands—all of the services' special operations forces (SOF).

Headquartered at Hurlburt Field, Florida, AFSOC includes one colocated wing with combat, training, and foreign internal defense squadrons; a special-tactics group; and a Reserve group. Operational groups in Europe and the Far East include fixed- and rotary-wing squadrons as well as special-tactics squadrons. A National Guard unit in Pennsylvania operates the EC-130E Commando Solo psychological-operations platform.

Fixed-wing special operations squadrons operate variants of the C-130, modified as gunships, refuelers, and deep-penetration SOF transports. Rotary-wing squadrons use modified versions of the H-53 helicopter. Both platforms are showing their age; indeed, the helicopters have begun to wear out.

Special-tactics teams deploy Air Force combat controllers and pararescue personnel to select assault zones, provide terminal guidance and control for fire support, manage air traffic control, and conduct combat medical care and personnel evacuation. Combat weather teams support the collection and prediction of weather data in the operational area. In short, the highly skilled, quiet professionals of Air Force special operations receive worldwide recognition for their expertise.

To Learn More . . .

Haas, Col Michael. *Apollo's Warriors: US Air Force Special Operations during the Cold War.* Maxwell AFB, AL: Air University Press, 1997.

Leary, William M. *Fueling the Fires of Resistance: Army Air Forces Special Operations in the Balkans during World War II.* Washington, DC: Air Force History and Museums Program, 1995.

Mason, Herbert A., Jr., Randy G. Bergeron, and James A. Renfrow Jr. *Operation Thursday: Birth of the Air Commandos.* Washington, DC: Air Force History and Museums Program, 1994.

Thigpen, Col Jerry L. *The Praetorian Starship: The Untold Story of the Combat Talon.* Maxwell AFB, AL: Air University Press, 2001.

Change is the law of life. And those who look only to the past or the present are certain to miss the future.

—Pres. John F. Kennedy

Unconventional Airpower

MAJ WILLIAM BRIAN DOWNS, USAF*

DESPITE ALMOST A century of air combat experience, the Air Force today confronts a form of warfare it is ill prepared to wage. In previous wars, we found a way to win by correctly adapting to each particular conflict. Once again we must adjust if we are to bring airpower more effectively to bear in counterterrorism (CT) and counterinsurgency (COIN). This article broadly outlines a doctrine of unconventional airpower for these missions and recommends modifications in force structure and tactics that will help execute that doctrine successfully on the battlefield. Specifically, the recommendations include development of a new aircraft for CT and COIN.

Although the Air Force should maintain a regional focus in its thinking about these two missions, we must remain globally aware. That is, we need intimate knowledge of the people, languages, and cultures of the countries in which we operate; at the same time, we must understand how our actions in a particular area will affect others on the planet. These facts are as true for the Air Force as they are for surface combatants. In fact, because the speed and lethality of air operations magnify the potential for doing good or inflicting harm, we must clearly comprehend all of their effects. Furthermore, despite the deep regional roots of terrorists, they have global operational reach. In some cases—Indonesia, for example—terrorists who plan operations against the United States elude us because of their location in areas politically closed to US forces. In others (e.g., Iraq and Afghanistan), the political environment allows insurgents to operate despite a sizable US military presence. To bring airpower against enemies in this global operational environment, Air Force combat operations should become as personal and selective as they are swift and precise—and include alternatives for striking targets in areas politically difficult to reach. Covert operations offer one way to attack these types of targets, but we should consider other methods as well.

*The author is a member of the 6th Special Operations Squadron, Air Force Special Operations Command, Hurlburt Field, Florida.

Doctrine

In unconventional warfare, the principles of war remain valid, but they apply in different ways and in a different context than during a conventional conflict. Similarly, the Air Force's distinctive capabilities apply to CT and COIN but need adjustments to make them effective. To allow for personal and selective air operations for these missions, the doctrine of unconventional airpower adapts the Air Force's distinctive capabilities of air and space superiority, information superiority, global attack, precision engagement, rapid global mobility, and agile combat support to our current global battlefield by considering their impact from diverse cultural perspectives.[1] For example, after we achieve air superiority, if continued air operations create unnecessary hostility in the population over which our aircraft are flying, we only hinder our larger, global mission. Thus, on today's battlefield, we must employ Air Force assets *selectively* to avoid creating more enemies. In some cases, rather than employ our own air assets, we should assist indigenous air forces so they can conduct operations against our mutual enemies. If a capable indigenous air force does not exist, the US Air Force should take the lead in developing one.

Similarly, information superiority in unconventional airpower goes beyond technical-collection platforms, shrewd analysts, or rapid-dissemination systems; it also includes an awareness of what people think and even *feel* about air operations conducted by US or local forces. For the most part, we gain this understanding by working closely with indigenous forces at the tactical level. In addition to learning how our operations influence a population, we must become adept at predicting that influence. Such awareness could then inform our planning.

In the same way, global attack and precision engagement are critical to unconventional airpower. However, not only must we attack globally and precisely, but we must also consider *who* executes the attack. We need not employ US aircraft or crews on every mission; indeed, combined crews of US and foreign Airmen could fly them just as easily. We must consider that the same attack, on the same target, with the same military effect, may produce a different political impact, depending on who flies the aircraft. We should use this fact to our advantage rather than allow it to surprise us.

Finally, in unconventional-airpower doctrine, rapid global mobility and agile combat support should be available to sustain military operations conducted by other than US forces—or even the activities of nongovernmental organizations when they support our objectives. Like the ramifications of an attack mission, the political impact of logistical support depends upon who carries it out. The doctrine of unconventional airpower, then, is effects-based, employing indigenous air forces to achieve political and military outcomes locally, regionally, and globally.

Force Structure

As might be expected, the force-structure changes that we must make in order to execute unconventional airpower doctrine focus on training and personnel. At every level, the Air Force should teach its members to think globally and to develop an understanding and appreciation of the specific cultures in which they will operate. This training should go far beyond our current briefings and pamphlets. Our military equal-opportunity program provides a good model for such an effort. Ironically, the Air Force currently expends more energy instructing its Airmen about their own culture than it does teaching them about the cultures of our enemies and allies!

Until now, in-depth training in cultural awareness has primarily been reserved for special operations forces. As Lt Gen Norton Schwartz has said, those forces must enhance their own cultural perception, but this acuity belongs in our expeditionary air and space forces as well.[2] Air Force officers should set the example by learning at least one foreign language fluently. But we also need more forces that specialize in bridging cultural divides. In the US Air Force, one finds these individuals predominantly in three specialties: embassy team members, foreign area officers, and combat-aviation advisors. The number of Air Force members assigned to embassies is limited, but members of the other two specialties should form a corps to develop cultural awareness in the Air Force.

We should increase the number of combat-aviation advisors so that every geographic combatant commander and combined forces commander has the benefit of their skills. These advisors, part of Air Force Special Operations Command, perform their missions in operational aviation detachments of various Air Force specialties that assess, train, advise, and assist foreign air forces and integrate them into combined operations. They represent the Air Force's link between foreign cultural awareness and operational capability. In addition to bolstering coalitions, advisors can help bring foreign airpower to bear unilaterally in areas politically closed to conventional US forces. If terrorists or insurgents are operating in a nation with extremely limited air capability, advisors can train with indigenous air force units and then assist them in combat. Although the US Air Force employs combat aviation advisors, it has not yet fully exploited their distinctive abilities. In general, the Air Force has left the training, advising, and assisting of foreign forces to the Army or civilian contractors; for example, the Army recently assumed the responsibility of obtaining a new surveillance aircraft for the Iraqi air force. Our service's combat aviation advisors have played no part in building the Iraqi air force.[3]

Clearly, the Air Force should improve the cultural awareness of all its Airmen. But it should also cultivate special units that employ airpower professionals to assist indigenous air forces with CT and COIN around the world, including building air forces where none exist.

Air Tactics for Counterterrorism and Counterinsurgency

After it has developed the doctrine and established the force structure, the Air Force should employ tactics specifically oriented toward CT and COIN. These should include training, advising, and assisting foreign air forces in their CT and COIN missions and integrating them into ours. We should also help them develop aircraft designed specifically to conduct these missions within the limits of their budgets. The United States possesses air assets that it utilizes for such operations, but most of them are inappropriate for nations with limited resources. Aircraft such as the AH-64, AC-130, A-10, and Predator unmanned aerial vehicle lie beyond the budgets of many nations with genuine CT and COIN requirements; furthermore, the AH-64 and A-10 were designed for antiarmor operations rather than CT and COIN. Even in those regions suitable for the employment of US air assets, building an indigenous CT or COIN air capability would provide a force multiplier, allow the United States to disengage, and foster confidence and political strength in the host-nation government.

Nations with limited resources should develop capabilities fundamental to successful CT and COIN. Air forces that conduct these operations must be able to locate, identify, and strike terrorist and insurgent targets anytime and anywhere, but they also must have the means to sustain these capabilities over the long term. Although these nations are forming CT and COIN ground units, air forces capable of complementing their army counterparts are either withering or nonexistent. In some cases, they will have to build such an air capability from scratch; in others, they should redirect funding from costly aircraft to less expensive, simple, yet effective CT/COIN platforms.

The ideal CT/COIN aircraft for nations with limited resources should be inexpensive as well as simple to maintain and operate yet have a robust intelligence, surveillance, and reconnaissance capability and the ability to strike targets immediately. It should also have long endurance for extended loiters, the ability to operate in rugged terrain, and low detectability. Although these countries should consider developing a completely new aircraft that meets these requirements, in the interim, they should explore the possibility of using the Thrush Vigilante. Created in 1989, the Vigilante is a low-cost surveillance and close air support platform based on the proven Thrush agricultural aircraft. The two-pilot Vigilante can locate and engage small units and individuals in austere environments. With its remote operating capability, seven-hour endurance, 25,000-foot ceiling, infrared sensors, defensive systems, and hardpoints, the Vigilante lends itself to employment in isolated areas by indigenous air forces to find and attack concealed terrorists and insurgents. The reliable and ubiquitous PT-6 engine powers this simple aircraft, whose basic systems are easy to maintain. The US Air Force should develop the Vigilante for the war on terror and especially to assist foreign indigenous air forces in conducting their own CT and COIN air operations.

Thrush Vigilante

Such air forces could use the Vigilante to great effect in executing the aerial CT and COIN tactics outlined by Maj Gen Richard Secord, USAF, retired, who advocates using airborne forward air controllers to call for air strikes or mechanized infantry assaults against located insurgents or terrorists.[4] One could also employ helicopter assaults in this manner, or, in the case of a positively identified target, the Vigilante could strike the target itself. A foreign air force could develop all of these capabilities for unilateral employment or in combined operations with our Air Force's combat aviation advisors. This type of combined operation, employing an aircraft able to operate in exceptionally close coordination with US and indigenous ground units, should also reduce friendly-fire incidents. Again, this approach would permit operations in politically closed areas, expand indigenous CT and COIN capabilities, and minimize risk to US forces.

General Secord is not the only advocate of this approach. In his single-integrated-attack team concept, Lt Col Jerome W. Klingaman, USAF, retired, describes a complete joint/combined CT and COIN tactic that includes the US Air Force's role.[5] He advocates employing light, armed surveillance aircraft, such as the Vigilante, to find and kill targets if possible. A US, foreign, or combined crew could perform this unconventional-airpower mission. If necessary, attack helicopters or fixed-wing strike aircraft could provide additional firepower. But we are currently missing the key to this tactic—specifically, initial contact with fleeting enemy targets is the result of persistent operations by inexpensive, light, armed surveillance aircraft.

Other authors and theorists have called for a similar use of airpower in CT and COIN. As early as 1965, Maj John S. Pustay, USAF, wrote that the ideal COIN aircraft should be easy to maintain and capable of reconnaissance and precise close air support.[6] In *The Air Force Role in Low-Intensity Conflict*,

Lt Col David J. Dean emphasized that "the US Air Force, to be effective in such situations [low intensity conflict], must have very detailed knowledge about the recipient of US assistance and the capabilities and limitations of that nation's military forces."[7]

In 1993 Maj Michael C. Koster specifically mentioned the Vigilante as an "alternative aircraft for Air Force special operations."[8] More recently, Dr. James S. Corum and Col Wray R. Johnson, USAF, retired, professors at the US Air Force's School of Advanced Air and Space Studies and Marine Corps University, respectively, said that "small wars" are long wars and that

> long wars are especially frustrating for airmen. Because of the highly complex and technical nature of an air force and the technical expertise required to manage even routine air operations, it takes many years for a country to develop an effective air force. Even a modern and capable air force can require a period of months or years to adapt its training, equipment, and doctrine to effectively fight insurgents and terrorists. Despite considerable outside aid and support, the air forces of many developing nations still require years of training and infrastructure development before they can be truly effective in counterinsurgency and counterterrorism.[9]

They are undoubtedly correct. The war on terror and our efforts against insurgents will take a long time. The US Air Force must adapt itself for the fight. □

Hurlburt Field, Florida

Notes

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2. Roxana Tiron, "Special Operators Must Change to Win War," *National Defense*, April 2004, http://www.nationaldefensemagazine.org/article.cfm?Id=1382.
3. The author is a member of the 6th Special Operations Squadron, the Air Force's only combat-aviation advisory unit. The squadron's advisors have not been tasked to assist in building the fledgling Iraqi air force.
4. Mladen Rudman, "It Was Chaotic Then and It's Chaotic Now," *Northwest Florida [Fort Walton Beach] Daily News*, 2 May 2004, A1.
5. Lt Col David J. Dean, ed., *Low-Intensity Conflict and Modern Technology* (Maxwell AFB, AL: Air University Press, 1986), 129.
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7. Lt Col David J. Dean, *The Air Force Role in Low-Intensity Conflict* (Maxwell AFB, AL: Air University Press, 1986), 105.
8. Maj Michael C. Koster, *Foreign Internal Defense: Does Air Force Special Operations Have What It Takes?* Research Report no. AU-ARI-93-2 (Maxwell AFB, AL: Air University Press, 1993), 56–58.
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The Advanced Special Operations Air Mobility Platform (M-X)

The Time Is Now

Col William E. Saier, USAF, Retired*

NOW IN ITS fifth decade of operational use, Air Force Special Operations Command's (AFSOC) MC-130E Combat Talon I aircraft still answers the call to provide clandestine infiltration, exfiltration, and resupply missions. This remarkable warbird and its younger sibling, the MC-130H Combat Talon II (which is only in its second decade of use), continue to prove themselves in combat in both Afghanistan and Iraq. However, with each passing year the time when these two aircraft will no longer be able to clandestinely penetrate and survive hostile airspace draws closer and closer. The most recent publication of AFSOC's *Way Ahead* predicts future threats that will bring about this development and their significance:

> **Threats to Aircraft**. The next 25 years will see the proliferation of infrared (IR), radar-guided, and directed energy (DE) threats that will render many existing aircraft obsolete by the end of this period. Between DE and radar-guided threats current AFSOF [Air Force special operations forces] aircraft will have survivability challenges in the years 2016 and beyond. This evolving threat has the potential to significantly challenge the capability for Special Operations Forces (SOF) to achieve tactical surprise through clandestine air mobility due to the increasing technological capability of passive aircraft detection at further distances.
>
> **Infrared**. IR man-portable surface-to-air missiles, already a significant hazard to AFSOC aircraft, will be an increasingly dangerous threat as more capable missile systems with advanced counter-countermeasures proliferate. Furthermore, the traditional AFSOC tactic of avoiding MANPADS [man-portable air defense system] by operating mostly at night will become less effective as our enemies acquire more night vision devices.
>
> **Radar Guided**. Emerging as a serious threat to AFSOF aircraft, the technology in radar-guided missiles is rapidly improving. Systems like the SA-10, SA-11, SA-12, and SA-20 (formerly SA-10C) are formidable systems capable of engaging targets at long ranges and at low altitudes. Recent articles in military journals describe the next generation of Russian-designed missile systems having ranges of over 240 nautical miles, altitude capability down to 1-meter above the ground level at those distances, and the capability of outmaneuvering most aircraft. Many of today's missiles and most future radar missiles will incorporate various types of anti-jamming technologies, which make them difficult to defeat.

*The author is currently working as a civilian contractor for Headquarters AFSOC on the "Advanced Special Operations Air Mobility Platform (M-X) Analysis of Alternatives."

Directed Energy. High-energy lasers will transform the battlefield in the far term. Lasers capable of shooting down aircraft have already been fielded by some nations. As a result, by the 2020 time frame, detection may become synonymous with instant aircraft destruction in some parts of the world. Proliferation of laser technology is expected to become worldwide in the next 30 years.[1]

Anytime, Anyplace, Anywhere

Our enemies are elusive, but we will find them—They are swift, but we will catch them—Anytime, Anyplace, Anywhere!

—Gen Paul Hester, USAF
Former AFSOC Commander

For General Hester's words to remain true—for AFSOC in the future to be able to truly go "anytime, anyplace, anywhere" at our choosing—AFSOC and the Air Force need to begin a serious effort to replace the aging Combat Talon I and II aircraft with a "next generation" of low-observable (LO) aircraft. An advanced LO aircraft with enhanced agility in the objective area is a "must have" to counter a future adversary's antiaccess and area-denial strategies.

The Past

The raison d'être of AFSOC's Combat Talon aircraft has been the clandestine penetration of enemy territory, most often for the purpose of achieving "tactical surprise" by United States Special Operations Command (USSOCOM) ground and maritime forces. Military forces, for thousands of years, have known the importance of achieving tactical surprise over the enemy. As an example of how far back military commanders have used the concept of achieving "tactical surprise," consider the following:

Thutmose III (1504–1450 B.C.) became Egypt's greatest warrior pharaoh, and is known to history as the "Napoleon of Egypt." Thutmose III established the empire far into Asia, exacting tribute from Babylon, Assyria, and the Hittites. He fought 17 campaigns abroad and was victorious in all of them. . . . The battle of Megiddo (Armageddon in the Bible) demonstrated all the characteristics of a modern army in battle. Thutmose III moved his army of 20,000 men from Egypt to Gaza, a distance of 250 miles, in less than 9 days and did so undetected. He immediately undertook another 10-day forced march . . . where he prepared to cross the mountains into enemy territory. Thutmose had to choose among three routes, two of which were easy marches but longer distances. The third was through a narrow defile but much shorter. . . . Thutmose's intelligence units learned that the enemy was deployed to protect the easier routes. In a bold gamble, Thutmose risked security for surprise. Taking the dangerous route, he arrived completely undetected outside the city of Megiddo, where he faced only a screening force of enemy soldiers. The result was a smashing victory. . . . The Battle of Megiddo provides an example of an army that utilized every major tactical device used by modern armies. Thutmose took advantage of his intelligence-gathering capacity and located the deployment of the enemy force. Using this information, he was able to

achieve tactical surprise and to mass his forces at the point of the enemy's greatest weakness.[2]

For AFSOC aircrews flying Combat Talon aircraft, planning to conduct clandestine operations and achieving tactical surprise have become "second nature." It is inherent in everything AFSOC does and is as important today as it was to Thutmose III over 3,000 years ago. In combat operations from the tragedy in the Iranian desert at Desert One to the successes achieved in Operation Enduring Freedom (Afghanistan) and Operation Iraqi Freedom, AFSOC's Combat Talon aircrews have spent countless hours planning and executing missions that emphasized clandestine infiltration and exfiltration. Aircrews use the concept of "detection avoidance navigation/threat avoidance navigation" (DAN/TAN), which emphasizes, first and foremost, undetected (clandestine) flight operations.[3] If an aircraft can avoid detection, then the risk to that aircraft is at the bottom end of the scale (fig. 1).

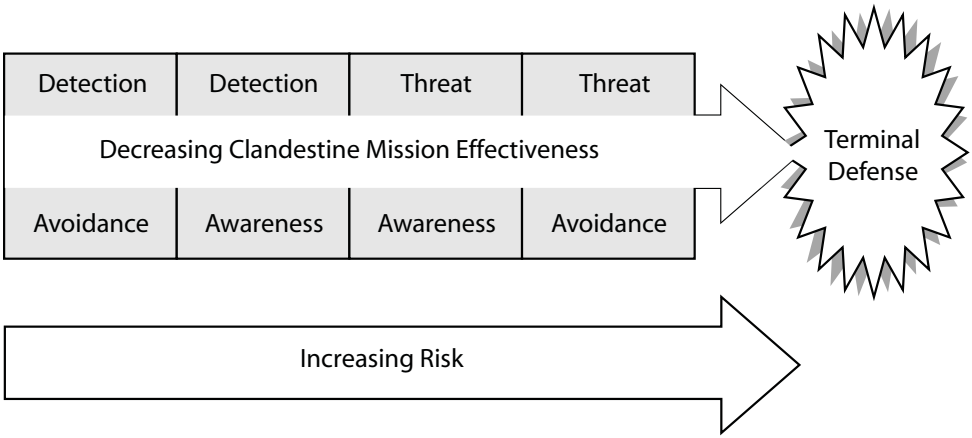

Figure 1. Detection avoidance navigation/threat avoidance navigation

Aircrews continue to use extensive premission intelligence data for thorough route planning. Once in the air, aircrews take maximum advantage of low-altitude flight profiles via the use of terrain-following and terrain-avoidance radars combined with the maximum use of terrain masking. In this way the aircrew has the greatest potential to avoid detection, particularly by enemy radar systems. Unfortunately for AFSOC aircrews, the threats an adversary can pose progressively worsen. On the other hand, AFSOC aircrew tactics for clandestine operations are at or near their limit. Aircrew and aircraft fly most of their missions at night and ideally in adverse weather that will degrade the enemy's threat-detection capabilities (without degrading the AFSOC aircraft's capabilities). AFSOC aircrews are flying as low as possible—given current technology and safety concerns. Regrettably, there is no practical way to reduce the large radar cross section (RCS) of a C-130 aircraft, which presents the biggest

"giveaway" to detection. While it is true that the visual, acoustic, and IR signatures of a C-130 are also large, it's the large RCS that gives the enemy the greatest opportunity to detect AFSOC aircraft. These aircraft will eventually become more and more susceptible, both in terms of detection and lethal engagement, to the increased threat created by adversaries with enhanced detection capabilities. The result will be an ever-expanding portion of the world where current AFSOC aircraft and aircrews will be unable to complete their mission.

The Future

AFSOC recently completed its M-X Analysis of Alternatives (AoA), a 15-month effort that explored potential concepts for the follow-on to the venerable (and often vulnerable) Combat Talon. While AFSOC continues to modify its Combat Talon aircraft with enhancements to increase mission effectiveness and survivability, it just won't be able to make the radar detectability of such a huge aircraft with a large RCS any better. Couple that with the fact that aircraft and aircrew can't fly any lower or any faster; night can't become any darker; adverse weather isn't something one can conjure up when needed; there are areas in the world where AFSOC may need to go where there is no terrain to hide in; and one quickly comes to the conclusion that AFSOC needs a new LO aircraft to remain relevant in the future. The effectiveness-analysis section of the M-X AoA included an Integrated Air Defense System (IADS) penetration triangle (fig. 2).[4]

As the triangle shows, three factors affect the success of penetrating an IADS. If AFSOC Combat Talons can't fly any faster and they can't fly any lower, then the only way to favorably affect the triangle is in the area of low observability. A new "next generation" clandestine-penetrator-concept aircraft for AFSOC was recently described in AFSOC's *Way Ahead*:

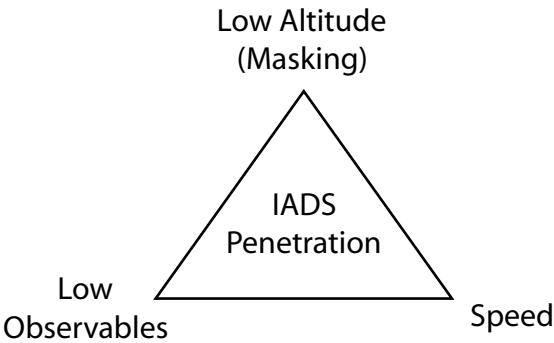

Figure 2. Integrated Air Defense System penetration triangle

> **M-X Aircraft**: This conceptual aircraft is required to support and improve SOF rapid global mobility beyond 2015. Reduced overseas basing and anti-access/area denial strategies drive the need for a high-speed, long-range air mobility platform capable of performing clandestine missions in denied, politically sensitive, or hostile airspace. The M-X will be designed to defeat sophisticated integrated air defense systems with

low-observable/stealth design technology combined with advanced air defense systems electronic countermeasures for increased survivability. The M-X needs "agility in the objective area" which means it must be able to accomplish short take-off and landings and/or hover at medium heights. The declining capability of the aging SOF C-130 fleet to penetrate deep into sophisticated hostile airspace beyond 2015 adds emphasis to this program. The 2001 Quadrennial Defense Review report specifically states "Special Operations Forces will need the ability to conduct covert deep insertions over great distances."[5]

This aircraft would possess the LO characteristics that when combined with low-altitude flight and appropriate speed capability would "reopen" hostile and denied airspace to clandestine flight operations. This will allow AFSOC aircraft and aircrews to deliver USSOCOM land and maritime forces well into the future, "anytime, anyplace, anywhere." □

Hurlburt Field, Florida

Notes

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3. Jacobs Sverdrup Technology, Inc., *Advanced Special Operations Air Mobility Platform (M-X) Analysis of Alternatives*, vol. 1 (Hurlburt Field, FL: Air Force Special Operations Command, 30 September 2004), 49–50.
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5. AFSOC's *Way Ahead*, 15.

MC-130H Combat Talon II

At the Crossroads

Future "Manning" for Unmanned Aerial Vehicles

MAJ JAMES C. HOFFMAN, USAF
CHARLES TUSTIN KAMPS*

I think it's reasonable to set a goal to have one-third of our deep strike tactical aircraft remotely piloted within 10 years, and to have one-third of our ground combat vehicles remotely operated perhaps in an equal number of years.

—Senator John Warner, R-VA

THE CURRENT AND future state of unmanned aerial vehicles (UAV) presents a number of challenges to the US Air Force. For example, how can the service deal with the cultural changes needed to make optimal use of an airframe that brings significant increases in capability at lower cost without a resident pilot? Additionally, what staffing procedure will make the best use of advanced UAV systems?

The presence of a human pilot in an aircraft imposes a variety of cost and weight penalties, such as constrained forebodies (the tapered front part of the airframe as distinct from the cylindrical midbody and the [usually tapered] afterbody), displays, and environmental-control systems. The pilot also restricts an aircraft's maneuverability because of physiological limits regarding G tolerance. Removing the pilot, however, gives rise to new "out-of-the-box" design freedoms that can produce smaller, more efficient, lighter, and more affordable aircraft. A UAV such as the Global Hawk does not need a pilot because flying it requires no stick and rudder skills. But experts contend that an engineer with some pilot background (knowledge of basic flight dynamics, weather, instrument flight rules, Federal Aviation Administration [FAA] rules, etc.), experience with home-computer flight-simulator games, extensive familiarity with flight systems and mission planning, and 250 to 500 hours of simulator time would be a model candidate as a remote pilot for the Global Hawk.

*Major Hoffman is chief of UAV Reconnaissance Operations, 609th Combat Operations Squadron, Shaw AFB, South Carolina. Mr. Kamps is professor of war gaming at Air Command and Staff College, Maxwell AFB, Alabama.

Cultural Roadblocks to Unmanned Progress

There certainly are aviators out there who feel threatened. I think, though, that most warfighters really believe there is a very viable niche for these types of vehicles.

—Lt Gen George Muellner, USAF, Retired

The cultural attitudes of military services are important to the progress, or lack thereof, of future changes in doctrine and materiel. In his insightful study *The Icarus Syndrome*, which treats the Air Force's cultural baggage at length, Carl H. Builder traces the origins of Air Force attitudes to the early days of aviation, dominated by young men of action not overly given to thoughtful analysis of air operations as warfare in the medium of the air—a part of general war theory. Primarily interested in platforms rather than effects, early aviators sought *higher*, *faster*, and *farther* performance for manned bombers and fighters.[1]

The Air Force's senior and midlevel leadership, controlled by the pilot community, could become a cultural impediment to the UAV "revolution," just as it hindered the proliferation of cruise missiles in the latter part of the Cold War. The idea of unmanned systems supplanting some manned fighters and bombers may appear threatening to anyone who does not take a holistic view of war in the air.

A new generation of leaders, however, may perceive UAVs as more of an opportunity than a threat. With education, they may appreciate these aircraft for their high-performance maneuvers, their effortless embodiment of the airpower tenet of persistence, or their ability to furnish a squadron's worth of platforms for the cost of a single manned aircraft. Indeed, only a concerted effort in education will effect cultural change in the acceptance of UAVs as part of "the real Air Force."

Human Resistance

Before the war, the Predator had skeptics because it did not fit the old ways. Now it is clear, the military does not have enough unmanned vehicles.

—Pres. George W. Bush

Over the history of aircraft system development, people in some arenas have strongly resisted new ideas, new concepts, and even change itself. Whether the vision involved breaking the sound barrier, landing on the moon, or just getting off the ground for the first time at Kitty Hawk, North Carolina, we have always had skeptics who scoffed at such efforts. The same holds true of today's vision for the unmanned combat aerial vehicle (UCAV)—in many ways, this resistance is even worse.

Some pilots appear wary of the usefulness of UAVs and UCAVs, primarily because they simply don't like the idea of being replaced by a robotic aerial vehicle. In 2000 a military pilot told one of the authors that "it will be a long time before any of us will be comfortable releasing bombs and betting the ranch using UAVs." Since that time, we have gained enough confidence in the UAV's reliability, positioning, and target accuracy that slinging bombs from this aircraft has become a foregone conclusion. However, the culture still has a long way to go in accepting unmanned technology for other potential missions.

This *change problem* entails moving from one state to another. To do so, military leadership must set up and define clear goals of what it wishes to attain. The analysis of such a problem includes defining the outcomes of the change effort, identifying the processes that produce these changes, and then finding ways to implement them.

Change-management specialist Fred Nickols identifies five factors in selecting a change strategy for dealing with resistance to UAVs: understanding the level of resistance involved, knowing the population, understanding what is at stake, knowing the time frame, and involving the experts.[2] In order for these aircraft to succeed, UAV experts must not only convince leadership of the value they add to the war fighter, but they must also clearly define the goals of the system as derived from extensive research and models concerning future mission demands and requirements.

Finally, successful change depends upon appropriate integration of both formal and informal change processes that leaders must recognize in the development of UAVs and apply to support decisions designed to attain specific goals. Just as change requires new ways of thinking, so does it involve rethinking the "architecture" of the future force structure. Otherwise, if not implemented, future UAV *development* programs will surely face an early demise.

Solutions?

More than likely, we will need a separate, formal career UAV/UCAV force to retain UAV pilots in the field, allowing them to stay highly proficient and experienced, much as we do currently with the missile- and space-command forces. A recent study of skills/capabilities for flying UAVs/UCAVs conducted by the Air Force Research Laboratory's Human Effectiveness Directorate showed that some flying experience is required (e.g., a private pilot's license with an additional 150 hours of flight time as a minimum). The challenges of landing a UAV, reading approach plates, making critical system inputs, understanding weather conditions, having to deal with simultaneous emergencies, evaluating last-minute threats, and sustaining situational awareness make such proficiency necessary. In February 2002, final results of the study concluded that T-38 or T-1 aircraft

time in specialized undergraduate pilot training (SUPT) is *not* required for flying UAVs.[3]

The Air Force currently suffers from a critical shortage of aviators for manned aircraft. After combining this shortage with the need for more UAV pilots, one understands the attractiveness of instituting a separate UAV/UCAV training track/formal schoolhouse. Today, the Air Force involuntarily removes young pilots from the cockpits of manned aircraft for 36 months to "fly" UAVs such as the Predator MQ-1. This practice negatively affects not only the UAV community with its high deployment rates and operations tempo, but also the manning of major weapon systems, which already suffer from pilot shortfalls. In addition, it disrupts pilots' normal career-progression milestones (e.g., upgrades, experience levels, promotions, etc.). Currently, only rated pilots and navigators who possess an FAA commercial instrument rating can fly Air Force UAVs, but the service is reengineering its navigator-training program to address the growing need for UAV operators. This program will produce Airmen known as combat system operators, who will have proficiency in employing both manned aircraft and UAVs.[4]

Pilot flying the Predator UAV in Bosnia (1996)

Until now, the rated force has provided midgrade officers to serve as UAV pilots. However, as the number of these pilots increases from its current level (approximately 60) to 400 in the next eight years (fig. 1), the rated major weapon system (MWS) community will not be able to meet the UAV manning demand. Having to assign approximately 170 rated officers each year will certainly exacerbate the current MWS pilot shortages and consume a significant portion of the annual 1,200 graduates of SUPT. Additionally, pulling rated individuals from other MWS's for UAV duty will greatly hurt unit readiness. The Air Force currently struggles to find even 20 pilots a year to volunteer for UAV duty. The practice of requiring MWS pilots to fly the Predator would likely have a detrimental effect on morale in UAV squadrons. Finally, treating the Predator assignment as a one-time tour prevents the UAV community from developing a cadre of long-serving experts.

Properly training and qualifying nonrated—preferably junior—officers for Predator UAV initial qualification training (IQT) would alleviate many of the problems previously mentioned. The new plan would call for Air Force officers who have not attended SUPT to volunteer for the Predator

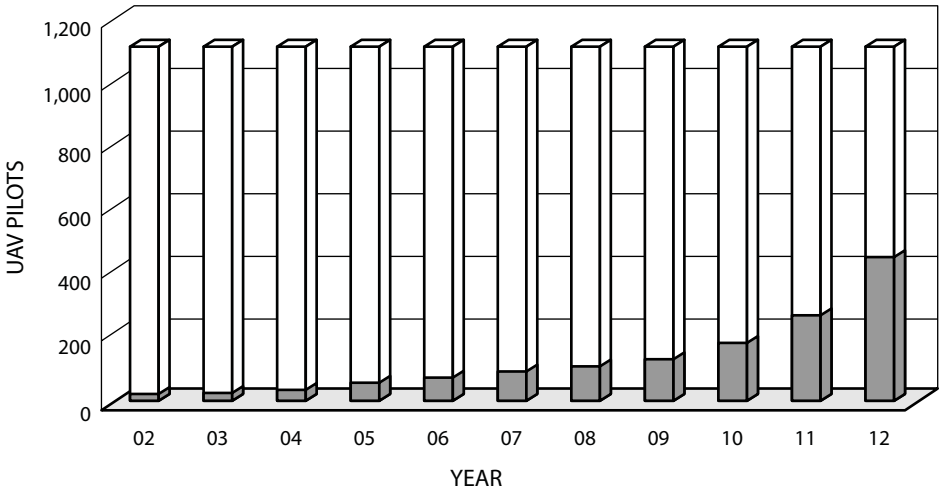

Figure 1. UAV manning requirements

and undergo the following three-phase training program: (1) use of contracted civil aviation or Air Force initial flight training (IFT) to obtain a private pilot's license, (2) use of contracted civil aviation training to obtain the equivalent of a commercial instrument rating, and (3) attendance and completion of Predator IQT. This system would satisfy the instrument-rating and manned-flying experience required to fly the UAV. The nonrated officer—now a trained, fully qualified "UAV pilot" ready for mission qualification training—would serve a three-year tour (or longer). A private, Air Force–sponsored IFT program already exists, which includes a full check ride and solo flight for the pilots in a Cessna 172. At an additional cost of $4,800 per individual (for an extra 80 hours of training), each trainee would receive a private pilot's license and an instrument rating.

By instituting this program, the Air Force would obtain UAV volunteers for the right reasons. Today, manned MWS pilots "volunteer" for MQ-1 Predator duty to escape the stress of high operations tempo and TDY commitments that accompany MWS systems. Increased morale within the UAV squadron would also emerge as a long-lasting benefit. Nonrated officers would have more motivation to fly a combat UAV than the MWS pilots the Air Force currently uses. If implemented, the program would also allow the retention of an experienced cadre within the UAV community to work future planning issues and/or serve in leadership positions such as squadron commander. Currently, at the end of a Predator pilot's three-year tour, he or she quickly resumes flying a manned MWS. Other UAV communities, such as the RQ-4A Global Hawk and the X-45 UCAV, could capitalize on the experience that pilots will acquire in the Predator program. Furthermore, having the opportunity to move to other UAV programs would enhance career progression and increase command opportunities for Predator pilots. However, one finds the most

X-45A UCAV

dramatic benefit in the cost savings associated with the implementation of this plan (tables 1–3). It is *very* expensive to move fully trained MWS pilots to mission-qualification status and then divert them to UAVs for a three-year tour that does not require advanced pilot skills.

This innovative approach of selecting nonrated individuals to become qualified UAV pilots would alleviate many of the problems noted above. If implemented, however, it would surely create a need for a dedicated career field for *unmanned aviation* that the rated community might not embrace. Such a reaction, in turn, could serve as a major roadblock to fulfilling the

Table 1. Cost of current system per pilot (B-52)

SUPT (fighter/bomber track)	$392,861
B-52 IQT	+292,190
Total	$685,051

Source: Air Combat Command/XOFT. This table uses a B-52 pilot as a valid sample of several Predator pilots, past and present, who maintain the B-52 as their MWS. Also, these figures do not include the cost of B-52 mission qualification training, B-52 requalification training after the Predator tour, survival schools, altitude-chamber training, life-support training, and so forth.

Table 2. Cost of proposed UAV plan per pilot

IFT	$5,500
Instrument rating	6,500
Hi-fidelity simulator check	+1,000
Total	$13,000

Source: Air Education and Training Command/XOFT. The cost is only $1,000 if the nonrated selectee already possesses an instrument rating. The table does not include the cost of Predator IQT because a B-52 pilot under the old system would still have to attend Predator IQT; therefore, the cost would be the same.

Table 3. Savings with a squadron of 15 pilots

Current process (B-52 pilot) x 15	$10,275,765
Proposed UAV pilot training plan x 15	–195,000
Total	$10,080,765

Assumption: All 15 selectees graduate from Predator IQT. However, if *only one* selectee out of 15 is successful in the proposed plan, then it still pays off, compared to the cost of one MWS pilot in a three-year tour with the Predator under the current plan.

requirements of our future UAV force structure and thus delay the full application of unmanned technology to a multitude of missions.

Conclusions

Entertain every idea like royalty because one may prove to be the king.

—Anonymous

The burgeoning capabilities of the UAV make it a military phenomenon whose time has come. Clearly, in the near future, technological factors will no longer restrain the development of unmanned aircraft. However, it remains to be seen if the Air Force's *operational* community will wholeheartedly embrace the UAV. If it does, then the service will have to apply a rational force structure and doctrine in order to optimize future mission areas. Only a substantial educational effort—and probably a generational change in midlevel leadership—will overcome deep-seated institutional and personal biases against unmanned aircraft.

UAVs hold the promise of delivering on a wide range of airpower tenets difficult to realize with current manned systems. Furthermore, the lower acquisition and operating costs of the UAV can provide for an expanded force structure—one that the Air Force can support only by nurturing a new crop of air warriors who require far less formal pilot training and who do not owe primary allegiance to manned systems. As outlined, the cost and length of training for UAV operators are substantially less than they are for pilots of manned aircraft.

The reasonable expansion of mission areas that could be addressed by UAV technology in the future is limited only by our imagination. Aside from natural extensions into areas where pilots normally find themselves at high risk (such as suppression of enemy air defenses and urban close air support), UAVs could assume homeland-defense duties, such as flying long-duration patrols over high-value assets (e.g., nuclear power plants). The US Air Force is indeed at a crossroads. It can either embrace the UAV phenomenon and press forward or languish with methods and vehicles that will become progressively less relevant in the new dynamics of war. □

Al Udeid Air Base, Qatar
Maxwell AFB, Alabama

Notes

1. Carl H. Builder, *The Icarus Syndrome: The Role of Air Power Theory in the Evolution and Fate of the U.S. Air Force* (New Brunswick, NJ: Transaction Publishers, 1994).
2. Fred Nickols, "Change Management 101: A Primer," *Distance Consulting*, 2004, http://home.att.net/~nickols/change.htm.
3. Brian T. Schreiber et al., *Impact of Prior Flight Experience on Learning Predator UAV Operator Skills* (Mesa, AZ: US Air Force Research Laboratory, Human Effectiveness Directorate, Warfighter Training Research Division, February 2002).
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Influence Operations

Integrated PSYOP Planning

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A WELL-KNOWN TELEVISION commercial for the American Express credit card featuring golfer Tiger Woods produces both primary and secondary psychological effects.[1] By using a popular and influential spokesman familiar to many young to middle-aged people, the advertising agency responsible for the commercial seeks the primary effect of persuading the target audience to utilize its client's product. Interestingly, the fact that the agency also arranged to have the commercial appear in the movie *Caddyshack* possibly generated the secondary effect of increasing video sales and rentals of that film. The fact that American Express cross-promoted the commercial with Warner Brothers' restocking of retailers' shelves with the movie indicates that the company did take into account the primary and secondary effects.[2]

Like this commercial, a psychological operations (PSYOP) message might also produce both primary and secondary effects. Although no statistical evidence exists, a classroom lesson on propaganda in the Air Force's Information Operations Integration Course has repeatedly tested the creation of these effects by showing that students grasped their significance in this particular commercial. Specifically, instructors asked the students questions designed to identify the product and content of the advertisement and surveyed their desire to rent or purchase the movie in which it appeared. Responses indicated that the students linked on multiple levels with the ad and its information. Just as students identified such primary and secondary effects, so might an adversary respond to carefully crafted PSYOP messages. Of course, our enemies could very well use this technique against our own forces and citizens to achieve their own purposes.

The creation of primary and secondary effects in order to reach multiple end states during military operations raises some difficult questions. How can we measure the secondary effects of PSYOP? Do PSYOP planners look for ways to achieve not only primary effects, but also secondary effects that support the goals of the joint task force (JTF) commander? How can Air Force actions supporting PSYOP achieve these effects to ensure that a target adversary audience understands both the message and its intent? Planners in air operations centers, strategy cells, and planning cells need to consider these questions.

The Air Force's *Concept of Operations for Information Operations*, 6 February 2004, organizes all the facets of information operations into three categories:

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network-warfare operations, electronic-warfare operations, and influence operations (which include PSYOP). Combining PSYOP, whether offensive or defensive, with electronic-warfare and network-warfare operations can greatly enhance its effectiveness. The Air Force is taking a hard look at the realm of PSYOP and influence operations to assure that its information-operations planners know how to coordinate with the joint PSYOP task force during both planning and execution. One notices this desire to step back into the PSYOP realm in a possible new definition for Air Force PSYOP as *the deliberate use of airpower and space power, in both their lethal and nonlethal forms, to shape and exploit the psychological content of the battlespace in a manner advantageous to US/coalition forces and objectives*. We can start to imagine the many ways our service can contribute to joint PSYOP at the strategic, operational, and tactical levels, thus complementing existing Army, Navy, and Marine Corps efforts. For example, the Air Force's air and space superiority might support task-force commanders by achieving primary and secondary effects of PSYOP themes and messages tied to a greater influence-operations plan. Air Force planners could achieve these effects through synchronizing air- and spacecentric influence-operations plans with respective services and agencies to capitalize on all available capabilities, thereby maximizing effects against a target audience or region.

As the military becomes more involved in worldwide operations, especially military operations other than war (MOOTW), the ability to reach and inform or educate the target audience becomes critical to mission success. Using PSYOP during MOOTW to validate the credibility of US military and government actions in support of indigenous people can help persuade an adversary to accept the goals of the host nation and US activities in the region. In conjunction with the 4th Psychological Operations Group (4th POG), the Air Force would create themes and messages to support the planning and execution of combatant commanders' regional plans. Additionally, by using relevant symbols and dissemination techniques, ranging from face-to-face communications to radio, television, and the Internet, Air Force assets can send messages that support missions around the world. Intelligence agencies and personnel that provide reach-back support to planners need to understand trends within the target audience so that themes and messages linked with good delivery methods provide both primary and secondary effects. Combining Air Force PSYOP and influence-operations assets with intelligence reach-back makes for solid execution and assessment when supporting both kinetic endeavors (e.g., force-on-force and combat operations) and those considered nonkinetic (e.g., logistics and deployment, humanitarian relief, noncombatant evacuations, and other nation-building support).

The Air Force might realize primary and secondary effects with PSYOP and influence-operations activities through in-depth, collaborative planning within all operation plans (OPLAN), concept plans, and functional plans. Air Force Manual 10-401, vol. 2, *Planning Formats and Guidance*, 1 May 1998,

divides OPLAN construction for conventional operations into five phases: (1) prehostilities or deterrence, (2) lodgment or crisis, (3) decisive combat and force stabilization, (4) follow-through, and (5) posthostilities and redeployment. Not all OPLANs have the same phase names and may lack a decisive combat portion—but they can deal with such situations as refugees created from governmental instability or collapse. Knowing an OPLAN's phases allows planners to direct primary and secondary effects against target audiences during execution of operations from peacetime, through combat, and back to peace.

Anyone planning and preparing to execute within a given area must realize that the US ambassador has responsibility for America's interests in a particular country. No matter the phase being executed in a plan, the ambassador and his or her team will coordinate activities within that country. The only exception occurs during phase three—decisive combat and force stabilization—when the regional or JTF commander guides the country (the commander returns control to the ambassador upon conclusion of that phase). The ambassador and country team coordinate all PSYOP activity with the military information support team (MIST)/PSYOP support element (PSE), provided through the 4th POG and its regional battalion. If the Air Force uses PSYOP to achieve effects, it must work with the MIST/PSE or joint psychological operations task force (JPOTF) at all times.

Before implementing an OPLAN, the regional commander will assess actions in the region that validate a need to move the command from phase zero (day-to-day activities) to phase one (prehostilities or deterrence). These daily interactions link governmental personnel to national-level military activities. During this time, the Department of State and Department of Defense usually coordinate PSYOP and influence operations that address interests linked to the nation's diplomatic, information, military, and economic strategies. Regional commanders have coordination and input through liaison officers assigned to the various commands for actions during this phase. If PSYOP and influence operations are to take hold within a region and produce long-standing effects, US personnel must plan thoroughly, execute early, and continue these operations through all phases of activity.

Typically, conflict enters phase one when the regional commander feels that a situation may arise within the next 18 to 24 months. The commander might already have a standing and approved OPLAN for the situation or might modify one already on the shelf. Either way, plans contain prescreened, culturally aligned objectives for PSYOP, including target sets, themes, and possible messages. Plans may also specify other themes and intentions to avoid (e.g., those that denigrate local culture, customs, and beliefs). Planners should then determine the best way to reach the target audience, seeking not only to affect actions immediately, but also to continue doing so in support of future US/coalition intentions. To further

US objectives in the region, our military and government should identify influential individuals from either the United States or the target nation who have a high degree of credibility with the target audience—perhaps professional and amateur athletes with multinational appeal, such as soccer and basketball players, or actors with international followings. This approach might prove useful in an effort to improve the target citizens' understanding of democracy by explaining, for example, that they should support US forces bringing supplies and aid to their nation.

Phase two, lodgment or crisis, usually activates six months prior to probable decisive action, which might include combat, noncombatant evacuation operations, and MOOTW. During this phase, commanders consider moving assets into a region and protecting them. Additionally, MOOTW can encompass bringing assets into a region under military deception to protect a capability or conceal its presence in-theater. PSYOP and influence operations would continue from phase one and undergo modification entering phase two to support the operation as it changes. During the movement of forces and assets, force protection and operations security expand at home stations and forward operating locations. PSYOP and influence operations aid in deterring foreign human-intelligence collection, sabotage, violence, or demonstrations; they also inform the host nation and international community of US/coalition actions that will support that nation and stabilize the region. If the adversary is a military force, PSYOP and influence operations help stem hostilities through shows of force and the willingness to use superior military capabilities. Phase-two target audiences include influential enemy and possibly friendly military, governmental, and nongovernmental personnel who might question the actions of their government in relation to US actions in the region. During this phase, exercises that show capabilities or aviation missions in support of influence operations might include conditioning drills to affect intelligence collectors or might involve air-defense operators who would collect vital information. Although the goal calls for influencing a government or military leader to capitulate or stem aggression, knowing the collector and conduit that carries the information is critically important. Throughout this phase and into the next one, we constantly try to influence the target audience. Knowing how to reach the adversary's leadership, whether government or military, as well as the general populace, will prove invaluable when and if we enter the following phase.

Phase three, decisive combat and force stabilization, does not always include force-on-force combat involving seizure of air, land, and sea space from an opposing force. Noncombatant evacuation operations, humanitarian relief operations, or other forms of MOOTW can take place as well. Strategic- and operational-level PSYOP continues during phases one and two with appropriate modifications. Phase-three planning and executing of PSYOP and influence operations start to involve operational- and tactical-level targets, usually lower-echelon fielded commanders and

their forces. In the realm of achieving air and space superiority, these targets encompass adversary air-defense forces, air forces, or audiences who might use weapon systems to bring down US/coalition aircraft or otherwise affect our air- and space-based systems. The Air Force needs to plan both for acting against hostile forces and for minimizing collateral damage against noncombatant civilians. Because news and other media outlets, including the Internet, can transmit reports of such damage to the international community in a matter of minutes, the JTF commander and planners of PSYOP and influence operations should be able to stem erroneous and damaging information. Typically, collateral-damage issues go to the public-affairs representative, but under the Air Force's concept of operations, public affairs falls under influence operations—an arrangement more apparent in today's strategic communications office, which includes public-affairs, PSYOP, and information-operations personnel. After the JTF commander determines that hostilities and decisive combat—or MOOTW—have concluded and that a need exists for follow-through operations, planners will initiate the next phase.

Phase four, follow-through after decisive combat, entails supporting the rebuilding of a nation or region. The US ambassador reassumes the key position in the country, and various activities can take place, ranging from mop-up actions against small groups of resistance to rebuilding schools and digging wells. In the realm of civil activities, the US Army's civil-affairs organizations as well as governmental and nongovernmental agencies rebuild facilities or provide comfort to displaced persons. PSYOP and influence operations can inform indigenous people about medical and dental care, food delivery, and support organizations in the area. The US Air Force can support medical, dental, and engineer civic-action plans through proper planning and use of deployed medical units; Rapid Engineers Deployable Heavy Operations Repair Squadron, Engineers (RED HORSE); and civil engineer squadrons deployed to the area. During this time, units begin to redeploy to the United States or elsewhere, and operations-security as well as force-protection issues can become a concern. Additionally, the host country may request assistance from US forces in establishing foreign internal defense (e.g., building a military or police force to support reconstitution), which should be part of the overall campaign plan instead of a last-minute effort to return a country to host-nation support. Images and activities showing people, both military and civilian, from the US Air Force and host nation working side by side can promote stability in the country or region. Regardless of whether Air Force members work in Afghanistan, Iraq, or sub-Saharan Africa, they are supporting delivery convoys, civic-action plans, and stabilization operations in the immediate area of their bases. Their efforts enhance the Air Force's ability to support tactical, operational, and strategic levels of PSYOP and influence operations, thus putting our service's manpower and equipment

to use in meeting US and coalition goals. Instead of building up a military presence, as in phase two, phase four decreases that presence.

As the exit strategy for the military, phase five—posthostilities and redeployment—leaves behind only assets requested by the US ambassador, including PSYOP activities that continue to support nation building and military assistance. The Air Force would use this phase to ensure that appropriate personnel assume control of airfields and airports and that infrastructure exists for continued operations. Various embassy teams would provide points of contact with agencies within the country that might support US interests—an important part of creating and disseminating PSYOP that has a host-nation rather than a US feel. By this phase, commercial entities would begin to work with the JPOTF to finalize products for release to the general populace as part of public support.

During all the phases of an OPLAN or action, Air Force information-operations planners, assigned either to the information-warfare flight, regional combatant command, JTF, or JPOTF should utilize Air Force assets to deliver, reinforce, and capitalize upon the service's inherent capabilities. Numerous methods exist to make sure that a PSYOP message or influence-operations plan reaches the intended audience. Air Force planners should know that their options for delivery of PSYOP and influence operations range from face-to-face communication, through the standard use of an aircraft platform (e.g., worldwide radio and television transmission from the EC-130E Commando Solo aircraft and the release of leaflets by Air Force Special Operations Command's MC-130s, Air Mobility Command's transports, and Air Combat Command's fighters and bombers), to capabilities that reside within the nonkinetic realm of information operations and special information operations, not only for actions supporting the joint force air component commander but also the JPOTF.

PSYOP and influence operations during planning and execution always need to consider the primary and secondary effects of the message and action. In addition to using themes, messages, and symbols, noncombat phases might include something as simple as a backyard barbecue or its cultural equivalent to attract and influence people. When working the tactical and operational side of persuading an audience, planners should consider any and all methods for getting the message across.

The US Air Force brings a multitude of PSYOP and influence-operations capabilities to all phases of military and diplomatic actions, and its broad base of experience can help planners find the perfect niche for assets and mission requirements. The Air Force makes training in planning, information operations, influence operations, and PSYOP readily available. Since no one fights alone, all of the services must think and work jointly. Each service has capabilities that augment those of its sister services. Our planners can help bring Air Force assets to the joint fight, making sure they complement the effects-based, networkcentric outcome desired by the combatant and JTF commanders.

An electronic-command-system operator for EC-130 Commando Solo missions makes a final adjustment to one of his radio-frequency controls.

PSYOP and influence-operations planners should always look at ways to achieve beneficial primary and secondary effects. As they study the adversary and the environment, they should consider every possibility for achieving the overall effect and reaching the end state laid out by the regional or JTF commander. No one doubts the importance of psychological factors to today's battlefield. Looking into the adversary's history, background, and values will allow planners to better prepare the themes, messages, symbols, sounds, and images that will produce responses that support their objectives. By working with intelligence agencies as well as the JPOTF and by taking into account all aspects of the target audience, Air Force planners can create the greatest effect at the least cost. □

Hurlburt Field, Florida

Notes

1. American Express, 18 October 2004, http://www.americanexpress.digisle.tv/spot64/index.html.
2. "Legendary Golfer Meets Legendary Gopher in New American Express Commercial," American Express, 26 February 2004, http://home3.americanexpress.com/corp/pc/2004/tigershack.asp.

Editor's Note: PIREP *is aviation shorthand for* pilot report. *It's a means for one pilot to pass on current, potentially useful information to other pilots. In the same fashion, we intend to use this department to let readers know about air and space power items of interest.*

AFSOC Logistics

Quiet Professionals Supporting the War Fighter

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AIR FORCE SPECIAL Operations Command (AFSOC) is famed for its combat capabilities, but the command's indispensable logistical underpinnings are less well known. AFSOC logisticians overcome numerous challenges to support war fighters at home and in the field. Performing a wide spectrum of functions, including aircraft maintenance, contracting, deployment planning, transportation, and supply, these specialists may not eat snakes, but they can certainly find them!

Aircraft Maintenance Challenges

The Air Force has concerns about the health of its aging aircraft fleet. In fact, fleet-management issues were at least partially responsible for our recent wing reorganizations. AFSOC, which has particular interest in maintaining low-density/high-demand (LD/HD) assets, constantly seeks to answer the question "How do we accomplish seemingly infinite missions with these extremely finite resources?" The crux of the command's maintenance-management dilemma lies in balancing two competing issues: (1) improving the health and capabilities of our aircraft to assure their readiness for the next several decades and (2) simultaneously maximizing aircraft availability for ever-growing mission requirements.

The challenge for AFSOC is akin to the one that confronts a family of five that must use one car (the same car) for the next 40 years. The situation isn't so bad when the children are young and the car is new, but as it gets older and as jobs, schools, and extracurricular activities multiply, management of the family vehicle becomes virtually impossible. From a maintenance-management perspective, AFSOC has experienced unique challenges. Since the terrorist attacks of 11 September 2001, heavy demands placed on AFSOC's fleet of special operations forces (SOF) aircraft to meet the demands of the global war on terror

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(GWOT) have adversely affected ongoing commitments such as periodic depot maintenance (PDM) inputs, aircraft upgrades and modifications, scheduled maintenance requirements, and operational taskings.

In September 2001, AFSOC possessed 109 aircraft but has since lost 10 specialized platforms due to battle damage or crashes—an overall loss rate of over 9 percent. But losses have not occurred uniformly across all aircraft types. The MH-53 (Pave Low) fleet has suffered a 21 percent loss and the MC-130H (Talon II) fleet 13 percent, but the MC-130P (Combat Shadow) fleet has incurred losses of only 5 percent.[1] SOF platforms have maintained mission commitments since 9/11, but at a price. Aircraft mission-capable rates have fallen 9 percent, partly due to unscheduled maintenance. Additionally, aircraft nonavailability has crept up from 19 to 25 aircraft annually due to increased PDM requirements, repairs to battle-damaged aircraft, and aircraft modifications. In contrast, the overall mission-capable rate for the Air Force fleet has remained stable while aircraft nonavailability has actually improved by 3 percent. The bottom line is that AFSOC continually faces a challenge to produce mission-capable aircraft to meet global commitments and training requirements. Since 9/11, every tail number but one from our specialized airpower fleet has deployed for combat operations and theater taskings in support of the GWOT.

Like the rest of the Air Force, AFSOC reacted to the increased operations tempo brought about by the GWOT. Since 9/11, SOF aircraft have consistently flown more hours per month (55) on each available aircraft than the Air Force average of 48 for similar basic platforms. Of the 134,461 SOF hours flown, 46 percent (61,774) have directly supported combat/contingency operations. The heavier utilization of a smaller fleet has accelerated scheduled inspection flows, required

MH-53

MC-130H

MC-130P

additional maintenance for aircraft reconstitution, increased demands on parts procurement, and created bottlenecks in PDM inputs.

Returning to our automobile analogy, the only way to take care of the car so it runs for the next 40 years is to use careful scheduling to meet all of the growing family's demands. Since every AFSOC airplane is LD/HD, the goal of managing our aircraft fleet is simple: keep as many planes on the ramp and mission ready as possible! Fortunately, we believe that AFSOC's entire logistics team is doing yeoman's work to ensure that the command has aircraft available to meet its many taskings.

Management of "nonpossessed" aircraft (those in PDM or undergoing modification) remains a major focus area for the AFSOC logistics community. The command's director of operations determines, by model, the maximum number of nonpossessed aircraft allowable at any one time, thus assuring the most airframes available for operational taskings. In order that each aircraft spend the minimum amount of time in PDM, logistics personnel and the depot communicate with each other constantly. Scheduling each aircraft's PDM input begins months or years in advance. Additionally, logisticians continually track aircraft status throughout the PDM process to make certain that they meet output dates or make schedule changes for the next aircraft flowing into PDM.

At the same time the logistics community schedules aircraft for PDM, it schedules others for modification. In order to reduce the number of aircraft nonpossessed for modification, weapons-systems managers ensure that we combine several such requirements at one time, in one location, and on one aircraft. This process maximizes the number of aircraft available to meet mission taskings while accommodating the necessary modifications.

AFSOC's logistics community also manages its LD/HD fleet by deploying only mission-ready aircraft that can remain in the area of responsibility (AOR) for an extended duration without scheduled maintenance coming due. This practice helps reduce the time spent ferrying aircraft to and from deployed locations and improves aircraft availability. This process depends upon focused maintenance management at all levels. AFSOC weapons-system functional managers, the maintenance community in each group and wing, and unit-level maintainers scrutinize each aircraft's needs prior to deployment and immediately upon its return, at which time all possible major maintenance is completed. Maintenance groups and individual maintenance units make every effort to rotate AFSOC C-130s back from deployment just prior to their next scheduled major inspection. Airmen and contractors working side by side then perform the inspection and reconstitution concurrently, keeping each C-130's downtime to an absolute minimum. Additionally, when an MH-53 returns from deployment, a contract depot field team completes on-condition maintenance tasks (depot-level maintenance work). The unit's Airmen then immediately begin the major inspection. Conducting these two major events back to back enables AFSOC to complete the required MH-53 maintenance in minimum time. Finally, each maintenance unit conducts a thorough test of all aircraft systems to ensure that fully mission-capable platforms move forward once again to the AOR.

Engine management constitutes another critical component of AFSOC maintenance. The command manages five different T56 engine variations to support its fleet of SOF and combat search and rescue (CSAR) C-130s. To alleviate the extensive logistics requirement created by the multiple configurations, by fiscal year 2008 AFSOC will have converted its AC-130H (Spectre), AC-130U (Spooky), MC-130E (Talon I), MC-130H (Talon II), and MC-130P (Combat Shadow) aircraft to a common configuration capable of sustaining its SOF fleet with a single engine variant.[2] The commonality of spares will reduce the logistics signature and enhance deployed operations. The command is pursuing a similar initiative with respect to its CSAR HC-130P (King) aircraft.[3]

As the lead major command for the HH-60G (Pave Hawk), AFSOC is beginning work on improvements to engine performance in re-

AC-130

HC-130P

sponse to mission needs. Aircrews have mandated a 5 percent increase in engine and aircraft torque factors due to aircraft weight, combat configuration, and operating altitudes as justification for increasing the performance minimums.[4] This adjustment has adversely affected the attrition rate of the T701C engine. Both Warner-Robins Air Logistics Center (WR-ALC) and AFSOC have joined forces in a sustaining engineering effort to balance aircraft performance and combat mission requirements. AFSOC is currently working with the Corpus Christi Army Depot to evaluate a T701D engine configuration that would boost engine horsepower output by 5 percent while increasing time-on-wing threefold over the performance of the current T701C configuration. This initiative is crucial to sustaining CSAR capabilities until the Personnel Recovery Vehicle replaces the HH-60.

Through stringent management at each level of maintenance and the consolidation of maintenance efforts and processes, the AFSOC logistics community successfully manages the command's aircraft fleet and keeps the maximum number of mission-ready airframes on the ramp. When the call comes, the aircraft are ready to get into the fight—but sometimes we can't take everything we need with us or get it through the supply system. That's when our contracting experts step in.

Contracting

By their very nature, SOF units deploy to extremely austere locations, many times at the very end of logistical supply lines. AFSOC contingency contracting officers (CCO) fill the gap, providing continued direct support to special operators. The list ranges from conducting routine tasks (purchasing fuel, securing landing rights, and leasing land and facilities) to devising innovative solutions to difficult problems. For example, when a need existed for critical radio equipment but routine resupply could not provide the item in the time required, an AFSOC CCO contacted the manufacturer directly, purchased the item, arranged express-mail delivery to the theater, and helicopter support within the theater. The customer got what he needed within three weeks.

Although base operating support remains a theater responsibility, AFSOC's CCOs are sometimes in-place ahead of their counterparts

HH-60

in either the Air Force or the other services. Thus, their contracts, agreements, and vendor information form the cornerstone for service support of follow-on forces. For CCOs, no job is too large or too small. They satisfy all requirements from extending runways to purchasing flags to denote coalition support forces, accomplishing everything within federal, Department of Defense (DOD), and service procurement regulations as well as financial rules. These officers have become a highly prized force-multiplier, providing base operating support and ensuring that all SOF units get what they need to achieve mission success.

Deployment Planning

The uniqueness of AFSOC's weapons systems creates interesting deployment challenges, especially with respect to the GWOT. Such systems require specialized support equipment and munitions uncommon in the Air Force. Consequently, with the exception of the support of some generic C-130 airframe spares, few logistical advantages result from deploying AFSOC units to locations that already contain similar platforms. In addition, because of the operational requirement of great flexibility in basing SOF platforms, little or no prepositioning exists. These factors restrict the tailoring of units for deployment. Thus, AFSOC units tend to deploy with most of their equipment and personnel most of the time.

Because AFSOC has low numbers of specialized LD/HD assets based at several different locations, units frequently deploy small amounts of cargo and personnel to sustain the operation over time, so logisticians must come up with innovative—sometimes complex—transportation solutions. We often deal with shipments too large for express carriers, too time-sensitive for channel air, yet too small to warrant a special-assignment airlift mission. In these cases, we have to wait until we have enough requirements to justify airlift (which delays getting assets to our war fighters), or, more commonly, we search for other shipments with which we can aggregate our cargo. We normally choose the latter option, when available, to minimize the time it takes us to move assets into the theater. Our planners and controllers at the logistics readiness center have become experts at searching the Global Decision Support System to find an airlift mission going where we need it to go and then coordinating to move our cargo to the mission point of origin in time to make the flight. After assets arrive in-theater, supply experts distribute them to the war fighters.

Supply: "For the Want of a Nail. . . ."

We logisticians must manage supplies and spares carefully to prevent failure of a mission due to a small yet critical part. Since our special-operations fleets are smaller than conventional combat forces and military-airlift forces, daily hands-on management of critical spares is absolutely essential. Fortunately, our fleets enjoy superb support from most sources of supply. For example, AFSOC benefits from special contingency codes that prevent our mobility readiness support packages from dropping to unacceptable on-hand levels. Moreover, these codes allow us to meet our varied and frequent missions worldwide without fear of missing one due to lack of supply support. Additionally, AFSOC logisticians enjoy an outstanding rapport with their counterparts who work in the WR-ALC's Special Operations Forces Directorate. A small cadre of personnel there operates the Commando Control Center, providing daily real-time status on parts movement for critical items.

Although we've enjoyed good support from our suppliers, the fact that AFSOC aircraft fleets are LD/HD assets creates substantial challenges. Fixing a non-mission-capable airframe is our number-one priority. We can't afford to let an LD/HD airplane remain grounded while the part it needs sits in a warehouse or goes to the wrong destination. Clearly, we must assign the highest transportation priority to parts supporting LD/HD assets to guarantee that they move by the most expeditious means possible; furthermore, we must maintain in-transit visibility to provide

logistics personnel the information they need to make timely maintenance decisions.

The truism that small fleet size usually equates to a small number of spare parts represents one of the most daunting supply issues facing AFSOC logisticians. War fighters also place heavy demands on our weapons systems by flying longer sorties, often under combat conditions. With aircraft deployed, commanders closely monitor and direct movement of their few spare parts so that we minimize adverse effects to real-world missions. Traditional materiel-management systems generally prove effective, but our hands-on approach gives us an added measure of positive control needed to meet AFSOC mission requirements.

The fact that we have an LD/HD fleet, together with the inherent uniqueness of our weapons systems (particularly in the avionics arena), means that many spare parts fall under a three-level maintenance concept. That is, we sometimes position a small, second level of maintenance capability forward to immediately repair selected, specialized mission equipment. During Operation Enduring Freedom and the early stages of Operation Iraqi Freedom, our logisticians closely monitored resupply for approximately 50 line items deemed "showstoppers" in the AOR. By tracking these items daily/routinely, AFSOC convinced Air Staff Logistics to deploy single, modular units to enhance repair in the area. The Air Staff supported this effort by approving a contingency readiness spares package to support the maintenance effort, deemed a true success.

Because fleet-modernization efforts can also present substantial challenges to meeting spare-parts requirements, we team with suppliers and maintainers to modify common assets—those shared with other weapons systems—to make them SOF specific. On the one hand, we benefit by having some measure of commonality even though the components have been modified to meet AFSOC needs. On the other hand, we create logistics constraints because we have components that are peculiar to a particular platform. Additionally, the fact that some supply vendors no longer exist complicates maintenance of our aging aircraft, particularly the MH-53M. In essence, this airframe has outlasted the numerous component and subcomponent vendors. Moreover, we might need only one of something that may be obsolete, but it is not cost-effective for vendors to start up production lines for small quantities.

The challenges of fleet modernization and obsolescence require unique solutions. Our weapons-systems managers work hand in hand with their maintenance counterparts, the WR-ALC's item managers, and equipment specialists to make certain that new modernization initiatives have supply support prior to installation of the modified asset. The ready availability of spares means that our weapons systems can meet mission requirements upon completion of the modification. After installation of the modified asset, our weapons-system managers notify all users of the new item's stock number and the correct substitute relationship between weapons systems and load authorizations in the applicable spares packages. In the case of obsolescence, our managers work with the item managers, equipment specialists, and engineers to determine if an asset is a candidate either for reengineering or for replacement with a commercial off-the-shelf item.

The AFSOC LD/HD fleet will continue to face supply challenges. The many different weapons systems and constant modifications will create a need for top-notch, hands-on management of the aircraft fleet. AFSOC logistics personnel stand ready to meet these challenges.

The Way Ahead

One can see from the myriad issues facing AFSOC that the family car is stretched pretty thin; however, AFSOC logisticians have proven equal to the challenge and are exploring a number of initiatives to propel the command into the future. In the sustaining-engineering arena, AFSOC has teamed with many outside organizations to improve the

maintenance and reliability of our aircraft. For example, AFSOC has partnered with Air Mobility Command and the WR-ALC in research and development of an active, in-flight balancing system for the C-130 propeller. Proposed as an aging-aircraft initiative, this system—which balances the propeller in flight, regardless of the engine's power setting or flight condition—transposes an industrial technology to the aviation community. Two successful tests—an engine test-cell run and an in-flight test demonstration—resulted in a tenfold reduction in propeller-vibration levels. If proven reliable, this system will replace the current manual process, which balances the propeller by adding weights. The next phase of the program, expected to yield a three-to-one return on investment, includes sustained, long-term testing. The benefits to our C-130s include a substantial reduction in aircraft and propulsion stressors resulting from propeller imbalance.

Under current plans, we will completely retire our MH-53 fleet by fiscal year 2012. As we draw down the Pave Lows, we will ramp up the CV-22 program within the command. AFSOC logisticians are deeply involved and engaged in determining the best method to support and sustain this new platform as it enters our inventory. Although the program office for the V-22 falls under the Navy, our challenge lies in finding the right balance for both DOD and contractor support and sustainment.

In the supply world, Web-based data systems increase visibility, allow real-time access, and facilitate the procurement of assets. Such systems include the Defense Logistic Agency's Web Customer Account Tracking System and Air Force Materiel Command's Weapon System Management Information System and Automated Stock Control System, all of which allow greater visibility of available procurable items, contracts, and spares in work. In the case of assets not available through normal supply channels, we use commercial services such as the Inventory Locator Service and Parts Base to locate items with long estimated delivery dates at commercial vendors. Along with the Web-based tools that the regional supply squadron uses for sourcing and movement, our customers can have full access to mission capable (MICAP) sourcing and movement data through the new Web-based MICAP Asset Sourcing System, now available to all users through the Air Force Portal. To deal with an increasing number of supply-specific challenges, we are utilizing unique procurement processes to move mission-critical items to the flight line anytime and anyplace, to let our maintainers do what they do best.

V-22

The list of initiatives goes on and on, all directed toward finding new and improved ways to ensure that our fleet can meet the challenges and taskings that lie ahead. Whatever the task, AFSOC's logisticians will find a way to bring snakes to the snake eaters.

Conclusion

The logisticians of Air Force Special Operations Command offer key services to the war fighter. Maintenance, contracting, deployment planning, transportation, and supply all interact in an elaborate ballet to ensure that the command's warriors have the right tool at the right time. Our forces have deployed continuously for the past three years. Although no one can predict the future, we have postured ourselves to provide world-class logistics support to the war fighter for the long haul. Before the first shot is fired, logistics determines the outcome of the war! □

Notes

1. The Pave Low's mission is low-level, long-range, undetected penetration into denied areas—day or night, in adverse weather—for infiltration, exfiltration, and resupply of SOF units. The MC-130E Combat Talon I and MC-130H Combat Talon II provide infiltration, exfiltration, and resupply of these forces and equipment in hostile or denied territory. Secondary missions include psychological operations and helicopter air refueling. The Combat Shadow flies clandestine or low-visibility, single-ship or multiship, low-level missions that enter sensitive or hostile territory to provide air refueling for special-operations helicopters. The MC-130P flies missions primarily at night to reduce the probability of visual acquisition and intercept by airborne threats. Secondary mission capabilities may include the airdrop of leaflets, small special-operations teams, bundles, and rubber raiding craft, as well as night vision goggles, takeoff and landing procedures, and inflight refueling as a receiver.

2. The primary missions of the AC-130H/U gunships are close air support, air interdiction, and force protection. Close air support missions include troops in contact, convoy escort, and urban operations. Air interdiction missions involve preplanned targets or targets of opportunity. Force protection missions include defense of air bases and facilities. The MC-130E Combat Talon I and MC-130H Combat Talon II provide infiltration, exfiltration, and resupply of SOF units and equipment in hostile or denied territory. Secondary missions include psychological operations and helicopter air refueling.

3. The mission of the HC-130P/N—an extended-range CSAR version of the C-130 Hercules transport—entails extending the range of CSAR helicopters by providing air refueling in hostile or contested airspace if required.

4. The primary mission of the HH-60G Pave Hawk helicopter calls for conducting day or night operations into hostile environments to recover downed aircrews or other isolated personnel during war. Because of its versatility, the HH-60G can also perform military operations other than war, including such tasks as civil search and rescue, emergency aeromedical evacuation, disaster relief, international aid, counterdrug activities, and support of the NASA space shuttle.

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LEADS

The Essential Elements of a 3-D Geographic Coordinate

JOHN W. DIX*

To build the most effective force for 2020, we must be fully joint: intellectually, operationally, organizationally, doctrinally, and technically.

—*Joint Vision 2020*

PRECISION WEAPONS, SUCH as the Joint Direct Attack Munition, depend on precise three-dimensional (3-D) coordinates to locate their targets. However, there is not a common format for transferring 3-D geographic coordinates across networks to precision weapon systems. This article proposes a simplified methodology for describing the 3-D geographic location of a target and its target location error (TLE). The system is called LEADS.

During the Vietnam War, close air support (CAS) required having an aircraft close to a target and often exposed to hostile fire.[1] Aircrews needed visual contact with the target or an offset reference point—ground forces could usually hear and see the aircraft involved.

Aircrews used the CAS nine-line briefing form (CAS-9) as a template for logically organizing information about the location of the target relative to ground features, the aircraft, and the location of ground forces. The briefing form is a fill-in-the-blank template. It specifies a target's location in terms of magnetic heading, offset, distance from the initial point, and battle point; geographic location, elevation above mean sea level (MSL), and description; as well as the location of friendlies, egress routes, and the means to be used to designate the target, such as laser or white phosphorous.[2] The CAS-9 describes a target with sufficient detail for a clear identification that prevents confusing it with another target.

The CAS-9 has proven its effectiveness for locating targets relative to features on the ground; however, it does not satisfy the information needs of precision weapons that navigate using a global positioning system (GPS). These weapons seek precise geographic coordinates that are measured relative to the World Geodetic System (WGS)-84 Ellipsoid—an invisible but precisely located surface based on the signals of GPS satellites (fig. 1).

Currently, there is no standard template analogous to the CAS-9 for organizing essential information about precise 3-D geographic coordinates. LEADS is a template for organizing essential information about precise 3-D geographic coordinates. The following description of the LEADS template proposes methodology to remedy this shortfall and consists of five elements:

1. The *L* in LEADS refers to the latitude and longitude of a geographic coordinate. Although there are various coordinate formats, it is intended for use with coordinates measured in degrees, minutes, seconds, and decimal seconds.

2. The *E* in LEADS refers to elevation. With the advent of the GPS, a geographic coordinate may be measured either as a distance above MSL or height above ellipsoid (HAE), which is the distance above or below the WGS-84 Ellipsoid. Maps, charts, and aircraft altimeters measure elevations relative to MSL. GPS-guided precision weapons require eleva-

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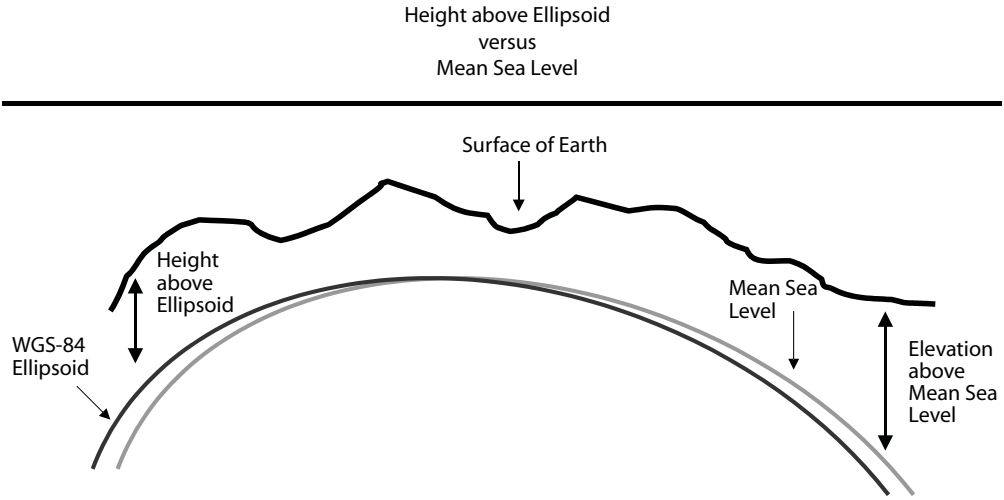

Figure 1. WGS-84 Ellipsoid

tions based on HAE as their vertical reference (fig. 2).

3. The *A* in LEADS refers to accuracy. The accuracy of a geographic coordinate is known as TLE and indicates the difference between the estimated location of an object and its actual geographic location. TLE is expressed in terms of a horizontal and vertical distance measured in meters or feet.

The most common method for reporting a geographic coordinate's accuracy uses horizontal and vertical error, plus a measure of the probability that they are within a stated distance from a geographic point. For example, imagine a soda can that has a marble suspended somewhere within it. We can't see the marble, but we know it's somewhere in the can. If we assume the marble is suspended in the exact center of the can, the horizontal error would be the distance from the marble to the side of the can, and the vertical error would be the distance from the marble to the top and bottom of the can. Therefore, if a geographic coordinate is reported with an accuracy probability of 50 percent, a horizontal error of plus or minus 100 feet, and a vertical error of plus or minus 50 feet, there will be a 50-50 chance that the coordinate is inside a cylinder that has a radius of 100 feet and a height of 100 feet.

Suppose the accuracy of an image or map were plus or minus 100 feet; coordinates measured using that image or map could not be any more accurate than plus or minus 100 feet, or approximately the nearest one second of latitude and longitude. Therefore, if a geographic coordinate from a source with an accuracy of plus or minus 100 feet is used by a geographic information system (GIS) that shows all of its coordinates to a precision of plus or minus one-thousandth (0.001) of a second of latitude and longitude, it implies that the coordinate's accuracy is known to within two inches, when in fact it is only accurate to within 100 feet.

There is no perfectly precise geographic coordinate. GIS's that add decimal places to coordinates from inaccurate sources do not improve the coordinate's accuracy. It is a misleading and risky practice because it implies the geographic coordinate is more accurate than actually exists and could result in the geographic coordinate being unintentionally

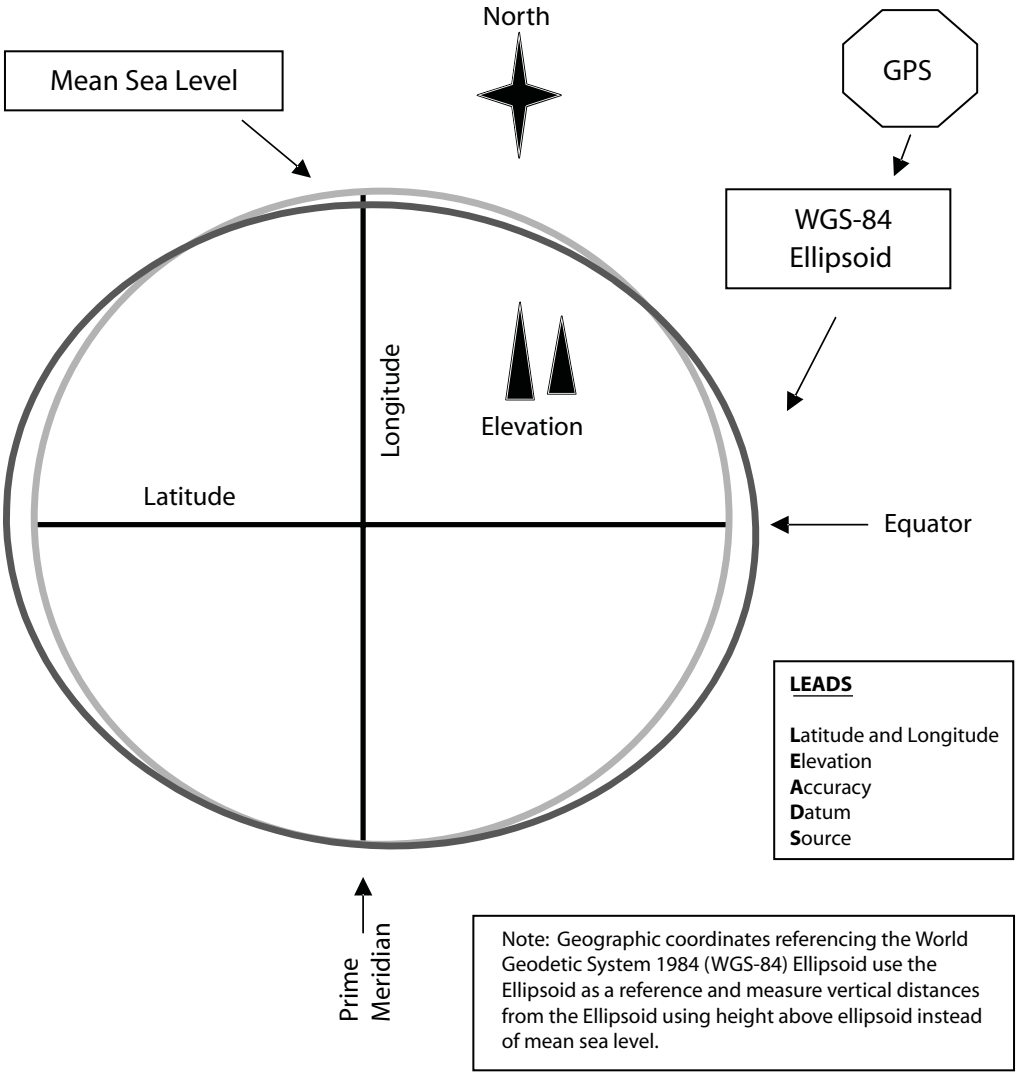

Figure 2. LEADS template

misused in an application that requires a truly precise coordinate.

4. The *D* in LEADS refers to datum. A datum is the common reference surface that a map, chart, image, or GPS receiver uses for determining latitude, longitude, and elevation. Horizontal datums define latitude and longitude, and vertical datums define elevation. There are dozens of international datums which use locally determined MSL to determine elevation.[3] The WGS-84 Ellipsoid is a global datum which uses HAE, instead of MSL, to define elevation. MSL and the WGS-84 Ellipsoid are not the same geodetic surface. The vertical separation between an elevation

referenced to MSL or referenced to HAE can be as much as 30 meters.

It is essential to know whether a coordinate is an MSL or HAE elevation because the difference between the two values can significantly affect a weapon's impact point. On flat terrain, a GPS-guided weapon with a delivery angle of 45 degrees and using geographic coordinates based on MSL instead of HAE would miss its target by 30 meters. A shallower weapon trajectory would magnify this induced horizontal error.

5. The *S* in LEADS refers to source. All geographic coordinates are derived from some original source, such as a paper map or chart, an image, mission-planning system, a precise point-positioning system, or a GPS receiver. The source of a geographic coordinate determines the accuracy and reliability of a coordinate. If a geographic coordinate's source is unknown, then its datum is unknown, as well as its accuracy and reliability. Geographic coordinates from unknown sources may not be reliable and should not be trusted.

The value of LEADS is that it quickly and efficiently organizes essential information needed to compare geographic coordinates from different sources that may be on different datums and of differing positional accuracies. In the future, LEADS could be useful in networkcentric operations as a standard template for integrating the machine-to-machine transfer of geographic coordinates from a myriad of sources, including targeting systems, mission-planning systems, GPS receivers, and paper maps and charts.

LEADS is intended to be a guideline of the most important considerations when using a geographic coordinate. In the context of CAS, some applications may not require every element of LEADS, but each of its elements should be considered if the desired outcome is to confidently and knowledgeably use a geographic coordinate. □

Notes

1. Gen Robert H. Foglesong, USAF, "Keynote Address" (Intelligence, Surveillance, and Reconnaissance Integration Conference, Arlington, VA, 16 November 2004).

2. Joint Publication 3-09.1 *Joint Tactics, Techniques, and Procedures for Laser Designation Operations*, 28 May 1999.

3. Defense Mapping Agency Technical Manual 8358.1, *Datums, Ellipsoids, Grids, and Grid Reference Systems*, 20 September 1990.

The Son Tay Raid

A 35-Year Retrospective

Charles Tustin Kamps

ON THE NIGHT of 20–21 November 1970, the North Vietnamese were treated to an aggressive demonstration of Pres. Richard Nixon's concern for the welfare of US prisoners of war (POW)—the raid on the Son Tay POW camp. Although we rescued no POWs (the enemy had moved them to other facilities), the raid serves as a model of a well-planned and -executed joint special operation. Indeed, Son Tay stands in stark contrast to the dismal effort mounted to free hostages in Iran 10 years later. Marked by outstanding organization, training, and unity of effort, Operation Kingpin badly embarrassed the North Vietnamese.

Brig Gen Donald Blackburn, special assistant for counterinsurgency and special activities in Washington and an old Army hand at special warfare, came up with the idea for the raid. After a favorable feasibility study, meticulous planning began with the blessing of the president. Most importantly, the operation remained directly subordinate to the Joint Chiefs of Staff, bypassing the bureaucracy in Southeast Asia. Brig Gen Leroy Manor, commander of USAF Special Operations at Eglin AFB, Florida, and the joint task force commander, wielded a very free hand. His deputy, Col Arthur "Bull" Simons, a long-time Army veteran of "spec ops," would go in on the ground with the raiding party.

The Central Intelligence Agency provided a scale model of the prison and surrounding buildings, and engineers constructed a life-size mock-up of wood and canvas in Florida that they could quickly disassemble before Soviet spy satellites made their twice-daily crossing over the area. The rigorous training involved dangerous dissimilar aircraft formation flying at night. Full-dress rehearsals proceeded under operational conditions until the team felt 90–95 percent confident of mission success. Barely three months had transpired from the time Manor had been summoned to the Pentagon until the force deployed to Thailand.

The Army provided the assault force (limited to 56 men), and the Navy committed 59 aircraft to a diversion in the direction of Haiphong, drawing the attention of the North Vietnamese air-defense network. The Air Force organized its mission aircraft into robust packages: (1) five HH-53 helicopters and one HH-3 (which had to crash-land the *rescue team* in the middle of the prison compound) carrying the assault troops and (2) five A-1E attack aircraft providing fire support. After refueling from separate HC-130Ps over Laos, each group then followed its own MC-130E Combat Talon special operations aircraft, which broke off in the target area to drop flares and diversionary ordnance. Ten F-4s flew combat air patrol in the objective area, supported by five F-105 Wild Weasels for suppressing surface-to-air missiles (SAM). Additional aircraft provided aerial refueling, radar coverage, enemy-radio monitoring, and command and control relay for General Manor, who operated from a ground station in South Vietnam.

Although Simons's helicopter landed at the wrong compound and a SAM downed one of the Wild Weasels, the force achieved surprise, completely overpowered the garrison, and evacuated the area one minute ahead of schedule. Only one raider sustained wounds. The effort stands as an excellent example of the masterful execution of a joint special operation. Well over a decade would pass before US special operations forces organized on a permanent basis to carry out raids like Son Tay.

To Learn More . . .

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LT COL PAUL D. BERG, USAF, EDITOR

Air and Space Power in Special Operations

OFTEN PERFORMED BEHIND a veil of secrecy, aerial special operations have endured as a well-established part of warfare since World War II. Whether called air commandos, Jungle Jim personnel, special operators, or "snake eaters," Airmen who perform these duties have distinguished themselves as a breed apart, sometimes even regarded with suspicion by their compatriots. Since the early days of the Cold War, special operations Airmen have inhabited a twilight zone between war and peace, performing hazardous, clandestine activities during "peacetime" that rival their most daring wartime exploits. Although special operations units disbanded following World War II and again after the Korean War, they became increasingly institutionalized over the years, a trend that culminated in the establishment of Air Force Special Operations Command (AFSOC) on the eve of the first Gulf War in 1990, just as the Cold War concluded. Today's AFSOC emerged from a long series of reorganizations, sometimes in response to formative events. The year 2005 happens to mark the anniversaries of three such events—the 35th anniversary of the raid on the Son Tay prisoner of war camp in North Vietnam in 1970, the 30th anniversary of the *Mayaguez* operation in Southeast Asia in 1975, and the 25th anniversary of the Desert One hostage rescue attempt in Iran in 1980. Although none enjoyed complete success, each operation influenced the way today's Air Force organizes, trains, and equips its special operations forces.

Even though Cold War counterinsurgency—most notably in Southeast Asia—remains a central part of AFSOC's heritage, special operations Airmen have adapted themselves to a changing world. Key participants in all manner of worldwide conflicts and humanitarian operations during the interwar era of the 1990s, they have enjoyed a dramatic renaissance since the start of the global war on terror. Highly trained, empowered by space-based communication and navigation networks, employing specially modified equipment, and using sophisticated tactics, special operations Airmen have proven indispensable in Afghanistan, Iraq, and other trouble spots. Small in number but potent in effectiveness, AFSOC units can act as powerful force multipliers if properly employed.

However, these Airmen know better than to rest on their laurels. They face significant aircraft-modernization challenges and must perform logistical miracles to support operations in far-flung hostile theaters. Moreover, the enemy's increasingly dangerous air-defense weaponry threatens to deny AFSOC forces access to important areas. Doctrinal questions also loom on the horizon. The use of Battlefield Airmen to perform a wide variety of functions such as providing precise target coordinates to aircraft delivering Joint Direct Attack Munitions has proven spectacularly successful in Afghanistan and Iraq. Nevertheless, the adaptability of opposing forces will require constant doctrinal innovation. Additionally, since airpower does more than simply destroy things, special operations Airmen must become more adept at providing security, restoring order, and helping rebuild infrastructure and institutions in war-ravaged or disaster-stricken areas. Bolstering allied militaries in their struggle against insurgencies has long been a staple task of special operations, and new challenges such as rebuilding the Iraqi air force have now arisen.

Simply stated, failure in these undertakings is not an option. Special operators must handle many tasks quietly and discreetly. In some cases, only experts have the qualifications to choose among competing alternatives in organization, training, equipment, or procedure, but all Airmen should ponder how best to integrate AFSOC's capabilities into US and coalition strategies. By engaging in professional dialogue about the key issues facing special operations Airmen, we can all become involved in these important matters. We dedicate this issue of *Air and Space Power Journal* to advancing that professional debate. ☐

America's Quiet Professionals

Specialized Airpower—Yesterday, Today, and Tomorrow

LT GEN MICHAEL W. WOOLEY, USAF

Editorial Abstract: The commander of Air Force Special Operations Command (AFSOC) uses illustrations from recent operations to encapsulate AFSOC's contributions to the global war on terrorism. He briefly explains where AFSOC is right now, how it got here, and where the command is going.

On the night of 17 June 2004, a coalition special operations team camped inside Afghanistan. One member of the team, an Air Force combat controller, was attacked while manning a security post. The initial enemy fire raked the position, destroyed one vehicle, and detonated the ammunition stored inside. The combat controller engaged the enemy as secondary explosions rocked the vehicle. He raced back to find two members of the team severely wounded. Grabbing a grenade launcher, he repelled the attackers. He then contacted command and control, and requested close air support (CAS) *and medevac. His suppressive fire bought time for the team to defend themselves against the 15–20 anticoalition militia members. When a flight of AH-64 Apaches arrived, he controlled the scene, enabling their 30-millimeter cannons to find, fix, and target the enemy forces. Overwhelmed, the enemy withdrew, and the team then successfully medevaced.*

I AM VERY PROUD of all our military men and women. As the above story illustrates, they deploy in defense of America's national security and willingly put their lives on the line for freedom. Every deployed Airman fighting this war knows why he or she is out there—they have not forgotten the 2,996 lives lost on 9/11. We are at war—and we will win.

This article briefly explains how Air Force Special Operations Command (AFSOC) views *where we are right now, how we got here,* and *where we are going.*

Where We Are Right Now

AFSOC is composed of approximately 20,000 Airmen who provide the Air Force

special operations with combat power and combat search and rescue (CSAR). A common misconception is that special operations forces (SOF) replace conventional force capabilities—they do not. SOF units complement our conventional capabilities and are indispensable in meeting some of the toughest challenges the United States faces in fighting the global war on terrorism (GWOT).

Dead Men Tell No Tales

Because terrorist organizations often maintain a very fluid leadership structure, it is difficult to create a clear leadership picture for many of the terrorist organizations we are fighting. When we capture or kill one leader, another quickly takes his place.

Although the conventional Air Force does an outstanding job in finding, fixing, tracking, targeting, engaging, and assessing the fleeting-target set that is our terrorist adversary—creating a smoking crater has its drawbacks. SOF personnel can remove a terrorist threat very effectively by using AC-130 gunships; likewise, they provide the capability to pinpoint and capture the terrorists alive and search the location for sensitive information.

Make no mistake, creating a smoking crater is often the appropriate response. However, the ability to interrogate some terrorists is invaluable, and it is this ability that helps us determine and eradicate a terrorist organization's leadership. For example, information acquired through a succession of SOF terrorist captures led us to Saddam Hussein.

We gain invaluable information on the capabilities of terrorist organizations by searching through the terrorists' "stuff" at the hit location. Captured items can reveal the weapons terrorists have available and provide insight into future terrorist actions. For example, exploitations of SOF sites located videos in Afghanistan in 2001, positively connecting al-Qaeda to 9/11.

Kicking Down the Door

The GWOT requires high-fidelity and actionable intelligence. SOF units are specifically trained to acquire this information. Cable News Network and Fox News have shown numerous videos of US forces searching Iraqi homes. Although conventional forces can knock down a door as well as SOF personnel can—finding the right door is a mission they are trained and equipped to perform very well.

During the GWOT operations, our Battlefield Airmen were on the ground with the SOF units of our sister services, kicking down doors in nonpermissive territory. Those Airmen enabled airpower to support these operations by making calls for fire, providing emergency medical support, and producing tailored weather forecasts. Our special-operations MC-130 aircraft and MH-53 helicopters got SOF people to the right door—when they needed to be there. AFSOC's AC-130 aircraft were overhead making sure all of the other doors stayed closed.

Teach a Man to Fish and He Eats for a Lifetime

There is more to special operations than the direct-attack missions mentioned above. They can also train some of our new coalition partners to fight the terrorist threat internally without US aid. This capability to engage with training is critical. AFSOC's 6th Special Operations Squadron's (SOS) combat aviation advisory (CAA) mission is essential to building strong coalitions. These special operators work closely with foreign air forces. The 6th SOS trains, advises, and aids our new coalition partners in integrating their forces into a US coalition.

The CAA mission is itself a microcosm of special operations—a few people working at the tactical level to create operational and strategic results. A recent trip to Colombia serves as an outstanding example of how our CAA Airmen work with our strategic partners. In the fall of 2003, Airmen from the 6th SOS trained Colombian air force UH-1 aircrews in daylight and night infiltration/exfiltration operations. Battlefield Airmen worked closely with Colombian police, training the Colombians in making calls for fire support to UH-1 and AC-47 gunships. They also trained the Colombians in CSAR operations. The 6th SOS did an outstanding job of training our

new coalition partners in SOF and CSAR mission areas.

The following example of a tactical operation illustrates the strategic return. Operators from the 6th SOS were in Uzbekistan on 9/11 for language-immersion training. They used the relationships they had built to establish US basing rights, enabling SOF missions into Afghanistan within weeks instead of months. Coalition warfare requires creating relationships, and the 6th SOS personnel deployed now are strengthening relationships with our coalition partners.

Although today our counterterrorism efforts are concentrated within a particular region, we would be naïve to assume that today's snapshot of terrorist concentration is also tomorrow's. It would be strategically impossible and irresponsible to have a large US presence in all regions of the world. The United States simply does not have the armed forces or logistical infrastructure to support that magnitude of forward basing. Coalitions allow for a worldwide military and moral presence against the terrorists. Enabling our coalition partners to fight the GWOT within their borders, using their own forces, is critical. CAA is essential to make that possible.

Under the Radarscope

Some of our coalition partners must often quietly support our efforts in fighting the GWOT. Political realities in their country may demand that their activities occur without fanfare. AFSOC is uniquely capable of working with these coalition partners clandestinely. AFSOC often works with some of our coalition partners—although, no one knows we are there—fighting the GWOT and/or helping to train these countries to fight alongside us.

These Things We Do—That Others May Live

Our SOF people are doing a great job augmenting conventional forces, enabling the Air Force to meet the challenges the GWOT presents. However, AFSOC also includes approximately 8,000 Airmen who embody the above rescue motto.

We celebrated one year of rescue under AFSOC in October 2003. Moving rescue under AFSOC was the right move for rescue and the right move for the Air Force. Special operations and rescue are one family whose rich history goes back to World War II, when the First Air Commando Group operated in Burma. They flew some of the first special-operations and air-rescue missions, and they did it as one SOF/CSAR team. Air Force special operations and rescue forces were a team then, and we are a team now.

Every time an Air Force aircrew flies an operational sortie, the crew members know that rescue forces stand ready to recover them should something go wrong. Not only have our rescue forces recovered isolated Air Force personnel, they have also saved the lives of soldiers, sailors, and marines. During the course of the GWOT, rescue forces have saved not only Department of Defense (DOD) and coalition force members, but civilian lives as well. Two stories illustrate this point.

On 12 June 2002, rescue forces were sitting rescue alert, supporting Operation Enduring Freedom (OEF). They launched in support of a possible aircraft crash. Initial information indicated that a C-130 had crashed near an Afghan airfield. Within 30 minutes, two HH-60G Pave Hawks launched. En route, the crews received reports of 30–40 Taliban in the area. The aircrews were challenged by high terrain and extremely low lunar illumination. Forty-five minutes into the flight, they were informed that an Army special forces team was on-site and reporting no survivors. Their spirits were lifted 20 minutes later when they were informed that seven survivors had been located. Upon arrival, an AFSOC AC-130 gunship provided overhead cover. The night vision goggles (NVG) landings were extremely challenging due to low lunar illumination and the flaming remains of the crashed aircraft. Both landings and takeoffs were made in brownout conditions. They recovered all seven survivors. Unfortunately, rescue forces were required to launch many times to save coalition lives in OEF and Operation Iraqi Freedom (OIF),

but our rescue forces completed every mission in an outstanding fashion.

On the other side of the world in the summer of 2004, rescue forces were preparing for local training at Moody Air Force Base (AFB), Georgia, when the Air Force Rescue Coordination Center called with a request for an immediate search-and-rescue launch. Approximately 24 hours earlier, a Chinese seaman had been hit in the chest by a pulley, breaking ribs and collapsing his right lung. He was in bad shape and nowhere near any medical support. Without urgent medical attention, he probably would not make it to port. Coincidentally, a rescue C-130 crew was preparing to fly a training exercise off the east coast of Georgia to train pararescuemen (PJ) in water-insertion operations.[1] The crew quickly loaded the same equipment they had planned to use for training on board the C-130—1,200 miles and four and one-half hours later, the rescue C-130 was dropping the PJs into the water next to a Chinese vessel. The PJs spent the next 16 hours stabilizing the Chinese sailor. They kept him alive until a pair of Air Force Reserve rescue helicopters from Patrick AFB, Florida, arrived. The two HH-60s hoisted the four PJs and patient on board and flew them to a hospital in Puerto Rico. That Chinese sailor is alive today, thanks to the efforts of our rescue forces.

If It Quacks Like a Duck

Like special operations, CSAR can operate at night, under the radarscope, and, to a large extent, in adverse weather. Our rescue and SOF platforms have very similar capabilities. These similarities translate to synergy by putting the forces in one major command. The lists below show the similarity between our helicopters and helicopter-refueling C-130s.

The SOF MH-53M Pave Low and Rescue HH-60G Pave Hawk helicopters can

1. fly at night using NVGs or a forward-looking infrared system,
2. defend themselves from surface-to-air missile launches,
3. defend themselves with either .50 caliber machine guns or 7.62 mm miniguns, and
4. receive near-real-time information updates on blue-force locations and adversary actions.

The SOF MC-130E/H/P and Rescue HC-130N/P aircraft can

1. execute modified-contour low-level flight,
2. fly NVG air and land missions,
3. conduct NVG helicopter air refueling,
4. perform NVG airdrop of personnel and equipment, and
5. receive near-real-time information updates on blue-force locations and adversary actions.

So where are we right now? We have consolidated like-capability aircraft into one major command, and we are beginning to see synergy from this merger. How did we get where we are today? Same as the rest of the Air Force, we implemented the Air Force core competencies.

How We Got Here

In January of 2003, Secretary of the Air Force Dr. James G. Roche outlined three Air Force core competencies—developing Airmen, technology to warfighting, and integrating operations—in his inaugural *Secretary's Vector*.[2] As Secretary Roche said, these three core competencies are how we develop our capabilities for joint warfighting. Everything we do revolves around them, and AFSOC is implementing them in all facets of our operations.

Developing Airmen

Secretary Roche said in his vector that "from the moment they [Airmen] step into the Air Force, we are dedicated to ensuring they receive the education, training, and professional development necessary to provide a quality edge second to none."[3] In addition to

the Air Force education and development programs such as Airmen Leadership or Squadron Officer Schools, AFSOC maintains a professional military education capability resident in the USAF Special Operations School (USAFSOS), located on Hurlburt Field, Florida. The USAFSOS provides 20 courses that truly embody the fundamental premise of force development. In fact, it shares the Air Force's force-development concept with our sister services as well as other federal agencies.

Below are just a few examples of ways that the USAFSOS is developing Airmen. The school introduces the concept of special operations in a four-day Introduction to Special Operations Course that lays the foundation for working with SOF units. Another course, Dynamics of International Terrorism, is relevant and timely during the prosecution of this GWOT. The USAFSOS also regionally orients Airmen for operations in five theaters of operation, offering courses for Asia/Pacific, the Middle East, sub-Saharan Africa, Latin America, and Europe/Russia. The school is also developing Airmen to support the operational level of warfare with its Joint Special Operations Air Component (JSOAC) Course, JSOAC Commander Course, Special Operations Liaison Element Course, and Joint Search and Rescue Coordinator Course. The USAFSOS is just one way that we are developing Airmen.

Another developmental strategy that we are using is "cross-pollinating" with other major commands. We are exporting traditional SOF specialties such as combat controllers, PJs, and aviators (officer and enlisted) outside the command to the larger Air Force, taking the lessons learned in special operations and then bringing back another major command's perspective. Also, AFSOC personnel have taken assignments with industry that help develop more effective program managers and procurement specialists.

Technology to Warfighting

Technology is a wonderful thing; however, technology has to get to the warfighter to be relevant. Although AFSOC is working hard to procure new technologies to enable our Airmen to better prosecute future operations, we do have some success stories to highlight from current operations.

We have put systems in our helicopters, C-130s, and even our Battlefield Airmen's ruggedized laptops that enable them to receive near-real-time information updates on enemy activity and friendly locations—an amazing force multiplier. AFSOC forces have used this capability in combat to save lives and acquire "high value terrorist targets" in Iraq and Afghanistan. For example, Army special forces operating in northern Iraq in April of 2003 requested an immediate exfiltration. As two AFSOC MH-53Ms launched, they lost all communications with the Green Beret team on the ground. Our Pave Lows got there on time, and they did so only because of our Blue Force Tracking system.[4] The MH-53Ms flew to the location where their multimission advanced tactical terminal (MATT) radio indicated the special-forces team members would be found.

Intelligence collection often implies spy satellites, but we have gotten intelligence collection down to the "paper airplane level" in AFSOC. We have combat controllers who are using unmanned aerial vehicles (UAV) that weigh as little as two pounds and extend our Battlefield Airmen's situational awareness up to three miles. Combat controllers are calling in air strikes on terrorist concentrations along the SOF team's route of travel far enough in advance to remove the threat before a ground firefight occurs. These tiny eyes in the sky enable airpower to support our forces on the ground more responsively, and thereby save coalition lives. The following statistic from the six weeks of OIF major combat operations[5] may seem surprising: not a single SOF unit in OIF with an AFSOC combat controller who had a small UAV was ambushed by enemy forces—and that is quite a testimony.

Integrating Operations

As the secretary said in his vector, "Effectively integrating the diverse capabilities found in all four service branches remains pivotal to

successful joint warfighting."[6] Both the SOF and rescue missions are inherently joint. AFSOC mobility forces—MH-53s and MC-130s—infiltrate, resupply, and exfiltrate our sister services' SOF personnel. Our Battlefield Airmen are embedded directly into sister services' SOF teams, and our gunships provide CAS to ground forces from all services. Our rescue forces have rescued embers of all services during OEF/OIF.

The following story really shows the jointness of rescue. On 2 January 2004, Air Force PJs saved an injured US Army soldier's life following an attack using an improvised explosive device in the Red Zone of Baghdad. The PJs sprung into action after receiving an urgent request from an Army UH-60 unit for a time-critical extrication and medevac. Traveling to the site with their Army comrades, the PJs worked rapidly to free a soldier pinned under a vehicle that came to rest on his leg following the explosion. Within minutes, the soldier was free, secured to a litter, and transported to an awaiting vehicle for transport to the air-evacuation landing zone. That story, while demonstrating exceptional courage and skills, was not itself the exception, since jointness is the rule in special operations and rescue.

Where We Are Going

As we look to the future, I see our combat capability increasing, and that is a bad thing for the terrorists. We are doing things in AFSOC to ensure that our special operations and rescue forces will help win this GWOT and be ready for the next OEF or OIF, whenever or wherever that occurs. As we have seen throughout history, warfighting is often a catalyst for technological advancement. The military is always looking for that "edge" in battle that leads to success. AFSOC is working diligently on air and ground systems that allow us to maintain the edge for future conflicts in the GWOT.

Lighter, Leaner, and More Lethal

AFSOC's Battlefield Airmen, combat controllers, PJs, and special-operations weather forces enabled airpower to meet the requirements of the joint force commander. Combat controllers operated on 11,000-foot mountaintops in Afghanistan, carrying over 160 pounds of equipment. That is quite frankly too much to carry. Secretary Roche and Gen John P. Jumper, the Air Force chief of staff, have made it a priority to improve the combat capability of our Battlefield Airmen. AFSOC is working closely with the Air Force Research Laboratory and others to develop equipment that is less than half the weight of the tools it replaces, while increasing the system's combat capability. Specifically, we are improving coordinate accuracy to provide truly precise targeting information, enabling airpower to support the ground component.

AFSOC is the Air Force's lead for small UAVs. If the UAV is smaller than a Predator, AFSOC is the Air Force proponent. Today, we have about 150 small UAVs in the command, and we are aggressively pursuing the acquisition of more of these systems. In the future, I want every combat controller to deploy with a small UAV.

Small UAVs definitely increase the situational awareness of Battlefield Airmen. However, as our capacity increases, we also need to look toward integrating information collected by small UAVs into the larger Air Force intelligence-information dissemination system—the Distributed Common Ground System (DCGS) suite. An AFSOC DCGS will create a gateway to a greater array of critical intelligence and operational information for our Battlefield Airmen and special operators. It will also simultaneously allow the Air Force and the joint communities to leverage AFSOC's currently uncollected and unexploited information.

With another initiative, which involves a machine-to-machine data link, combat controllers are closing in on the ability to pass target coordinates directly from their handheld target designator, through their laptop, to strike aircraft and command-and-control

facilities. This will decrease the time required to get bombs on target from an average of 30 minutes to less than three.

The failed attempt to rescue the Iranian hostages in 1980 illustrated that the US military requires a special capability, not just a specially modified aircraft. SOF personnel need the capability to conduct deep-penetration operations behind enemy lines under cover of one period of darkness. This requirement resulted in development of the CV-22 Osprey (tilt-rotor aircraft), and we are near to meeting this SOF necessity. The CV-22 can fly at speeds similar to those of a C-130 and then hover and land like a helicopter. This new capability, which will greatly increase AFSOC support to SOF operations, presents many exciting future possibilities.

AFSOC is also working to develop aircraft to meet the mobility requirement of the future. The Advanced Special Operations Air Mobility Platform (M-X) aircraft will meet the SOF insertion, resupply, and exfiltration missions and integrate many of Air Mobility Command's (AMC) C-130 replacement capabilities. I see a bright future with AFSOC and AMC working together.

Along with the need to transform our C-130 mobility capability, we need to increase our persistent, precise, and danger-close CAS capacity. During OEF we increased the combat capability of every one of our gunships by integrating a real-time video feed from the Predator UAVs. This was the first time that we integrated an off-board sensor into the targeting process of our gunships, and it was a smashing success. Right now, we are in the process of increasing our gunship inventory from our current 21 to 25 by the summer of 2006. The gunship is an amazing aircraft; however, it cannot operate in high-threat environments—it's still a C-130! For that reason, we need a transformational capability. We are currently researching a platform that will provide the same high-quality CAS but will also operate in all threat environments day or night.

The HH-60 Pave Hawk is a capable rescue platform, but an aging helicopter fleet, combined with increased threat capabilities, makes developing a new personnel-recovery vehicle a necessity. We have initiated a program to fill this capability shortfall and enable us to perform personnel recovery into the future. We are working hard to procure the right equipment; however, there are other ways we can improve tomorrow's combat capability.

Some Thoughts on Combat Aviation Advisory

The Air Force needs to look hard at expanding CAA into something bigger in scope than it is today. CAA is an important facet of foreign internal defense, but our new coalition partners require training beyond specialized airpower. There is a growing need to conduct aircentric, postconflict stability operations—for example, rebuilding air force and civil air infrastructure. We see an increasing demand for conventional Air Force expertise in command and control, fighters, training and simulation, base setup and support, and information operations. This expertise is not resident in AFSOC—nor should it be. These interactions are worth expanding in the near future.

Some Thoughts on Synergy

A common tanker would truly allow us to increase synergy with the addition of rescue forces into AFSOC. Right now we have three different variants of C-130s that can refuel helicopters. Soon, we will have four variants when our MC-130H Talon II aircraft gain the MC-130H air-refueling system. Although we need more tankers, four different variants bring a whole different set of problems. There is a lot of value in a common tanker. Operationally and logistically speaking, one tanker instead of four makes a lot of sense. This is where we need to go.

Some Thoughts on Rescue

We must transform the way we do personnel recovery. As Mr. Jerry Jennings, the deputy assistant secretary of defense for prisoner of war/missing personnel affairs, recently stated at the DOD Worldwide Personnel Recovery Conference on 31 August 2004, "One of the

primary goals of transforming personnel recovery is to continue your efforts to move from a service-centric function to one that is not only joint, but interoperable with our interagency and coalition partners,"[7] Our AFSOC rescue forces are already trained and very capable of meeting the assistant secretary's goals. All AFSOC forces, both special operations and CSAR, inherently operate in a joint environment. However, our personnel-recovery forces are not only participating with all of our personnel-recovery partners, they are ready and capable of taking the lead in developing common personnel-recovery tactics, techniques, and procedures.

We have made great strides over the last year in our efforts to get rescue to the fight sooner and with a much smaller logistical footprint. Historically, rescue required extensive strategic airlift as well as robust base-operational support. We are developing rescue Lightning Bolt deployment packages that transport three HH-60G Pave Hawk helicopters with personnel and supplies to sustain operations for two weeks, using two C-17 Globemaster IIIs.

AFSOC maintains administrative, not operational, control of its two overseas SOF units. We need to look seriously at mirroring this arrangement with our rescue forces as well. We have seen many good things come about because of the way we do business with our overseas SOF personnel. I think we could translate this into immediate advantages in the way we do business with our overseas rescue forces.

Humans Are More Important than Hardware

We spend billions of dollars every year upgrading our technology and improving our combat capability. However, as Gen George Patton said, "Wars may be fought with weapons, but they are won by men. It is the spirit of the men who follow and of the man who leads that gains the victory."[8] That was true then and is still true for the men and women of today's Air Force. The US military is fighting a GWOT that will continue into the foreseeable future. Have all the wild cards been dealt from this deadly deck? Probably not, but our military forces are adapting to its challenges. This war will not end soon, but it will end in victory. Whatever the future holds, we will be ready. □

Notes

1. The abbreviation *PJ* was for parajumpers during World War II. *PJ* was kept, but the term *pararescuemen* is currently used. United States Air Force, US Air Force Fact Sheet, *Pararescuemen*, April 2003, http://www.af.mil/factsheets/factsheet.asp?fsID=177.

2. Dr. James G. Roche, *The Secretary's Vector*, 14 January 2003, http://www.af.mil/media/viewpoints/vector_core_comps.html.

3. Ibid.

4. The Blue Force Tracking (BFT) system consists of a computer, satellite communications, and global positioning system (GPS). BFT displays the host-vehicle location on the computer's terrain-map display along with other platforms in their respective locations. Timothy L. Rider, "Blue Force Tracking to Expand across Force," *Army News Service*, 14 April 2004, http://www4.army.mil/ocpa/read.php?story_id_key=5851.

5. OIF major combat operations are defined as beginning on 20 March 2003 when coalition forces invaded Iraq and concluding 1 May 2003 when President Bush announced the end of major combat operations from the deck of the USS *Abraham Lincoln*. Pres. George W. Bush, "President Bush Announces Combat Operations in Iraq Have Ended" (Washington, D.C.: US Department of State [Bureau of Public Affairs], 1 May 2003), http://www.state.gov/p/nea/rls/rm/20203.htm.

6. Roche, *The Secretary's Vector.*

7. Rudi Williams, "DoD Official Outlines Personnel-Recovery Work to Be Done," *American Forces Information Service*, 1 December 2004, http://www.dod.mil/news/Aug2004/n08312004_2004083109.html.

8. Gen George S. Patton Jr., "General George S. Patton, Jr. Quotations," http://www.generalpatton.com/quotes.html.

Airmen on the Battlefield

Warfighting Integration in Support of Special Operations Forces

LT GEN WILLIAM THOMAS "TOM" HOBBINS, USAF

Editorial Abstract: Air Force Airmen on the battlefield and special operations forces in particular need all the connectivity, access, and sophisticated information sharing that we can create. This endeavor will not only enable their success, but also close the seams in the kill chain and help the Air Force achieve netcentric warfare. The deputy chief of staff for Warfighting Integration provides readers the "inside scoop" as he leads the joint and combined integration of the Air Force's manned, unmanned, and space systems for command, control, communications, computers, intelligence, surveillance, and reconnaissance.

The battle, sir, is not to the strong alone; it is to the vigilant, the active, the brave.

—Patrick Henry

SPECIAL OPERATIONS FORCES (SOF) perform their missions across the spectrum of military operations, and Air Force Airmen "flex" the airpower and space power muscle of those forces. They possess capabilities integral to the success of the joint force commander and act as a force multiplier that complements all joint-force operations.[1] To assist them in this critical work, we in Warfighting Integration (Headquarters USAF/XI) are improving the joint and combined integration of the Air Force's manned, unmanned, and space systems for command, control, communications, computers, intelligence,

surveillance, and reconnaissance (C4ISR). We provide the leadership, direction, policy, and resources to capitalize on the technologies, concepts of operations, and organizational changes necessary to achieve horizontal integration and interoperability. The eventual result will take the form of a fully integrated digital system that delivers a seamless, survivable, instant capability to execute the joint force commander's desired effects. We call this future method of operating "network-centric warfare" (NCW). Robust connectivity and great applications will make that happen, and the entire joint force and our Air Force will benefit from this future. This article explains how SOF units and our joint and coalition warfighting partners will profit from the applications and programs currently in the works at Headquarters USAF/XI.

The Big Picture

What will NCW look like? Imagine a battlespace where every platform automatically sends all its critical data, machine-to-machine, through a network of ground-, air-, and space-based relays, protected by multilayer security, to the appropriate command centers where planners, analysts, and commanders see real-time depictions of the status of those units. The information does not come to the commanders raw but with intelligence fused and machine-processed to create decision-quality options for the decision makers. This "human in the loop" ensures that analysis takes place and turns information into actionable intelligence. Information and data are not useful until someone thinks about them, especially in combat where missing data is the norm. We need clear thinking. We certainly want speed of transmission, but we also want to transmit quality information. Once that process is complete, commanders make their decisions, and the results are again sent—machine-to-machine—to the affected units, which read and execute their orders and then generate more feedback to the command centers, thus driving further data sharing and awareness-based decisions. That is NCW—and that is where we are going.

The Command and Control (C2) Constellation—our components of the Department of Defense's (DOD) Global Information Grid—represents one of the Air Force's key contributions to warfighting operations. The constellation includes a family of ground-, air-, and space-based C4ISR systems that share horizontally and vertically integrated information through machine-to-machine conversations enabled by a network of sensors, command centers, and shooters. Both an operational construct and an architectural framework, it guides our development of people, processes, and technology toward NCW. Important elements of this constellation include the air and space operations center (AOC) and the Distributed Common Ground System. Fundamental programs within the AOC, such as the Theater Battle Management Core System, already serve as the joint standard for the planning and execution of air operations. We continue to migrate these systems to a more modern, web-enabled architecture. The Air Force provides information transport and computing-layer components of the overall Global Information Grid through the ConstellationNet, creating a communications network in all three mediums—air, space, and terrestrial—that facilitates the rapid, free flow of information to our warfighters.

As stated at the outset, NCW is our ultimate aim. To meet this goal, we use our continually updated C4ISR Flight Plan as a playbook. Airmen realize that we are not going to fight alone, so the Air Force works diligently with our coalition and joint service partners to integrate our capabilities and contribute to decisive coalition combat capability throughout the battlespace.

Toward that end, we must have decision superiority. After determining our objectives, we look at the effects we want to achieve on the battlefield to obtain those objectives. We need to know more about the situation and acquire that knowledge quicker than the enemy does. We do so by means of superior predictive battlespace awareness (PBA)—

"battlespace forensic science"—which transforms intelligence and data into probable enemy vulnerabilities, illuminates courses of action, and compresses the decision time. We use PBA to create capable effects-based operations (EBO) to efficiently and effectively bring about the commander's desired outcomes, whether through kinetic attack, information operations, or delivery of humanitarian supplies. To ensure the proper result with little or no unintended collateral effects, we need greater precision with speed. The more we reduce our reaction times, the better. That is why our leadership says that we must move toward "one time of flight" of the weapon.

Robust Connectivity

So what's the first practical step? Global connectivity. We must bring the Global Information Grid down to the tactical edge, fusing our intelligence information to produce real-time situational awareness, thereby enabling effective C2. Making this happen is a major focus area for those of us at Headquarters USAF/XI. We can break this task down into two major groups: (1) robust and reliable connectivity (networks) and (2) smart applications running across them. We must develop both of these groups to reach our desired NCW end state, and both will require roughly equal levels of funding.

Networks (air, space, and terrestrial) form the connected delivery system for the applications we want to use in supporting our Airmen on the battlefield. Five key subgroups capture what we are doing in connectivity. First, as I mentioned earlier, we published and continue to update the C4ISR Flight Plan, which captures the overall view of where we are now and where we are going. Second, we are focused on improving the ground-based command centers for the air, land, and maritime component commanders, the future battle control center, and the air support operations center. Third, beyond-line-of-sight range-extension efforts will increase connectivity between the networks and mobile nodes. A number of roll-on or bolt-on range-extension efforts are under way, as well as the future multisensor command and control aircraft (MC2A). Availability of worldwide beyond-line-of-sight communications for the Global Hawk unmanned aerial vehicle (UAV) is also critical in support of warfighters' ISR requirements. Headquarters USAF/XI developed a plan to migrate Global Hawk to the Extended Tether Program, which will provide flexibility, bandwidth, and coverage to meet current and emerging beyond-line-of-sight communications requirements. The fourth key subgroup encompasses our big and medium-sized Internet protocol (IP) networks in the battlespace, with quadruple redundant communications channels and common data links, which support the Tactical Targeting Network Technology, Wideband Network Waveform, and Joint Tactical Radio System (JTRS) programs. Finally, superbly trained joint-interface control officers will have responsibility for the tactics, techniques, and procedures of using and maximizing the potential of these networks. To help them improve the joint force commander's battlespace awareness until we reach full interoperability, the Joint Datalink Information Combat Execution program has begun to develop, test, evaluate, and institutionalize joint and service tactics, techniques, and procedures that provide critical mission information across multiplatform tactical data links for air and ground.

Great Applications

We can group our top-notch applications, the other key element to NCW, into four functional areas: situational awareness, PBA, EBO, and combat operations support. Some specific applications that expand our situational awareness include the common tactical and operational picture programs, Family of Interoperable Operational Pictures, Blue Force Tracker, Global Concept of Operations Synchronization, Integrated Air Ground Imaging, and improved weather information imported to the common pictures. PBA relies on the fusing of a mix of short- and long-dwell intelligence inputs through a mixture of plan-

ning, information, and integration programs. EBO is a planning-and-execution construct whereby we deliver the right effect (kinetic or nonkinetic) at the right place at the right time—and verify that it worked. ISR Warrior and the Army's close air support (CAS)/situational awareness concept contribute to the control and coordination piece of EBO, while other programs—especially Network-Centric Collaborative Targeting—contribute to the targeting piece. The Data Link Automated Reporting System will assist the final assessment piece of EBO by enhancing battle damage assessment, facilitating the transfer of the pilot's assessment to the combined air operations center (CAOC). Combat operations support delivers combat power to the theater of operations and sustains it there despite myriad challenges. The Operational Support Modernization Program (OSMP) will enhance these vital support operations while enabling Air Force forces.

The Data Link Automated Reporting System is particularly useful to the Air Force's effort to support SOF units and line-Army forces in the field. This machine-to-machine system uses Link 16 as its conduit to receive, process, and transmit real-time information from air-component aircraft in flight regarding fuel, weapons, and maintenance status, as well as pilots' assessment of the effect of their weapons on any struck target. This information is automatically routed to the CAOC, where planners can assess the status of available aircraft and make instantaneous decisions to reroll aircraft to another target to support CAS, time-sensitive targets, air-refueling needs, or other immediate requests. The system also feeds to maintenance, facilitating the regeneration of aircraft for future sorties. Successfully tested at the Joint Expeditionary Force Experiment 2004, this system integrated with the Theater Battle Management Core System, drastically reducing the overall time to find, fix, track, target, engage, and make assessments for warfighting decision makers.

Information Flow

Assuming that robust connectivity and great applications are essential to a fully integrated digital system, there is more to the information-flow challenge. All information in a network flows through a seven-layer "IP stack" (fig. 1). While the Air Force continues to upgrade its ground-based connectivity, we place more of our emphasis on the large, growing fixed and mobile air-to-ground network connectivity that expeditionary NCW relies upon (those Airmen on the battlefield again). The information flow begins when the user inputs data through the user interface—normally a keyboard, mouse, and monitor combination—or when a sensor receives and transmits data. From there the information flows down through the various control and application functions to the transport encoding layer, where it is translated by the transmission control protocol/user datagram protocol layer and fed into a transmission line to the next destination. *This translation to IP coding is the critical interoperability hurdle* since IP provides the flexible standard usable by all other programs and applications. Information transmission can occur through one of two mediums—cables on the ground-based network or satellite and/or radio transmission for the airborne network. At the destination, the reverse process takes place, turning the encoded information into readable data. Following our flight plan will ensure the use of IP coding by all future systems to make certain that joint and coalition forces can speak to each other.

The Ground Constellation

Having established the importance of IP coding, we can now address the work ahead in the transmission mediums of the C4ISR Flight Plan. An examination of the Ground ConstellationNet reveals the progress we have made in creating our self-healing, self-forming Global Information Grid (fig. 2). About 50 percent of the Nonsecure Internet Protocol Routing Network, 30 percent of the Secret Internet Protocol Routing Network, and 15 percent of

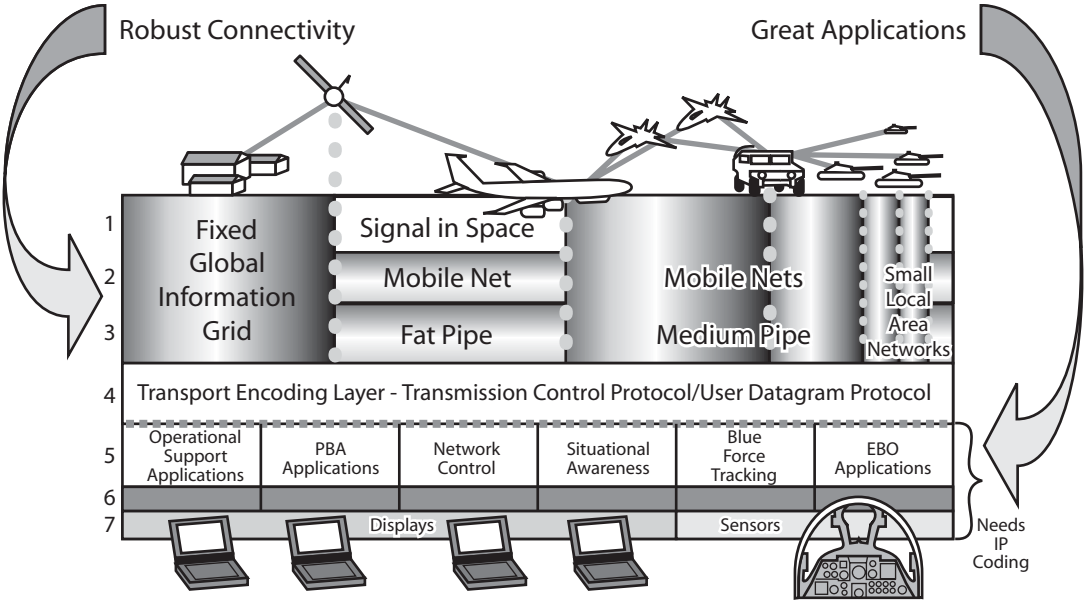

Figure 1. Seven-layer Internet protocol stack

the network-operations/defense infrastructure are developed and linked. If we follow the C4ISR Flight Plan, we will complete the installation of communications infrastructure in fiscal year (FY) 2020. For convenience we centralized the machine-to-machine operational-control and intrusion-detection functions at the major commands and the Air Force's Network Operations and Support Center. Eventually this network will be fully redundant, with no single points of failure and the ability to self-form our networks as well as self-heal after attack or intrusion. These robust nets increase survivability, availability, and access for all users, guaranteeing seamless connectivity in any environment and at any distance, fixed or mobile. Fully converged voice, video, and data will pass through an IP-based ConstellationNet supporting multilevel security across all domains, allowing coalition partners to access all available information. Every platform, AOC, and remote and mobile user will have access through these "smart" nets.

The Airborne Constellation

Although a robust ground IP network already exists, *there is no airborne IP network*—another major focus area for our Flight Plan. The first challenge we face is that many of our platforms are not connected via data link of any kind. In the air, we currently rely on a limited Link 16 line-of-sight information-transmission capability, along with stovepiped radio systems and some satellite communications. Near-term efforts (over the next six years) will focus on moving more platforms into the Link 16 network and improving its connectivity to other systems. Within a theater, we do have a collection of line-of-sight data links that facilitate information exchange, but the *network is not resilient.* We have only limited ability to add new players in this closed community and have access only via time-consuming gateways. In addition, beyond-line-of-sight communications are limited in bandwidth and, except for very few lines, are "voice only" (instead of data)

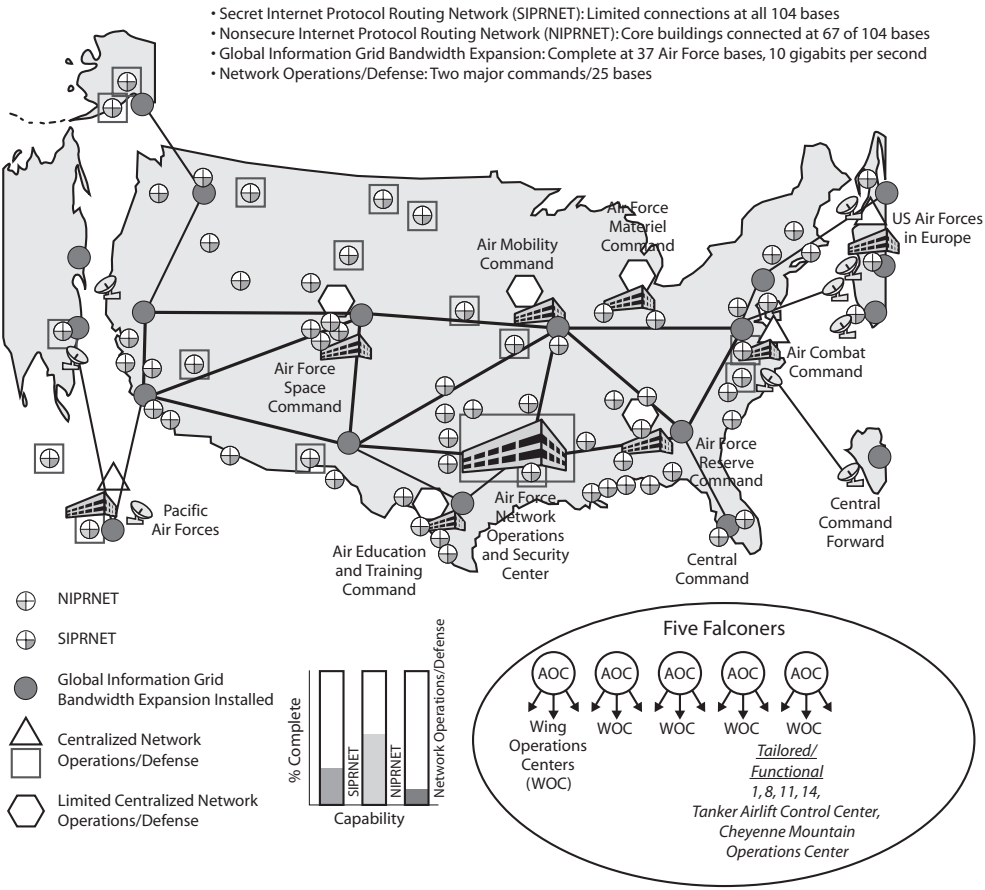

Figure 2. ConstellationNet (ground) for fiscal year 2005

and not protected. Finally, we can send traffic via IP to airborne forces but just to key VIP and national platforms. However, by FY 2020 we plan to expand the Link 16 network and then evolve it through a series of enhanced linkages to form a robust, airborne IP network.

The first major step in that transition involves the introduction of JTRS radios and deployment of the Navy's multifunction information distribution system (MIDS) JTRS on airborne Air Force platforms in FY 2008–9 that will allow the formation of airborne networks. We also expect to see the creation of new waveforms coming online. The Airborne Network Waveform, keystone of the JTRS radio, will connect much of our fleet to allow the beginning of a self-healing, self-forming network. It will improve aircraft information-sharing capabilities from "voice only" or "data link only" capability to a network-centric line-of-sight IP connectivity. The Multi-Platform/Common Data Link will provide very high bandwidth or "big pipes" (274 megabits per second) for connecting C2 nodes with ISR platforms. The IP-based protocols will automatically find and connect with any network within their radio-frequency range. Adding the airborne platforms to the IP community allows rapid access to more sources of information as needed.

The integration of the JTRS is a huge undertaking, in terms of both cost and effort. The joint program will cost DOD approximately $6.5 billion just for development and acquisition, and that represents only about 30 percent of the total outlay. The Air Force has fully funded its radio acquisition, thus far allocating nearly $1 billion to integrate the radios into fighter, bomber, and ISR aircraft. This effort will continue, eventually including all SOF and mobility aircraft, with cost and integration stretching well beyond the current budget plan.

During this period, we also see significant increases in the number of deployed sensors and platforms, with corresponding demands for bandwidth and access. We envision the proliferation of IP-using platforms and advanced applications expanding from Link 16 to a true airborne network. Rather than relying on broadcast, we will be able to address information to the particular platforms that need it. In addition, airborne platforms will act as routers and dynamically choose the best path to send information. To reach the FY 2013 vision, additional funding beyond the current budget plan must occur. More aircraft will gain a beyond-line-of-sight IP capability using Family of Advanced Beyond-Line-of-Sight Terminals to access the new, advanced relay satellites. During this same period, we begin deployment of a spaceborne IP dynamic-routing capability with the first transformational satellite that will supply initial satellite IP capability to this network. This satellite is also the key to assured service because it provides high-capacity antijam protection to a large group of users through laser communications.

During FY 2013–20, the fully integrated, self-healing, self-forming airborne network, tied seamlessly to space and ground, will become a reality. As the deployment of future ISR systems takes place, we will complete the evolution of air and space architectures. Completion of the transformational-satellite constellation will give us an order-of-magnitude increase in our space-based communications capability. Dynamic routing of the transformational satellite and improved processing will cure latency—the slow transmission of information due to poor processing rates, small pipes, or insufficient pipe size. The Family of Advanced Beyond-Line-of-Sight Terminals will proliferate on additional large aircraft, allowing us to vastly extend our airborne network to all reaches of the globe. At that point, warfighters can operate beyond line of sight and maximize the exploitation of shared awareness.

We have worked on providing our Air Force with sensor information to and from the forward troops, including special forces. Video from airborne nodes, whether UAVs or fighters with an accurate targeting pod, is key to ensuring the ground force's situational awareness over the hill or around the block. Gen John P. Jumper, the Air Force chief of staff, recently initiated a program to enhance our ongoing improvements to the support of ground forces. He wants to connect sensors to our Airmen, just as the Marines did in Operation Iraqi Freedom with their Litening advanced-targeting pods; get the signal from all our potential tactical "time-sensitive-target/kill-loop" sensors to our Airmen in the battlefield; and integrate freehand "John Madden"–like features into the targeting process.[2] Called Integrated Air Ground Imaging, this program boasts three components: (1) an electronic knee board that receives and displays formatted and freehand John Madden CAS graphics and text through the aircraft's UHF radio; (2) an advanced targeting pod with video transmitter to send the tactical air control party the same video observed by the pilot; and (3) a Rover III multichannel video receiver to gather video from the targeting pod and other sources. We have a plan to fund the purchase of 550 Rover IIIs, already demonstrated at the Joint Expeditionary Force Experiment, and outfit every vehicle in a tactical air control party with one. The electronic knee board and the cockpit-mounted version (PACMAN) are funded for acquisition throughout the next five years. These interim capabilities will assist our Airmen on the battlefield until the JTRS radios are fielded. These three components (knee board/PACMAN, advanced targeting pod, and Rover III) synergistically provide a

shorter "kill loop," especially for time-sensitive targeting since the shooter can see and highlight exactly what the ground force or special-operations unit intends to have destroyed.[3]

Critical Path to Net-Centric Warfare

A wide variety of programs contribute to NCW and the future capability of the Air Force and the joint warfighter (fig. 3). Although we are absolutely sure we do not have this completely right, at this time we are following four critical paths to NCW: IP-based routing, shared data access, assured service, and essential technologies. IP-based routing enables self-forming, self-healing networks, while shared data access improves C2 and situational awareness across platforms. We gain assured service through robust connectivity, better security, and jamming protection. Essential technologies form the underpinnings of many of these net-centric programs.

Global network connectivity depends upon all platforms and applications communicating via an IP network, as previously explained. IP version six, the "next generation" protocol to replace the current 20-year-old version four, fixes a number of problems in its predecessor. First, version four has only 4.2×10^9 addresses worldwide, while version six will bring the Air Force 33 million sites with 4×10^{31} addresses to use—enough for every Airman, aircraft, vehicle, and weapon in our service to have its own address many times over.[4] It will also add key improvements such as assigning relative-priority levels to bandwidth use so that Airmen cruising the Web have lower priority than combat units in the field or a commander making an important call. Also, it features built-in, multilevel-security compatibility; furthermore, the networks will be capable of auto-configuration so that any IP address has complete mobility.[5]

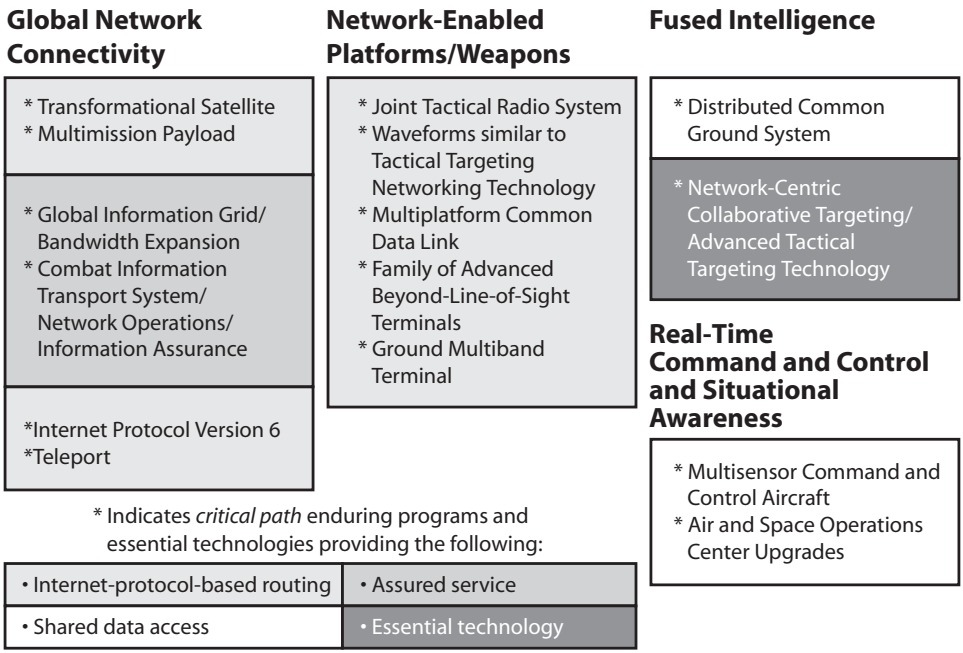

Figure 3. Critical enablers of net-centric operations

The transformational satellite as well as the multimission payload will expand the IP network, as previously discussed. Teleport telecommunications collection and distribution points augment warfighter communications by providing interoperability between multiple military and commercial satellite systems. They offer deployed ground-mobile forces military-telephone line switching, video teleconferencing, secure and nonsecure network connectivity, information-assurance tools, and C4I support with worldwide reach-back capabilities to the Defense Information Systems Network.[6] The Global Information Grid Bandwidth Expansion initiative will establish an optical network with high-speed IP services to approximately 100 facilities in the United States, the Pacific, and Europe, operating at 10 gigabits per second and supporting voice, data, video, and transport services.[7] A combat-support and global field-opening program known as the Combat Information Transport System, which provides on-the-fly flexibility for execution planning, will accommodate multiple, independent levels of security. Both this and bandwidth expansion contribute to information assurance for our forces.

Five critical programs augment network-enabled platforms and weapons. Earlier we mentioned the introduction of the JTRS and MIDS, the big pipes of the Multiplatform Common Data Link, and the intersatellite communications capability of the Family of Advanced Beyond-Line-of-Sight Terminals that will allow the formation of airborne networks. Waveforms similar to Tactical Targeting Network Technology will provide flexible, low-latency, high-capacity, tactical-data-link capability to support emerging networked targeting applications. The latter are designed to keep fleeting targets at risk by exploiting distributed sensor platforms to rapidly and precisely locate tactical targets for real-time fire-control processes.[8] Ground multiband terminals will expand and reinforce the network.

The sharing and fusion of intelligence information from multiple sources are bedrocks of net-centric operations. The Distributed Common Ground System will bring the various types of intelligence (measurement and signature, imagery, and signals) together simultaneously, allow users to leverage Air Force Special Operations Command's currently uncollected and unexploited information and push the common picture to all users, including SOF units. Network-Centric Collaborative Targeting is an airborne-threat geolocation application that uses machine-to-machine sensor collaboration of C2ISR assets to quickly provide accurate, time-sensitive-target combat identification. This essential technology will couple well with the Advanced Tactical Targeting Technology program, a series of networked threat-warning receivers designed to supply rapid (within 10 seconds of the first intercept) geolocation of a target within 50 meters. These networked, multipath boxes will replace the current generation of radar-warning receivers.[9] Together, these fusion programs will improve our ability to know the enemy and enhance the speed and precision of our decision superiority.

Once we have our intelligence, we need to fold it into our situational awareness and leverage it to make real-time decisions. We will have help from the MC2A—the next-generation airborne ISR platform—which will integrate ground surveillance and targeting capability within the multisensor C2 Constellation and have full interoperability with other ISR aircraft and unmanned systems. It will augment and eventually replace the Joint Surveillance Target Attack Radar System and Airborne Warning and Control System aircraft, filling the void left by the cancellation of the airborne battlefield command and control center aircraft. All of this situational awareness will be focused for the joint force air component commander in the CAOC by systems upgraded through the Family of Interoperable Operational Pictures to allow rapid and accurate decision making.

Mobile node connectivity represents our last tactical mile. We must share, distribute, and horizontally integrate time-sensitive targets—to one and all simultaneously. Integrating the finders, deciders, connectors, and shooters via interconnected IP-based net-

works in space, in the air, and on the surface offers a challenge. But we have a plan, we are executing it, and we are experimenting to make further innovations and confirm our concepts.

Pulling It All Together

The Joint Expeditionary Force Experiment 2004 successfully demonstrated a wide selection of connectivity and application programs—with full integration and participation of three coalition partners (fig. 4). This event, the fifth in a series of highly focused experiments occurring twice a year, explored and empirically validated emerging concepts and capabilities. Warfighters, planners, system architects and engineers, industry representatives, ground and naval forces and their simulations, as well as assessors joined together in a live-fly, live-play, distributed, and collaborative warfighting environment. The experiment successfully modeled a future C2 system based on capabilities listed in the space and C4ISR concepts of operations. We explored battle-management C2, EBO, and PBA through the future capabilities of the C2 Constellation. On the ground network, we connected 11 joint and coalition bases. For the first time ever, we established an airborne IP network using Tactical Targeting Network Technology and common data links, connecting it back through quadruple redundant communications on our MC2A risk-reduction aircraft called Paul Revere. The Connexion satellite link expanded the wideband network for the CAOC and the beyond-line-of-sight systems. We hooked our IP world up to the legacy systems on Link 16, the tactical air con-

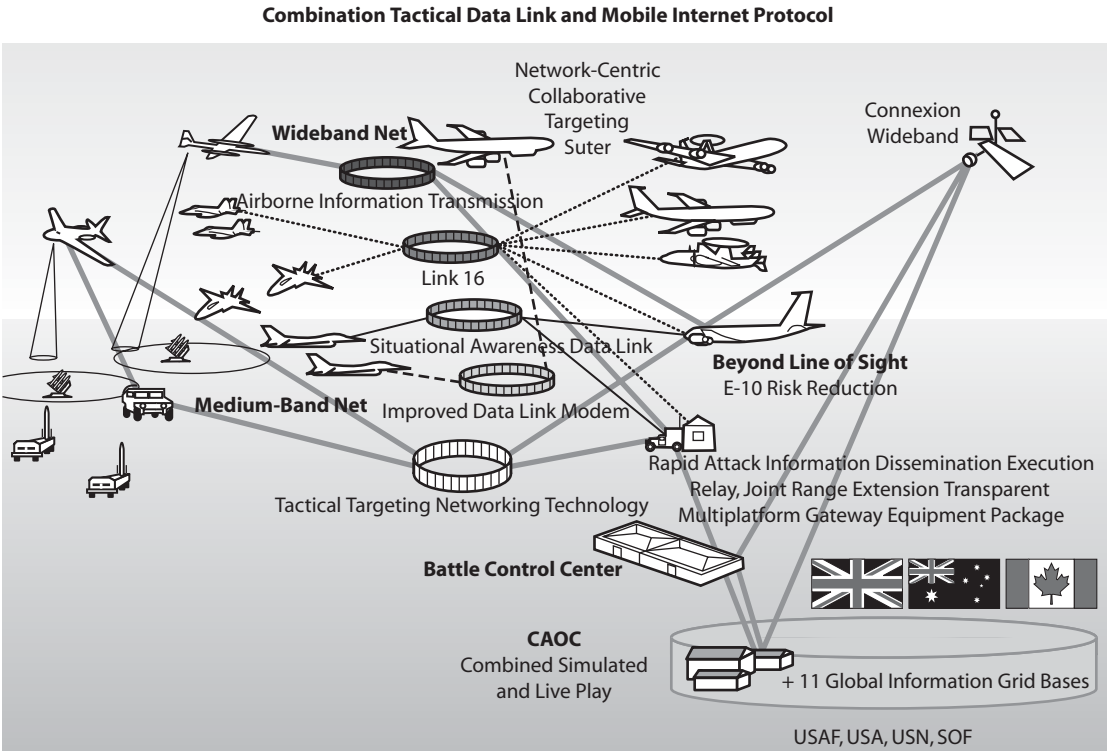

Figure 4. Coalition Joint Expeditionary Force Experiment 2004

trol party modernization program, and a number of other targeting and ISR fusion programs to enable the *first net-centric targeting solution.* We executed the first robust IP forwarding of information through our upgraded AOCs and simulated MC2A platform. The experiment also demonstrated air and ground situational awareness and Blue Force Tracking, including the Army's CAS/situational awareness concept. SOF operations were integrated through a near-real-time synchronization of the common operational pictures from the CAOC to SOF C2 nodes. Lastly and most importantly, we executed EBO by showing both simulated and ground live tracks through the Cursor on Target (CoT) program, thus enhancing Blue Force Tracking and situational awareness.

CoT, which uses a common, neutral computer-language format to translate only key items for machine-to-machine metadata tagging, is important to special forces. It brings together more than a dozen types of "time-sensitive tactical data" from imagery to real-time Blue Force Tracking, target solutions for weapons, strike or platform cross-cueing orders, ISR-collection or air-support requests, weather data, and signals intelligence or sensor information—all from a variety of sources. The program's hierarchical structure enables these different data types (words, pictures, programs, data, and numbers) and integrates the entire enterprise. For example, a SOF unit identifies a target with a CoT-enabled application like the Digital Precision Strike Suite. The unit sends target and SOF team positions in CoT format to the Special Operations Liaison Element, which approves the target for review in the Automated Deep Operations Coordination System. The CAOC leadership releases the target in this system, and CoT forwards the target information to the appropriate systems/links for execution. We can use the same architecture for this system, which works well, to create and disseminate ISR requests or drop and landing-zone information in the same machine-to-machine fashion. At the Joint Expeditionary Force Experiment 2004, CoT connected more than 40 systems. It doesn't try to do everything—just the most important—and its backward-compatible language and scalable format give us net-centric value at a reasonable cost.

The economic integration of time-sensitive data is important, but we are also trying to "lighten the load" of our troops. The Battlefield Airman program addresses the needs of four types of Air Force personnel who operate on the ground: (1) the tactical air control party, which works with ground forces to direct close air support; (2) combat weathermen who do ground-based collection to relay information to airborne units; (3) pararescue jumpers who fly on HH-60s to assist in bringing downed or wounded troops to safety; and (4) the combat control team, which provides combat air-traffic-control services and tactical support to special forces. This program focuses on the hardware side, reducing the weight and volume of equipment needed by these Airmen in the field. It has already succeeded in cutting their typical 150-pound payload by 40 pounds.

Another interesting program, Air Force Special Operations Command's SOF Signals Training and Rehearsal System, provides SOF aircrews with a realistic, simulated combat environment for distributed mission operations, including mission planning, training, testing, rehearsal, and experimentation. The program integrates live, virtual, and constructive simulations with national intelligence capabilities to provide a seamless, simulated, but lifelike SOF combat environment. It injects real-world or simulated intelligence, Blue Force Tracking, and orders of battle on live and/or simulated aircraft, including C4ISR/electronic-warfare broadcast systems. The training benefits are obvious, allowing SOF warfighters to train and rehearse just as they would fight in a real combat situation. The successful operational assessment occurred in June 2004 as part of US Special Operations Command's Combined Joint Task Force Exercise. Documentation and transition of the SOF Signals Training and Rehearsal System hardware/software to Air Force Special Operations Command are occurring now.

Also developing now, the Rapid Attack Information Dissemination Execution Relay (RAIDER) allows enhanced tactical information-dissemination capabilities. It began deployment to the combatant commands starting with US Forces Korea in April 2004. A further development of a system proven in Operation Iraqi Freedom, RAIDER provides digital connectivity from the battle-management decision level to the cockpit for all fielded data links. It enables machine-to-machine precision engagements (Automated Deep Operations Coordination System➔RAIDER➔aircraft). C2 elements can receive real-time, digital battle damage assessment or nontraditional ISR results (strike-aircraft film and sensor data). During Foal Eagle 2004, RAIDER enabled target acquisition to bombs-on-target in 21–45 minutes rather than previous two-hour time frames.

Finally, our Operational Support Modernization Plan, mentioned earlier, is transforming our support processes—operational success requires a foundation of integrated support. The OSMP aims to make support rapid and predictive. It replaces fragmented functional processes with enterprise-wide ones focused on the warfighter to produce ready units, people, materiel, installations, and situationally aware commanders who can mobilize, move, sustain, recover, and support the joint force. Improvements in these "business" practices, in turn, will improve operations tempo.

In much the same way as the kill chain was reengineered to remove steps that added no value, the OSMP will examine and reengineer critical support processes. Early reviews of some of these processes showed that certain ones (e.g., deployment) could be significantly improved. For example, a study found that to deploy a fighter squadron from the United States to Southwest Asia today, support teams would use several dozen manual processes and over 60 data sources, but the commander would have adequate visibility into *only one-third* of those processes. Projected current improvements would address some of the deficiencies by 2011 but not enough to meet the operational needs. However, some operational-support areas are strong. Another study that looked at repairing a C-17 in-theater involving Air Mobility Command's Agile Maintenance program found that the command's existing transformation programs were nearly complete (few manual processes and near-complete commander visibility) and would meet all requirements in 2011. The OSMP's initial reengineering work, just now under way, is targeting four critical support processes: deployment management, full-spectrum threat response, agile sustainment, and focused operational-support C2. More processes will follow. Enterprise Resource Planning software will come into play to introduce Air Force–wide processes and enable the capture of data once by authoritative sources and then make it available to all. The program aims to have commanders receive information through a *common operational support picture* fused with their operational picture. That's what the warfighter needs.

SOF units would benefit directly from the OSMP through the availability of decision-quality support information to the SOF decision maker: real-time status of personnel, equipment, and materiel. Visibility into the support systems would enable them to react faster to a deployed emergency maintenance or support requirement (e.g., aircraft parts and specialist assistance). Also, as with all unit moves, special forces would profit from the deployment-management capabilities of the OSMP, as well as acquisition/logistics improvements and embedded financial support.

Here There Be Dragons

The Air Force still has plenty of dragons to slay en route to full NCW and full support to Airmen on the battlefield. Stealth and net-centric operations don't easily go together, but we are tackling the technical challenges. Across all the network domains (air and ground, fixed and mobile) we are working toward standardization of quality of service. Because commercial quality of service does not directly transfer to military operations, we are sorting that out. Finally, our core radio pro-

grams need attention. What started as the merger of more than 30 voice waveforms is also incorporating the new IP waveforms to bring mobile IP to the tactical user. Of highest concern for us are the MIDS and JTRS—we need to sort the IP waveform for worst-case users.

Takeaways

In summary we are on the flight path to NCW. Robust connectivity and joint applications are the elements guiding our efforts for the joint force commander. But much work remains. We must install a standard IP protocol across all platforms in all the services, and we must design future programs and applications to work in that environment. We need to learn the lesson of commercial "bandwidth hog" applications and have our designers and programmers create systems on a tight "bandwidth diet" to reduce the usage of our new and larger pipes, keeping the information flow rate high. The services and other agencies need to work with a common grid/coordinate system to facilitate accurate location information. Latency and quality of service go hand in hand. A ground vehicle moving on a common operation picture with a two-minute update might be fine for a ground unit covering one-and-a-half miles in that time, but that's unusable for controlling an aircraft that traverses 20 miles in the same time. Sensor forwarding demands even more speed. Industry and the DOD must consider coalition and joint effects due to security, connectivity, and throughput on new systems. We want to work to assure security, but we must also enable access. Masking the source helps. It is also crucial to time-tag our events so users know the latency involved in the information they are receiving. Proven connectivity is necessary prior to a net-centric application's making the grade: no digital radio, no application. If we have only a little money available, we should spend it on the transport layer so we can gain commonality in our warfighter applications. Finally, we need to build on our Center for Domain Integration initiative and virtually plug our test centers together *so we can field joint applications jointly*. With this center, we can run the applications in a "hot" test environment, compare it to a "designated joint test standard" before we field them, and let industry fix the digital misfits. I have confidence in our future—we will be ready to support the joint force commander's priorities and objectives with the jointly developed C4ISR Flight Plan. □

Notes

1. Air Force Doctrine Document (AFDD) 2-7, *Special Operations*, 17 July 2001, v.

2. Just as football commentator John Madden uses his light pen to analyze plays, so would someone on the ground transmit an image, perhaps with a certain area marked with the light pen indicating locations of friends or enemies or strike run-in direction. The flyer could send back the same image with other markings on it. This technique is much more interactive than voice only.

3. Headquarters USAF/XO and XI, to the commanders of Air Combat Command and Air Force Materiel Command, joint letter, 6 August 2004.

4. Col David Kovach, commander, Air Force Communications Agency, communication with the author, 12 October 2004.

5. *Ipv6 Information Page*, http://www.ipv6.org.

6. 2d Lt Matthew Bannantine, "Deployed Warfighters Require Three Rs for Success," *Intercom: The Journal of the Air Force C4 Community*, 2004, http://public.afca.af.mil/Intercom/2004/APR/040403.html.

7. Colin C. Haley, "Feds Announce Global Network Contract Winners," *Internetnews.com*, 31 December 2003, http://www.internetnews.com/xSP/article.php/3294321.

8. Stephen Waller, "Tactical Targeting Network Technology," *Information Exploitation Office*, n.d., http://dtsn.darpa.mil/ixo/programdetail.asp?progid=63.

9. "Research Brief: DARPA Advanced Tactical Targeting Technology (AT3) Program," *Avtec.com*, 2004, http://www.avtec.com/content/view/full/250.

The *Mayaguez* Incident, 12–15 May 1975

A 30-Year Retrospective

Lt Col John F. Guilmartin Jr., USAF, Retired

ON 12 MAY 1975, less than two weeks after the fall of Saigon, a unit of the Cambodian Khmer Rouge navy seized the American-flagged container ship SS *Mayaguez*, taking the crew hostage. With memories of North Korea's seizure of the USS *Pueblo* in 1968 still fresh, Pres. Gerald Ford was determined to act decisively to recover the ship and crew. Surely America's might would quickly prevail against a fourth-rate military establishment, but complications arose. Despite the presence of abundant Thailand-based tactical airpower, the United States still needed ground troops to recover the crew but had none nearby. Staffs at all levels of the chain of command went to work with a vengeance. Late that night the ship was located, anchored off a tiny island called Koh Tang in the Gulf of Siam; planning proceeded on the assumption that the crew was on the island. Marines would deploy to U Tapao Royal Thai Navy Base and assault Koh Tang aboard Air Force special-operations and air-rescue H-53s based in Thailand, hitting the beach at sunrise on the 15th in the Air Force's first-ever helicopter-assault operation. The frigate USS *Henry Holt*, serendipitously in the area, would provide support.

It looked like a walk, but virtually everything that could go wrong did. The marines and helicopter crews never received the good intelligence available about the island's defenders; they went in expecting 18 to 40 lightly armed militia but instead found a reinforced battalion of elite Khmer Rouge naval infantry. The Cambodians shot down three of the first four helicopters to approach the island, one of them carrying the Marine forward air controller (FAC) team; the fourth was badly damaged and forced to abort. For hours, Air Force A-7s providing fire support failed to find the marines, let alone support them. The marines hung on by a thread while the remaining H-53s of the assault wave fed in reinforcements trickle by trickle; the enemy badly shot up most of the remaining seven helicopters—only three landed in commission at U Tapao. A boarding party, transferred to the *Holt* by helicopter, seized the *Mayaguez*, only to find the ship deserted; the Cambodians had taken its crew to the mainland two days earlier.

Perhaps prompted by a retaliatory strike on mainland targets by A-6s based on the USS *Coral Sea*, the Khmer Rouge released the *Mayaguez*'s crew, sending them out in a Thai fishing boat. Destroyer USS *Henry G. Wilson*, just arrived on scene, took them aboard, prompting President Ford to order a halt to offensive action. Had he not rescinded this order in response to frantic lower-echelon pleas and had not a second wave gone in, the enemy might well have overrun the marines on the island. It was close. They were saved by a combination of low-level initiative, hard fighting, and superior airmanship: an AC-130 fire mission coordinated by an air-rescue HH-53 Jolly Green crew proved pivotal, as did the belated intervention of two OV-10 FACs. The extraction, begun on the initiative of the senior FAC without endorsement from above, occurred under fire in inky darkness. When the extraction began, only four H-53s were available, and one was quickly shot up and put out of commission. Maintenance provided one more as the rescue proceeded, providing a razor-thin margin of success.

What about the lessons? Official sources remain noncommittal, but the Air Force's sudden conversion to a strong belief in realistic, combat-oriented aircrew training—read Red Flag—surely emerged, at least in part, as a result of the near-disaster on Koh Tang. Seemingly self-evident lessons about the importance of accurate intelligence at the cutting edge and the dangers of high-level intervention in tactical decisions went unheeded—witness the Desert One fiasco five years later. But realistic training became the hallmark of the Air Force's tactical forces, particularly special-operations elements, and remains so to this day.

To Learn More . . .

Guilmartin, John F., Jr. *A Very Short War: The* Mayaguez *and the Battle of Koh Tang* (College Station, TX: Texas A&M University Press, 1995).

What Kind of War?

Strategic Perspectives on the War on Terrorism

COL JOHN D. JOGERST, USAF

Editorial Abstract: In this article, Colonel Jogerst takes a look at the evidence for and the implications of three competing views of the global war on terrorism: the clash of civilizations predicted by Samuel Huntington, the criminal activity of isolated groups, and the widening of an ongoing insurgency or civil war in the Arab Islamic world.

The first, the supreme, the most far-reaching act of judgement that the statesman and commander have to make is to establish by that test the kind of war on which they are embarking; neither mistaking it for, nor trying to turn it into something that is alien to its nature.

—Carl von Clausewitz

AFTER THREE YEARS of our global war against transnational terrorists, the strategy of the United States and its coalition partners in the civilized world continues to evolve.[1] Ruling regimes that supported terrorism in Afghanistan and Iraq have been destroyed. Terrorist movements in the Philippines and elsewhere are under attack. Individual terrorists have been arrested in nations around the world. The United States has published a *National Strategy for Combating Terrorism* that calls for "a strategy of direct and continuous action against terrorist groups, the cumulative effect of which will initially disrupt, over time degrade, and ultimately destroy the terrorist organizations."[2] Yet, the national debate continues over the characteristics of, appropriate strategy for, and ultimate US goal in this war on terrorism.

In the immediate aftermath of the attacks of 11 September 2001, various commentators characterized this conflict as an entirely new

type of war.[3] The global reach and integration of terrorist organizations, the possibility of their use of weapons of mass destruction, and the absence of a nation-state as an adversary seemed unprecedented. Our *National Strategy for Combating Terrorism* recognizes that this "struggle against international terrorism is different from any other war in our history. We will not triumph solely or even primarily through military might. We must fight terrorist networks, and all those who support their efforts to spread fear around the world, using every instrument of national power—diplomatic, economic, law enforcement, financial, information, intelligence, and military."[4]

Applying these instruments of national power in a coherent fashion requires a unified perspective—a definition of the conflict as well as a specific adversary—that applies from the tactical battlefield to the highest levels of US policy making. The academic and popular debate has coalesced around three candidates for such a perspective. One camp sees the conflict as a "clash of civilizations" inherent in our multicultural and globally connected world. Another perceives it as part of the never-ending task in a civilized, global society to root out and destroy evil elements that prey on that society. To a third camp, the current war on terrorism represents a new, wider phase in an ongoing civil war for control of the Arab Islamic world.

Even though careful analysis affirms the validity of the third perspective, the global arena and terror tactics of the insurgents blur our view. Our frame of reference for the war on terrorism has both immediate and long-term implications for US strategy and force planning. Each of these perspectives presents the United States with a very different set of strategic choices.

The Clash of Civilizations

In his article "The Clash of Civilizations?" and subsequent book on the same subject, Samuel Huntington describes the future of conflict not in terms of competition between nation-states for resources and influence, but in terms of friction between the world's great civilizations.[5] In the past, members of different civilizations had either no contact or only intermittent contact with each other. Conflicts largely occurred between members of the same civilization who fought for local control of territory, population, or influence. This situation changed with the rise of the great Western empires, whose superior technology allowed them to dominate other civilizations; members of Western civilization also conducted large-scale warfare against each other. The end of the Cold War seemingly brought an end to warfare within Western civilization but also removed restraints on conflict between other members of the now closely connected web of world civilizations.

In this new phase of competition, Huntington expects fundamental conflicts to arise from cultural differences between major civilizations, described as Western Christian, orthodox Christian, Islamic, African animist, Hindu, Buddhist, Confucian, and Japanese. Conflicts occur on the "fault lines" between these cultures, where matters of basic cultural identity and values replace international geopolitical issues that previously fueled core state conflicts.[6]

Using Huntington's framework, one sees the conflict between Islam and the West as a continuation of 1,400 years of competition between two expansionist and universalist cultures similar in their missionary views (to the extent that they represent one true faith and have a duty to convert all "unbelievers").[7] Their monotheism makes it difficult to assimilate additional deities and leads them to perceive the world in dualistic terms. Although for both, the world is a product of "God's design," which they have a duty to fulfill, the Muslim concept of Islam as a way of life subsumes religion and politics, whereas Western Christianity separates the practice of religion from secular state governance.

A variety of forums has endorsed this perspective of the war on terrorism as a clash of civilizations—the fourth world war. Writing in the immediate aftermath of 9/11 and the war in Afghanistan, Dr. Eliot Cohen of Johns Hopkins University describes this war as a

"contest for the free and moderate governance in the Muslim world."[8] Speaking before a Restoration Weekend Symposium in 2002, James Woolsey, former head of the Central Intelligence Agency (CIA), built upon Dr. Cohen's thesis, summarizing the conflict neatly in cultural terms: "We're hated because of freedom of speech, because of freedom of religion, because of our economic freedom, because of our equal—or at least almost equal treatment of women—because of all the good things that we do."[9] One finds a more scholarly summation of the cultural conflict between Islam and the West in the writings of Bernard Lewis, professor emeritus of Near Eastern studies at Princeton University. In articles spanning the past decade, Dr. Lewis identifies the cause as a fundamental conflict between Islam's triumphant vision of past conquests and its current political and economic marginalization.[10]

Osama bin Laden and al-Qaeda have made similar statements, casting the conflict as an apocalyptic global clash. In an interview that took place in 1999, bin Laden describes his war: "Let us say that there are two parties to the conflict: The first party is world Christianity, which is allied with Zionist Jewry and led by the United States, Britain, and Israel; while the second party is the Muslim world."[11] This consistent message echoes his earlier comment that "this war will not only be between the people of the two sacred mosques and the Americans, but it will be between the Islamic world and the Americans and their allies because this war is a new crusade led by America against the Islamic nations."[12] The idea of a grand clash of civilizations—a war pitting Islam against the West—serves these groups as a rallying cry. From this perspective, both sides focus on fundamental cultural differences between Western and Islamic societies and imply that success in this war lies in changing (i.e., defeating) the other.

If we accept this framework for the war on terrorism, we must then define our objectives within that framework. In this clash, each civilization's goal calls for changing (effectively destroying) or containing the other. These objectives apply whether one takes a realist position (the other poses a threat that must be destroyed or contained) or an idealist position (the other must accept "right" values and norms of behavior). Building a strategy requires us to define the ways in which we employ our available means to achieve the chosen objective—our ends.

Destroying or conquering another culture or group of nations comprising that culture implies changing the ruling regimes that are the expressions of that culture in the international system of nation-states. This stance assumes that we have ruled out physical annihilation of the culture and its population as incompatible with the values of our own culture. New regimes, either sympathetic to the West or directly controlled by it, must then change the societies they rule. History includes abundant examples of how one can change regimes, although in most cases such action does little to alter the underlying culture if the population is preserved. The British example in India is instructive, as is their colonial experience in Iraq. The colonization of the Americas did change the preexisting cultures, but the native population was virtually eliminated and replaced with—or dominated by—Western Christian colonists.

Employing our available diplomatic, informational, military, and economic tools to change Islamic regimes would prove difficult. Our experiment with diplomatic and economic sanctions against Iraq in the 1990s illustrates the extent of the difficulty. Despite almost unanimous, worldwide diplomatic pressure and a decade of near-embargo, it still took significant military action to topple the regime of Saddam Hussein.

Fighting a war against a "civilization" will require a strategy of confrontation and conquest. Although problematic, the West could in fact wage and win such a war. Certainly, it would be costly and require large numbers of troops, together with high-tech military forces. It would also entail a significant period of occupation to establish control over the population and change its behavior through indoctrination and education.

Even though Operations Enduring Freedom in Afghanistan and Iraqi Freedom demonstrated the ability of Western high-tech militaries to win the battles, their aftermath has taught us that ensuring stability and rebuilding societies require a great deal of manpower. Even with substantial effort, it remains to be seen whether the West can win the information battle and undo the effects of years of ideological conditioning in the Islamic schools (madrassas) and the regimen of five daily prayers in the mosques. One has doubts about whether an external informational campaign could significantly change the structure of the closed and self-contained culture of Islam.

Containing the Islamic states presents an even more difficult task. Containment, which implies a boundary within which one controls the enemy, requires building a strong coalition to create and maintain that boundary. The West successfully contained the Soviet Union but only in the face of an immediate threat to coalition nations' survival and with the legacy of World War II military alliances on which to build. Neither is available today. More than likely, the military potential of the Islamic nations, even including present and future nuclear powers, will never reach the magnitude of the Soviet Red Army.

Economic containment of Islam represents an even greater problem. Unlike the Soviet Union during the Cold War, Islamic states play a crucial role in the world economy. Many prospective members of an anti-Islamic coalition depend upon Islamic nations for oil supplies. Saudi Arabia alone possesses about one-quarter of the world's proven petroleum reserves. The economic disruption in the West caused by losing these resources would make the marshalling of popular support for containment extremely unlikely in the absence of a dire, immediate threat.

Indeed, one would be hard pressed to cast the Islamic nations as a significant threat. Their military forces are small, and their reach is limited. Furthermore, they have a vested interest in supporting the West as a customer for their oil and as the ultimate source of their wealth. In fact, members of the US-led Global Counterterrorist Coalition include Azerbaijan, Egypt, Jordan, Kuwait, Kyrgyzstan, Malaysia, Pakistan, Qatar, Saudi Arabia, Tajikistan, Turkey, Turkmenistan, United Arab Emirates, and Uzbekistan.[13]

Most problematically, a containment strategy only postpones the conflict. The essence of containment is stasis—preventing open warfare while either waiting for the adversary's internal conditions to change or pursuing nonmilitary competition. Without effective military or economic options, we can only wait for an ideological change within the adversary's population. The self-contained nature and demonstrated cultural stability of Islam indicate that such a wait would be a long one. Meanwhile, containment condemns the adversary population to isolation and misery, strengthens ruling elites by providing an external enemy to blame for problems, and sows the seeds of future conflict.

Huntington's thesis specifies where wars will likely occur, but it certainly does not mandate warfare. It posits friction along the fault lines between civilizations but does not preclude cooperation across those lines. Several writers have taken Huntington to task on his identification of culture as the driving force for future conflict rather than local issues of political power, economics, and ideology.[14] In fact the US national security strategy explicitly rejects the war on terrorism as a clash of civilizations: "The enemy is not a single political regime or person or religion or ideology. The enemy is terrorism—premeditated, politically motivated violence perpetrated against innocents."[15]

Our *National Strategy for Combating Terrorism* refines this assertion by focusing on fighting the terrorist networks, thus casting the conflict as a fight between terrorists and all civilized nations. Rhetorically separated from Islamic society as a whole, terrorists are evil, misguided opportunists who exploit popular discontent and use it to fuel their radical agenda. We have no intention of fighting a war of conquest against Islam.

Al-Qaeda versus the West

Although we call this a war on terrorism, wars are fought against specific adversaries—not actions. Our foes in this war are variously identified as "Muslim radicals," "Islamic extremists," or more simply, "evildoers." Commentators identify radical Islam as the breeding ground for these individuals and cite the peaceful tenets of Islam as evidence that terrorists do not represent the Arab or Islamic people, whose governments do not openly support terrorist groups. Authorities in over 90 countries, including Saudi Arabia, Jordan, Yemen, Pakistan, Malaysia, and Indonesia, have arrested members of al-Qaeda and associated groups.[16]

Jamal Khashoggi, editor in chief of the English-language *Arab News* in Saudi Arabia, provides one argument from this perspective, pointing out the shame that bin Laden has brought to his prominent family, his lack of standing as an Islamic scholar, and his violation of Islam's ban on shedding innocent human blood.[17] Nevertheless, according to an abundance of reporting, al-Qaeda and other fundamentalist groups enjoy widespread support throughout the Islamic world. Steven Emerson—expert on terrorism, director of the Investigative Project, and author of *American Jihad: The Terrorists Living among Us*—testified before Congress that,

> using an elaborate network of mosques, schools, "charitable" and "humanitarian" organization[s], and even official diplomatic facilities, Saudi Arabia has for years fostered the growth and spread of a militant doctrinal interpretation of Islam. The ideology of Wahhabism has been exported not only throughout the Middle East but throughout the world resulting in the indoctrination of anti-American, anti-Christian, anti-Semitic and anti-western hatred among new generations of militant Islamic youth.

Yet, he cautions that

> it is imperative to point out at the outset that the terrorism of Osama bin Laden and the extremism of Wahhabism do not equal Islam. The vast majority of Muslims are not tethered to terrorism or extremism but rather seek a peaceful co-existence like members of other religious denominations. Rather it is only a small Islamic extremist minority that seeks to impose its views on the rest of the Muslim world.[18]

The terrorists themselves offer support for this view of a war against the West. The stated goal of bin Laden and al-Qaeda involves ousting the Western-led globalized system from the "Islamic world" as a way of "correcting what had happened to the Islamic world in general, and the land of the two Holy Places in particular."[19] These comments refer to the loss of territory in the Arab-Israeli conflicts, the liberation of Kuwait by Western forces, the continued presence of those forces on the Arabian peninsula, and the downturn in Middle Eastern economic fortunes.[20]

Bin Laden openly articulates al-Qaeda's commitment to violence in his "Declaration of War against the Americans Occupying the Land of the Two Holy Places," released in 1996.[21] Moreover, an al-Qaeda training manual captured during a raid in Britain graphically reveals that organization's intentions: "Islamic governments have never and will never be established through peaceful solutions and cooperative councils. They are established as they [always] have been—by pen and gun—by word and bullet—by tongue and teeth."[22] Thus, the terrorists wish to coerce the West into withdrawing from the Arabian peninsula and from Palestine. On a larger scale, they call for the forceful establishment of Islamic governments that reject Western contacts and influence.

If this is the war we face, we must establish a goal of capturing or killing the members of these terrorist groups, as well as deterring them from acts of violence and preventing future recruitment. Paul K. Davis and Brian Michael Jenkins see terrorists as part of a complete system, each element having unique characteristics and avenues of influence (fig. 1). Building a worldwide strategy to defeat terrorists requires dealing appropriately with each of these parts and integrating diplomatic, informational, military, and economic measures. Such action, reflected in the *National Strategy for Combating Terrorism*, will more likely resemble a law-enforcement operation than a war:

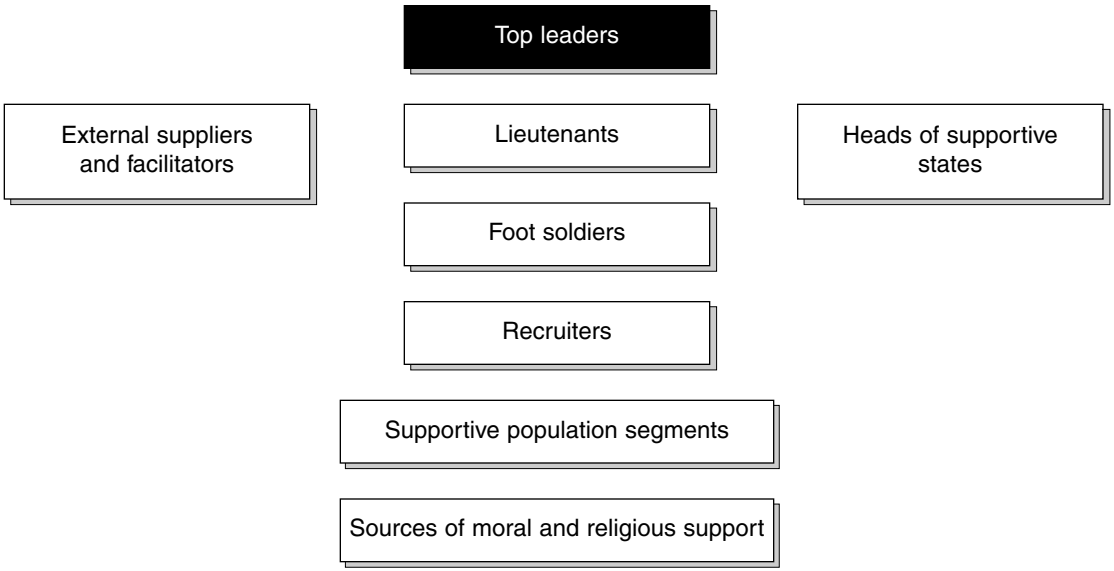

Figure 1. The actors in a terrorist system. (Reprinted from Paul K. Davis and Brian Michael Jenkins, *Deterrence and Influence in Counterterrorism: A Component in the War on al Qaeda*, MR-1619-DARPA [Santa Monica, CA: RAND, 2002], 15, http://www.rand.org/publications/MR/MR1619.)

> The United States and its partners will *defeat* terrorist organizations of global reach by attacking their sanctuaries; leadership; command, control, and communications; material support; and finances. . . .
>
> We will *deny* further sponsorship, support, and sanctuary to terrorists by ensuring other states accept their responsibilities to take action against these international threats within their sovereign territory. . . .
>
> We will *diminish* the underlying conditions that terrorist[s] seek to exploit by enlisting the international community to focus its efforts and resources on the areas most at risk. . . .
>
> Most importantly, we will *defend* the United States, our citizens, and our interests at home and abroad by both proactively protecting our homeland and extending our defenses to ensure we identify and neutralize the threat as early as possible (emphasis in original).[23]

The US strategy details the kinds of activities and campaigns necessary to defeat terrorists. For military operators, the most significant concept involves an inversion of the normal intelligence-operational relationship. In conventional military operations, enemy forces are generally easier to find than to destroy. Relatively large military formations and their equipment usually operate in clear terrain and emit a variety of signatures subject to interception and location through technical means. One can then marshal superior force to destroy a sufficiently large proportion of the adversary's combat power and defenses to neutralize unit cohesion and effectiveness. The defeated unit then withdraws, scatters, or is captured.

In contrast, terrorists operate as individuals or in small groups buried within a larger population, producing small signatures easily lost in the noise of a global society. They can conduct their activities by using couriers and move as individuals to avoid generating a signature. Finding them requires an extensive intelligence effort to make the most of what little information the terrorists let slip. Indeed, human intelligence may be the only way to

gather actionable information prior to terrorist actions. After locating the terrorists, one can capture or destroy them with relatively little force, making sure to account for *all* of them; otherwise, they can quickly regroup and carry on their attacks.

Military operations in the war on terrorism will not require substantial increases in conventional forces. Rather, the military contribution should focus on gathering intelligence. We must not underestimate the magnitude of the effort necessary to capture the terrorists' faint signature, the need for human intelligence, and the critical nature of interagency coordination. Traditional military operations will likely limit themselves to providing mobility and small raiding forces. Major combat would come into play only to deal with large concentrations of terrorists or states that support them. Those military operations should couch their objectives in law-enforcement terms: to bring in *every* terrorist, dead or alive. We should solicit assistance from other organizations and countries to provide information and undertake development and nation building in areas where terrorists breed.

This perspective stems from the assumption that this war is between terrorists and Western nations, specifically the United States. If so, the terrorists are waging a war against the United States, its ideals, and the international system that supports it. They seek to change specific Western behaviors, win over the world to their point of view, and ultimately destroy Western civilization. However, statements of the terrorists themselves bring this view into question. The leadership of al-Qaeda is well educated and familiar with Western culture. Is it likely they thought the attacks of 9/11 would lead to fundamental changes in Western culture and governance? Or is it more likely they designed the attacks to provoke a Western response that they could exploit to gain support from another audience? Osama bin Laden doesn't care how his ideological message plays in Peoria. His objectives and target audience lie within the Arab Islamic world. Specifically, a review of the history and rhetoric of Islamic terrorist groups leads one to the conclusion that they constitute an active insurgency waging a civil war. If this is the case, then the fight is between progressive and fundamentalist elements for control of the Islamic world.

Civil War in the (Arab) Islamic World

The terrorists' statements and actions are consistent with one of the oldest forms of war—insurgency—but conducted on a global stage. Their objective is not mindless violence, revenge, or profit; rather, they see themselves as "an organized movement aimed at the overthrow of a constituted government through use of subversion and armed conflict."[24] Their loosely organized but effective leadership under the al-Qaeda banner follows a definite ideology that influences their strategy and base of support as they work toward their goal of replacing the current governments of the Arab world with an Islamic caliphate.[25] The terrorists' base of support consists of a widespread, well-organized network of individuals, religious and government officials, offshoots of the Muslim Brotherhood Islamist movement, and local dissenting groups.

The founders and senior members of al-Qaeda have their roots in Islamic nationalist movements exemplified by the Muslim Brotherhood, established in Egypt in 1928 and closely related to the Saudi Wahhabi fundamentalist movement.[26] Founded in reaction to the colonial domination of Islamic nations, the brotherhood seeks to achieve national independence and establish Islamic governments in new nations. It has spawned numerous splinter groups and continues to exploit popular discontent to advance its cause.[27] Since the withdrawal of the colonial powers, the brotherhood has directed its efforts against ruling Arab regimes, seeking participation if possible—and acting in violent opposition if not.

A close reading of the terrorists' own pronouncements reveals their focus on the Arabian peninsula. They reserve their bitterest invective and condemnation for the rulers of Saudi Arabia. Concerning the problems within

Saudi Arabia, bin Laden writes, "They [the people] even believe that this situation is a curse put on them by Allah for not objecting to the oppressive and illegitimate behaviour and measures of the ruling regime: Ignoring the divine Shari'ah law; depriving people of their legitimate rights; allowing the American to occupy the land of the two Holy Places; imprisonment, unjustly, of the sincere scholars." He appeals directly to the Saudi security forces for action, declaring that

> the regime had reversed these [Islamic] principles and their understanding, humiliating the Ummah [community of Islam] and disobeying Allah. Half a century ago the rulers promised the Ummah to regain the first Qiblah [literally, direction of prayer; early in his career the Prophet faced the mosque in Jerusalem to pray], but fifty years later [a] new generation arrived and the promises have been changed; Al-Aqsa Mosque [the "Dome of the Rock" in Jerusalem on the Temple Mount] [was] handed over to the Zionists and the wounds of the Ummah [are] still bleeding there. At the time when the Ummah has not regained the first Qiblah and the rout[e] of the journey of the Prophet (Allah's Blessings and Salutations may be on him), and despite . . . all of the above, the Saudi regime had stunt[ed] the Ummah in the remaining sanctities, the Holy city of Makka and the mosque of the Prophet (Al-Masjid An-Nabawy), by calling the Christians['] army to defend the regime. The crusaders were permitted to be in the land of the two Holy Places. Not surprisingly though, the King himself wore the cross on his chest.[28]

Robert Baer, a 21-year veteran of the CIA and a Middle East expert, captures the dynamic of this insurgency in his article "The Fall of the House of Saud," arguing that the ruling regime in Saudi Arabia has forfeited its legitimacy. A repressive monarchy that offers no meaningful participation in government to its citizens, the house of Saud lost its credentials as defender of the holy places within Islamic culture because of widely reported corruption, moral lapses, failure to liberate Palestine, and close dependence on the United States. Finally, a combination of population growth, low oil prices, and spending by the royal family has decreased annual per capita income in Saudi Arabia from $28,600 in 1981 to $6,200 in 2001.[29] Extravagant spending has become a particularly sore point; one prince, for example, reportedly spent $4.6 billion on a palace and theme park complex outside Riyadh. The amount of money diverted to support the royal family would make Saudi Arabia the number-one kleptocracy on anyone's list—the house of Saud makes no pretense that oil revenue belongs to anyone other than itself. State funding consists of what remains after the payment of royal stipends to an estimated 10,000–12,000 princes.[30]

Al-Qaeda's appeal within Saudi Arabia and the Islamic world rests on its promise of reform through a return to the fundamental tenets of Islam rather than the protracted work of building representative governments in Islamic nations. Accordingly, bin Laden postures himself as a Middle Eastern Robin Hood, living a modest life of service while "defending the poor and the downtrodden against a distant tyrant and his nearby henchmen."[31] In "Islam and the West" and "The Politics of Rage," Fareed Zakaria outlines the terrorists' appeal. A growing young Islamic population has become politically and economically frustrated in the face of nonparticipatory governments across the Arab world, widespread corruption, mismanagement of state resources, and a global civilization that supports the status quo. Their message deeply steeped in history, the terrorists offer these youths a return to "traditional" Islamic values and the glories of the thirteenth century, when Arab Muslim armies swept across Africa, Asia, and Southern Europe. They have made the call for renewed Islamic expansion their rallying cry.[32]

So, what does all this mean? Insurgents use terrorist tactics in a civil war waged against—and aimed at replacing—"illegitimate" Muslim regimes. As Lee Harris explains, the West's only importance lies in serving as a prop in the insurgents' campaign:

> The terror attack of 9-11 was not designed to make us alter our policy, but was crafted for its effect on the terrorists themselves: It was a spectacular piece of theater. The targets were cho-

> sen by al Qaeda not through military calculation—in contrast, for example, to the Japanese attack on Pearl Harbor—but entirely because they stood as symbols of American power universally recognized by the Arab street. They were gigantic props in a grandiose spectacle in which the collective fantasy of radical Islam was brought vividly to life: A mere handful of Muslims, men whose will was absolutely pure, as proven by their martyrdom, brought down the haughty towers erected by the Great Satan. What better proof could there possibly be that God was on the side of radical Islam and that the end of the reign of the Great Satan was at hand?[33]

This manipulation of symbols and perception is characteristic of an insurgency. Since the insurgents cannot win conventional battles and hold territory, they seek other avenues to achieve victories. Ultimately, they hope to persuade the population to cease supporting the existing government (i.e., destroy its legitimacy) and instead cast their lot with the insurgency.

Government legitimacy, the prize in any civil war, depends upon many factors: an acceptable balance of material well-being and security, meaningful participation in governance, and cultural consistency. The side that best meets these needs will gain popular support. Dr. Gordon H. McCormick of the Naval Postgraduate School uses a government-people-insurgents triangle to illustrate this fundamental conflict (fig. 2).[34] Insurgents seek to break the government's link with the people by demonstrating its inability to govern. Attacks on government officials and supporters reveal the regime's impotence while strikes on economic targets undermine its ability to provide for the material needs of the population. Many insurgent groups offer competing services—both economic assistance and a "shadow" government—to begin actively replacing the government and strengthen their links with the people. One finds evidence of such activity in widely reported ties between terrorist organizations and Islamic "charities," as well as al-Qaeda's origin within charities that not only recruited fighters for the Afghan war against the Soviet Union, but also provided benefits to veterans of that conflict. For its part, the government seeks to separate insurgents from the populace by attacking the former or relocating and protecting the latter. At the same time, the government must address grievances that gave rise to the insurgency.

If the terrorists are insurgents waging civil war within the Islamic world, what is the appropriate strategy—and who must execute it? Defeating an insurgency requires us to identify and destroy the enemy "soldiers" as well as attack the insurgents' ideological foundations, support structure, and underlying conditions that give rise to and sustain them. Defeating that wider system; destroying the terrorists' source of new recruits, support, and sanctuary;

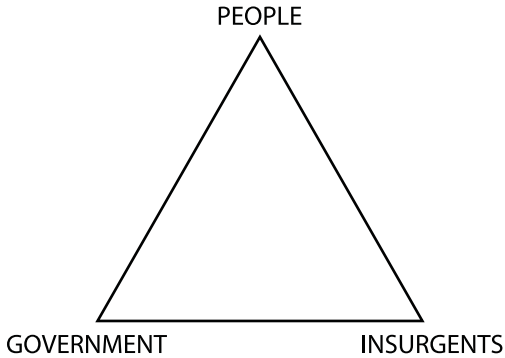

Figure 2. Government-people-insurgents triangle

and returning the enemy's fighters peacefully to their societies are necessary conditions for victory in this war.

Although a well-studied subject, counterinsurgency is not well understood. Simply recognizing that terrorists are waging a global insurgency yields the most important doctrinal insights: conventional military operations cannot dominate our final strategy for victory, and only within the Muslim world can we win the battle. That is, only the indigenous government can win the struggle for popular legitimacy—not an outside power. One finds detailed US doctrine for counterinsurgency in US Army directives on foreign internal defense, the focus of which is internal defense and development (IDAD)—the full range of measures taken by a nation to promote its growth and protect itself from subversion, lawlessness, and insurgency. IDAD concentrates on building viable institutions—political, economic, military, and social—that respond to the needs of the society.[35]

These definitions, focusing on security and development from within the threatened society, must shape every aspect of our strategy. The role of the United States or any external power in an IDAD strategy is to advise, train, and assist indigenous forces in establishing government control within their borders. The critical, unstated assumption in this doctrine is that the supported indigenous government can gain and maintain legitimacy.[36] Whereas a short-term perspective focuses on finding and defeating the insurgents, a complete strategy recognizes the primacy of the political, economic, and social aspects of the conflict.

In IDAD, purely military operations should provide a secure environment in which balanced development can occur. Initial US operations in Afghanistan served this function, destroying the Taliban and al-Qaeda armies and forcing them out of the population centers. However, military operations should never become independent actions aimed solely at destroying insurgent combat forces and their base areas. Military operations must remain part of a synchronized effort to gain broader goals.[37]

The counterinsurgency campaign within the IDAD program takes the form of three overlapping—sometimes simultaneous—phases. In the first phase, military and paramilitary forces secure the area targeted for consolidation. Again, one assumes that these forces are indigenous troops under the control of a local, legitimate government. They have as their goal the systematic destruction of both the enemy force structure and individual insurgents. Since people usually live in the area to be consolidated, troops must limit their use of firepower to reduce civilian casualties and property damage. The true consolidation effort begins with the second phase, when law-enforcement agencies replace the operational forces after the latter have either destroyed or neutralized the insurgents and their infrastructure. The final phase concerns developmental work—nation building—wherein the local government brings security and prosperity to the populace.[38] Extending this doctrine to a global conflict that crosses national, cultural, and economic boundaries represents a challenge because its worldwide nature widens the scope of operations in all areas and complicates interactions between parts of the terrorist system and our strategy.

In order to deal with such complications, most scholars and current US doctrine view insurgencies as complex systems. Doing so requires us to consider the effects of our actions on the insurgents' organization, on relationships between its different parts, and on relationships between the insurgents and the rest of the world. From a military perspective, we must use a systems approach to integrate the political, social, and economic effects of military action with the wider conflict. The following comments combine military doctrine with the work of Bard E. O'Neill, especially his comprehensive analysis *Insurgency and Terrorism: Inside Modern Revolutionary Warfare*.[39]

Army doctrine uses seven elements as a framework for analyzing an insurgency: the insurgents' leadership, ideology, objectives, environment, external support, time phasing, and organization/operational patterns.[40] O'Neill frames his analysis around the insur-

gents' organization and unity, nature of the insurgency, insurgent strategies, environment, popular support, external support, and government response.[41] In either framework, one must examine these characteristics and appropriately extend them to the current insurgency's global battlefield.

Analysis of the insurgency yields characteristics of each component of the terrorists' system and then suggests potential terrorist methods of operation, vulnerabilities, and strategies to defeat them. However, one cannot construct individual parts of the strategy in isolation because interactions between the parts of the terrorist system, the global environment, and our own actions may result in a given strategy's having vastly different effects on different parts of the system. For example, the traditional notion of external support for an insurgency considers a nation-state that provides insurgents sanctuary and resources. In this war, the insurgents' support consists not of states, but a complex network of individuals, government officials, and organizations—both overt and covert—that offers them assistance and shelter within the open societies of the West or lawless regions of the world. They use global communications, transportation, and financial infrastructure as an integral part of their operations. All of this complicates the task of locating, isolating, and defeating the insurgents.

Destroying any insurgency is a complex, long-term task for which there is no smart weapon, silver bullet, or critical node that assures quick victory. This war presents few opportunities for combat between organized military forces in a defined area with well-separated noncombatants in a distinct rear area. Likely, the military operations that do occur will look like the chaotic and dirty small wars of the past.[42] More important than these few open conflicts will be the sustained and comprehensive campaign to "drain the swamp" where terrorism breeds—the key to counterinsurgency. Unfortunately, this activity holds little appeal for the Department of Defense since it offers few opportunities to exercise our best technology, generates few requirements for expensive programs, and takes several political election cycles to complete. It also has little room for glorious combat between valiant warriors, requiring skills more akin to those of a policeman walking a beat or a local politician building a community. A quick comparison of the principles of war with those of military operations other than war (MOOTW) (counterinsurgency is considered a subset of MOOTW) from US joint doctrine highlights these differences (table 1).

Table 1. Principles of war and principles of MOOTW

War	*MOOTW*
Objective	Objective
Offensive	Restraint
Mass	
Economy of Force	
Maneuver	
Unity of Command	Unity of Effort
Security	Security
Surprise	Perseverance
Simplicity	Legitimacy

Adapted from Joint Publication 1, *Joint Warfare of the Armed Forces of the United States*, 14 November 2000, III-8.

Although it may be beyond our resources and may not be our place to solve the problems facing Muslim societies, we can do much to encourage the Muslim world to solve them internally. Historically, the inability to participate in shaping public policy has commonly led to insurgencies. Yet, democracy and representative government are not incompatible with the practice of Islam. Governments in Turkey, Indonesia, Iran, and occasionally Pakistan demonstrate participatory democracy to varying degrees. Large numbers of Muslims live in Western nations, practicing their religion and taking part in democracy. We must make every effort to encourage these nations and groups to take the lead in the Islamic world and its organizations.

However, our first task is preventing future attacks on America and the rest of the civilized world—isolating the insurgency so as to

engage and defeat it on its home ground. Ideally we would like to identify, capture, and kill all the potential terrorists before they attack. However, the widespread, diffuse, and closed nature of terrorist/insurgent organizations makes this impossible. Equally important, we must maintain legitimacy and a solid legal basis for our actions. Most potential terrorists commit no obvious crime until they attack. Evidently, the infamous 19 hijackers of 9/11 entered the United States legally and had broken no laws before that day. If we cannot apprehend the terrorists, then we must deter them from beginning their attack.

But how can we dissuade adversaries willing to kill themselves to attack us? One answer lies in looking at the system that supports and sustains them and then devising and executing a sustained strategy that attacks *every* part of that system in an appropriate fashion. Most members of the terrorist system, especially those forming its support structure, are not willing to die for the cause and can be deterred by enforcing on them the responsibility they have thus far avoided. Another answer entails denying terrorists any benefit from their actions. Hardening targets directly decreases the damage a terrorist inflicts in return for his sacrifice, and treating captured terrorists as criminals subject to public trial and imprisonment denies them their martyrdom. Perhaps the most important tactic calls for casting terrorist acts in their complete Islamic context. Al-Qaeda has come under strong criticism from Islamic religious leaders for practicing selective and shoddy Islamic scholarship. Death in battle may draw praise within Islam—but not suicide.[43]

Conclusion

What kind of war is this? The evidence shows that it is primarily a civil war for control of the Arab Islamic world. However, its global arena and the terror tactics of the insurgents blur our perspective. Cultural issues—friction between cultures—are factors in the battle for legitimate governance in Muslim countries. The conflict has not yet taken the form of a clash of civilizations, but it could become one.

In this war, we have supported existing regimes in Muslim countries, both explicitly and implicitly, through the global economy and political institutions. The insurgents—the terrorists—who seek to destroy these regimes have adopted tactics to eliminate that support, thus drawing us in. The terrorists see this connection to the West as a center of gravity and have rediscovered Clausewitz's comment on the latter: "[for] small countries that rely on large ones, it [the center of gravity] is usually the army of their protector."[44] Winning the war on terror requires us to continue to assist friendly regimes in their efforts to eliminate insurgents—not withdraw our support.

Yet, in this civil war neither side holds values or exhibits actions we totally admire. Regardless of the insurgents' motivation, we cannot allow attacks on the United States. Their choice of terrorism as a tactic and their targeting of US citizens require us to respond. But we need not do so by extending unconditional support to current governments in the Arab world. We must carefully craft our response to fit the realities of this conflict, especially in terms of ending terrorists' operations in those areas beyond the reach of the Muslim governments while encouraging internal reforms to address legitimate grievances.

Indeed, insurgencies exist because of grievances. Eliminating them will require fundamental changes to existing Arab governments—an essential part of any long-term solution. Effecting such change is a difficult, delicate task that demands the careful weighing of our words and actions. We must target the evil of both terrorists and repressive regimes in terms consistent with their culture. Just as the act of terrorism is not the enemy, neither is Islam. Rather, the enemies are individuals and institutions that use violence to dominate their fellow man. We must avoid a clash of civilizations by encouraging the maturity of the principals.

Islam and the West may have differences, but differences do not lead to conflict until one side challenges the other. In this case, the

national strategy of the United States, our fundamental values, the open nature of Western societies, and the global interconnections that bring Western influences into homes around the world have combined to put us in the middle of an ongoing civil war within the Islamic world. The United States has consistently called for promoting democracy abroad and for actively working to bring democracy and the rule of law to every corner of the world—committing itself to change those aspects of other civilizations.[45] The values and beliefs of the West, borne on the global-information network, have entered virtually every part of the Islamic world.

If in fact this war on terrorism becomes a clash of civilizations, the West will have inadvertently initiated it, and the world's insatiable demand for the fruits of Western civilization will sustain it. That popular demand makes me confident that the nonnegotiable requirements of human dignity set out in our national security strategy—"the rule of law, limits on the absolute power of the state, free speech, freedom of worship, equal justice, respect for women, religious and ethnic tolerance, and respect for private property"—will triumph in the end.[46] □

Notes

1. As used here, the meaning of *terrorism* is consistent with the one found in the US State Department's annual report *Patterns of Global Terrorism*, drawn from Title 22 of the *US Code*, sec. 2656f(d): "The term terrorism means premeditated, politically motivated violence perpetrated against non-combatant targets by subnational groups or clandestine agents, usually intended to influence an audience." The meaning of *transnational terrorism* tracks with the one found in Bard E. O'Neill's *Insurgency and Terrorism: Inside Modern Revolutionary Warfare* (Dulles, VA: Brassey's, Inc., 1990): terrorism carried out by autonomous, nonstate actors to distinguish it from acts conducted by groups controlled by a sovereign state (24).

2. Pres. George W. Bush, *National Strategy for Combating Terrorism* (Washington, DC: The White House, February 2003), 2, http://www.whitehouse.gov/news/releases/2003/02/counter_terrorism/counter_terrorism_strategy.pdf.

3. For a good early perspective, see Elaine M. Grossman, "Is the U.S. Military Ready to Take on a Non-Conventional Terror Threat?" *Inside the Pentagon*, 18 October 2001, 1. A global perspective, though still focused on conventional military operations, is evident in Eliot Cohen's article "World War IV," *Wall Street Journal*, 20 November 2001. For more detailed discussions, see Lt Col Andrew J. Smith, Royal Australian Army, "Combatting Terrorism," *Military Review*, January–February 2002, 11–18; and Colin S. Gray, "Thinking Asymmetrically in Times of Terror," *Parameters*, Spring 2002, 5–14. For a general treatment, see T. Irene Sanders, "To Fight Terror, We Can't Think Straight," *Washington Post*, 5 May 2002, B2.

4. Bush, *National Strategy for Combating Terrorism*, 1.

5. Samuel P. Huntington, "The Clash of Civilizations?" *Foreign Affairs* 72, no. 3 (Summer 1993): 22–28; and idem, *The Clash of Civilizations and the Remaking of World Order* (New York: Simon and Schuster, 1996).

6. Huntington, *Clash of Civilizations*, 208.

7. Ibid. This paragraph summarizes much of chap. 9, "The Global Politics of Civilizations."

8. Cohen, "World War IV."

9. The Restoration Weekend is an annual conservative symposium sponsored by the Center for the Study of Popular Culture, a 501(c)(3) nonprofit group based in Los Angeles. In November 2002, the symposium was held in Palm Beach, FL. James R. Woolsey, "World War IV" (speech, Restoration Weekend Symposium, 16 November 2002, http://www.globalsecurity.org/military/library/report/2002/021116-ww4.htm).

10. Bernard Lewis, "The Roots of Muslim Rage," *Atlantic Monthly* 266, no. 3 (September 1990): 47.

11. Transcript of "Usamah Bin-Ladin, the Destruction of the Base," presented by Salah Najm (conducted by Jamal Isma'il in an unspecified location in Afghanistan), aired 10 June 1999, Terrorism Research Center, http://www.terrorism.com/terrorism/BinLadinTranscript.shtml.

12. Osama bin Laden, "Dispatches 1997," quoted in "A Sampling of Quotations from Osama bin Laden," *Boston Herald*, 20 September 2001.

13. US Central Command, "International Contributions to the War on Terrorism," http://www.centcom.mil/Operations/Coalition/joint.htm (accessed 19 August 2003); and US Department of Defense, "International Contributions to the War against Terrorism," fact sheet, 14 June 2002, http://www.state.gov/coalition/cr/fs/12753.htm.

14. For a selection of articles on aspects of Huntington's thesis, see Richard E. Rubenstein and Jarle Crocker, "Challenging Huntington," *Foreign Policy*, no. 96 (Fall 1994): 113; Edward W. Said, "The Clash of Ignorance," *Nation* 273, no. 12 (22 October 2001): 11; and Seifudein Adem Hussein, "On the End of History and the Clash of Civilization: A Dissenter's View," *Journal of Muslim Minority Affairs* 21, no. 1 (2001): 25–38.

15. Pres. George W. Bush, *The National Security Strategy of the United States of America* (Washington, DC: The White House, 17 September 2002), 5, http://www.whitehouse.gov/nsc/nss.html.

16. United States Embassy, Tokyo, Japan, "White House Details Steady Progress in Global War on Terrorism," fact sheet, 1 July 2003, http://japan.usembassy.gov/e/p/tp-20030703a4.html (accessed 16 August 2004).

17. Jamal Khashoggi, "War against Terror: a Saudi Perspective," *Arab News*, 9 October 2001, http://www.arabview.com/articles.asp?article=109 (accessed 25 July 2003).

18. Senate, *Testimony of Steven Emerson with Jonathon Levin before the United States Senate Committee on Governmental Affairs: "Terrorism Financing: Origination, Organization, and Prevention: Saudi Arabia, Terrorist Financing and the War on Terror,"* 108th Cong., 1st sess., 31 July 2003, 3, http://www.senate.gov/~gov_affairs/073103emerson.pdf. See also Steven Emerson, *American Jihad: The Terrorists Living among Us* (New York: Free Press, 2002).

19. Osama bin Laden, "Declaration of War against the Americans Occupying the Land of the Two Holy Places," *Al Quds Al Arabi*, 1 August 1996, http://www.defenddemocracy.org/research_topics/research_topics_list.htm?topic=7580&page=2.

20. Dr. Fareed Zakaria, "Special Report: The Politics of Rage," *Newsweek* 138, no. 16 (15 October 2001): 36.

21. Bin Laden, "Declaration of War."

22. *Al Qaeda Training Manual* (located by the Manchester [England] Metropolitan Police during a search of an al-Qaeda member's home), http://www.fas.org/irp/world/para/manualpart1.html.

23. Bush, *National Strategy for Combating Terrorism*, 11–12.

24. Joint Publication 1-02, *Department of Defense Dictionary of Military and Associated Terms*, 12 April 2001 (as amended through 9 June 2004), 260, http://www.dtic.mil/doctrine/jel/new_pubs/jp1_02.pdf.

25. The caliphate envisioned would unite the Muslim world under one temporal and religious ruler—a caliph who serves as the successor to the prophet Mohammed.

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27. Gary Servold, "The Muslim Brotherhood," in *Know Thy Enemy: Profiles of Adversary Leaders and Their Strategic Cultures*, ed. Barry R. Schneider and Jerrold M. Post (Maxwell AFB, AL: USAF Counterproliferation Center, November 2002), 41–84.

28. Bin Laden, "Declaration of War."

29. Robert Baer, "The Fall of the House of Saud," *Atlantic Monthly*, May 2003, 53–62.

30. Ibid., 56.

31. Bernard Lewis, "Deconstructing Osama and His Evil Appeal," *Wall Street Journal*, 23 August 2002.

32. Zakaria, "Special Report." This five-part special report—"Islam and the West" and "The Politics of Rage"—provides a comprehensive overview of the issues fueling Islamic terrorism and violence.

33. Lee Harris, "Al Qaeda's Fantasy Ideology," *Policy Review*, no. 114 (August/September 2002): 19.

34. The "legitimacy" relationship among the government, people, and insurgents is fundamental to counterinsurgency theory and doctrine. During discussions with the author, several military officers engaged in the war on terrorism mentioned that Dr. McCormick's triangle gave them critical insight as they developed their missions.

35. US Army Field Manual (FM) 31-20-3, *Foreign Internal Defense Tactics, Techniques, and Procedures for Special Forces*, 20 September 1994, 1-1.

36. Government legitimacy rests in the minds of the people governed. They consent or acquiesce to the government's rule in return for a combination of physical security, meaningful participation in government decision making, and material reward—in other words, the "life, liberty, and the pursuit of happiness" that Thomas Jefferson wrote of in the Declaration of Independence. This does not mean that legitimate governments must be liberal democracies or meet each requirement equally. So long as adequate mechanisms exist to satisfy the perceived needs of the governed, the people will regard the government as legitimate. For example, despite the USSR's repressive nature, its people seemed to grant the Communist government legitimacy until it completely failed to meet their material needs. The current government of China appears to maintain legitimacy by meeting the population's security and material needs despite providing little meaningful participation in government decision making.

37. FM 31-20-3, *Foreign Internal Defense*, 1-18.

38. Ibid., appendix C.

39. O'Neill, *Insurgency and Terrorism.*

40. FM 31-20-3, *Foreign Internal Defense*, 1-8.

41. O'Neill, *Insurgency and Terrorism.* I have altered the order of presentation to facilitate a parallel presentation with previous information from Army doctrine.

42. For a good definition, see Col C. E. Callwell's classic text *Small Wars: Their Principles and Practice*, 3d ed. (1906; repr., Lincoln: University of Nebraska Press, 1996):

> Small war is a term which has come largely into use of late years, and which is admittedly somewhat difficult to define. Practically it may be said to include all campaigns other than those where both opposing sides consist of regular troops. It comprises expeditions against savages and semi-civilized races by disciplined soldiers, it comprises campaigns undertaken to suppress rebellions and guerilla warfare in all parts of the world where organized armies are struggling against opponents who will not meet them in the open field, and it thus obviously covers operations very varying in their scope and their conditions (21).

43. "Suicide Bombings Are UnIslamic, Says Grand Mufti," *Gulf News*, online ed., 25 April 2001, http://www.gulf-news.com/Articles/print.asp?ArticleID=15483.

44. Carl von Clausewitz, *On War*, ed. and trans. Michael Howard and Peter Paret (Princeton, NJ: Princeton University Press, 1976), 596.

45. Pres. William J. Clinton, *A National Security Strategy for a New Century* (Washington, DC: The White House, May 1997), i; and Bush, *National Security Strategy*, introduction.

46. Bush, *National Security Strategy*, 3.

Rescue Operations in the Second Gulf War©

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Editorial Abstract: In keeping with the American way of war, when our combat forces deploy, they are accompanied by units dedicated solely to rescue operations. Even though we rarely called upon their services because of the relatively few losses incurred during Operation Iraqi Freedom, they nevertheless performed with the professionalism and élan that have become their historical standard.

THE PRESS CALLED it "shock and awe." Beginning on 19 March 2003, coalition military operations against the Baath regime in Iraq moved quickly and decisively, overwhelming the Iraqi military forces and deposing Saddam Hussein. As a matter of policy, the United States never deploys military forces anywhere in the world without providing a capability to rescue or recover personnel who may become isolated or captured in enemy territory. This mission, known as personnel recovery (PR), refers to the sum of all the efforts our nation will make with each of its instruments of power to recover our young men and women. This national imperative, which includes combat search and rescue (CSAR), has the backing of a strong rescue capability and a country willing to use it.

Among the US military services, the Air Force traditionally has maintained, both on active duty and in its Reserve components, the largest and most robust rescue force. During Operation Iraqi Freedom, three Air Force rescue task forces deployed to the theater. One task force—consisting of the 66th Rescue Squadron (RQS), flying the HH-60 helicopter; the 71st RQS, flying the HC-130 tanker aircraft; and the 38th RQS, providing pararescue jumpers (PJ)—deployed to locations in Jordan. These active duty units came from Nellis AFB, Nevada, and Moody AFB, Georgia. A second task force—consisting of the 301st RQS, flying HH-60s; the 39th RQS, flying HC-130s; and the 304th RQS, providing PJs—went to Kuwait. These Air Force Reserve units, called up under presidential directive, hailed from Patrick AFB, Florida, and Portland, Oregon. A third task force—consisting of the 129th RQS, flying HH-60s; the 130th RQS, flying HC-130s; and the 131st RQS, providing PJs—deployed to Turkey. These Air National Guard units, also called up under the presidential recall, came from Moffett, California.[1] Additionally, all three task forces were collocated with A-10 units to allow close coordination between the recovery helicopters and their support aircraft. Anticipating a swift-moving ground campaign, the task forces were orga-

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nized and equipped to move forward into Iraq as coalition forces seized enemy airfields.

When the Iraqi airfield at Tallil fell on 4 April, one of the first flying units to arrive was a detachment of rescue helicopters and PJs from the 301st and 304th RQS.[2] After the installation of supporting communications, their crews went on immediate alert. As special operations forces (SOF) from the United States, Great Britain, and Australia seized other airfields in the west and north, the other detachments in Jordan and Turkey did the same, dramatically reducing their response time across Iraq.

Naval Reserve helicopter-rescue units were also activated and deployed to the region. Veterans of combat in Operation Desert Storm, the sailors from Helicopter Rescue Squadron 4, based at Norfolk, Virginia, and from Helicopter Rescue Squadron 5, from San Diego, California, deployed with 180 personnel and eight HH-60H Seahawk helicopters.[3]

The Marine Corps, Army, and SOF units did not have formed rescue squadrons; rather, their tactical units contained embedded teams of helicopters and personnel designated to respond for immediate rescue. The Marines had "tactical recovery of aircraft and personnel" (TRAP) teams, and the Army had "disaster assistance response teams" (DART). Teams from the 5th Battalion of the 158th Aviation Regiment, known as Raptors, were organized to move with attack-helicopter units on deep attacks and provide an immediate-rescue capability for any downed aircrews.[4] "It's an American thing," according to Chief Warrant Officer 5 (CW5) Warren Aylworth, tactical operations officer with the Raptors. "We always want to get our people out. We take that more seriously all the time."[5] Prior to the initiation of combat, the Raptors had been augmented with AH-64 helicopters, forming into Task Force Gabriel. Attached to V Corps, they would be immediately available for PR missions.[6] SOF units designated helicopters for rescue duties within each formed assault element or task force. This preplanned element made for an almost seamless operation when its capabilities were needed. Additionally, SOF personnel were also prepared to employ nonconventional assisted-recovery assets when necessary.[7] Clearly, the coalition forces enjoyed significant rescue support.

The rescue units and elements in the region came under the operational or tactical control of the theater joint search and rescue center (JSRC), brilliantly colocated with the combined air and space operations center (CAOC) at Prince Sultan Air Base in Saudi Arabia. Directed by Lt Col Keith Sullivan, the JSRC had up to 52 personnel from all services and coalition partners assigned to it during the conflict.

The collocation of the JSRC in the CAOC did not occur by happenstance. Prior to combat operations, Gen Tommy Franks, commander of US Central Command (CENTCOM), had appointed Lt Gen "Buzz" Moseley of the Air Force, the joint force air component commander, to serve as the theater's personnel recovery coordinator (PRC) as well. After reviewing his designated responsibilities and authorities, General Moseley issued strong guidance:

> I am the PRC and am therefore responsible to [General Franks] for ensuring the recovery of the joint force that may find themselves isolated from the main body. I hereby task and empower the JSRC to insure that this is done by the quickest, most capable PR force able to respond to the individual event, regardless of the component of "ownership." The JSRC will task the most appropriate RCC [rescue coordination center] to conduct the recovery taking into account the individual capabilities and the requirements of the specific mission with time being the most critical factor.[8]

This arrangement gave Colonel Sullivan direct access to units that could actively search for and locate missing personnel or provide critical support to any task force designated for a recovery mission. As the battles ebbed and flowed, 27 subordinate rescue-coordination centers, located with various component headquarters and task forces, reported to the JSRC. All of them were well integrated by multiple communications links and interoperable computer systems. As mandated by

the JSRC, these headquarters would actually direct rescue or recovery missions as they occurred. Because of the physical presence of the JSRC in the CAOC, Sullivan could very quickly coordinate with commanders there for any needed support. For the duration of the conflict, 55 assorted missions were executed at the direction of the JSRC.[9] The available loss data indicates that five fixed-wing coalition aircraft (a British Tornado as well as an F-14, F-18, F-15E, and A-10) went down in enemy territory.

CENTCOM reported that a Patriot missile downed the Tornado, call sign Yahoo 76, on 23 March, killing both crew members—Flight Lt Kevin Main and Flight Lt David Williams from 9 Squadron, forward-based at Ali Al Salem in Kuwait. A helicopter team from Task Force Gabriel launched and spent several hours searching for the crew. They found one body before British troops arrived to secure the site. Proper communication, navigation, and traffic-control procedures should have prevented such an unfortunate turn of events.[10] But a subsequent investigation indicated that the identification, friend or foe (IFF) system on the Tornado had failed. Since the aircraft had just started to descend as it approached Kuwait and the pilot had not yet made radio contact with the traffic controllers, the aircraft was identified as an inbound antiradiation missile, and the Patriot battery fired in self-defense.[11]

A similar incident occurred less than 24 hours later. A flight of four F-16 CJs from the 22d Fighter Squadron was supporting a large formation of strike aircraft hitting targets in the Baghdad area when a Patriot battery of the 5th Battalion, 52d Air Defense Artillery Regiment, located near An-Najaf, accidentally targeted it. Unfortunately for the Patriot unit, these particular F-16s were equipped to locate and destroy enemy surface-to-air-missile (SAM) forces. To the detection gear on the F-16, the Patriot radar signal appeared as an SA-2 site. Since the Iraqi air-defense units still used the SA-2 system, the flight lead assumed that the site was an enemy position trying to shoot them down. Reacting instinctively, he launched a missile, which guided to the site and did considerable damage to the radar equipment but did not harm the Patriot crew.[12]

Navy sources reported that mechanical failure involving the fuel system forced down the F-14, call sign Junker 14, on 1 April. Assigned to Fighter Squadron 154 aboard the USS *Kitty Hawk*, the aircraft was over southern Iraq when the crew safely ejected.[13] Two Air Force HH-60s from the 66th RQS, led by Maj Chris Barnett and using the call signs Vampire 25 and 26, scrambled to pick up the crew members, who landed 80 miles southwest of Karbala. They rendezvoused with a flight of A-10s led by Maj Jim "Rainman" Stephenson from the Massachusetts Air National Guard, who had located the survivors and acted as the on-scene commander. The survivors' lack of familiarity with their rescue equipment and procedures caused some confusion among the rescue forces. Regardless, under the watchful eye of the "Sandy" A-10s, the helicopters proceeded directly to the survivors' locations and successfully rescued both men. "Once we heard the guys coming to get us it was a great feeling," said the pilot, Lt Chad Vincelette.[14]

Disaster struck the *Kitty Hawk* again the next day when an F-18, call sign Dogwood 02, from Fighter Squadron 195 aboard that ship went down southwest of Baghdad. Task Force Gabriel launched a helicopter team that initiated the search for the pilot, Lt Nathan White, but he had died in the crash. Helicopters from the 301st RQS also responded and joined the intensive search for White. The recovery crews found the wreckage of the F-18 and the remains of the pilot. Two weeks later, a spokesman for CENTCOM revealed that a Patriot missile had downed White's aircraft.[15] Concerned about such incidents of surface-to-air fratricide, Gen Richard Myers, chairman of the Joint Chiefs of Staff, said, "We'll have to investigate each one of them, see if it was a breakdown in our techniques or our procedures or if there was a technical breakdown that we have to shore up."[16]

On 6 April an Air Force F-15E, call sign Borax 56, from the 333d Fighter Squadron, based at Seymour Johnson AFB, North Caro-

lina, went down near Mosul. Specifically designed for low-level attack, the aircraft apparently flew into the ground. A rescue task force of helicopters and A-10s launched and proceeded to the crash site, despite the number of active enemy air defenses in the vicinity. A large aerial armada gathered over the area, prepared to battle enemy defenses in order to enable rescue operations. During suppression of the threat, even KC-135 and KC-10 tankers took station in the area so as to sustain operations.[17] But the rescuers never made contact with the two crew members; on 23 April the Department of Defense announced that the pilot, Capt Eric Das, and weapons-systems operator, Maj William Watkins III, had been killed. A special forces team recovered their remains.[18]

The next day, a handheld SAM hit an A-10. The explosion damaged the right engine and flight controls, knocking out both hydraulic systems. But the pilot, Capt Kim Campbell of the 75th Fighter Squadron from Pope AFB, North Carolina, flew the A-10—designed to survive severe battle damage—back to Kuwait and landed at Ali Al Salem Air Base. Her calmness and professionalism saved the aircraft, obviating the need for another rescue mission.[19]

On 8 April, an enemy SAM hit another A-10, call sign Facing 43, as it supported the advance of the 3d Infantry Division through the southern suburbs of Baghdad. The pilot, Maj Jim Ewald of the 110th Fighter Squadron from the Michigan Air National Guard, was advised that he could use the Baghdad airport, recently secured, as an emergency field. His aircraft still flyable, Ewald instead chose to head south in hopes of returning to Tallil or perhaps Kuwait. He flew for about 10 minutes until the aircraft began to yaw uncontrollably and then ejected. His wingman, Facing 44, assumed on-scene command responsibilities, noted his position, and began to initiate CSAR procedures.

Floating to the ground, Ewald took shelter among some reeds along a canal. Concerned about Fedayeen Saddam paramilitary units active in the area, he heard his aircraft crash and mistook the exploding ordnance as enemy fire. Fortunately, American troops from the 54th Engineer Battalion of the 3d Infantry Division watched his descent and sent a forward team in a Bradley fighting vehicle to his location. Jim heard what he thought were American voices but remained cautious. Hearing the clarion call, "Hey pilot dude! Come out, we are Americans," Ewald broke cover and sprinted to the Bradley, whose soldiers pulled him inside and sped away. He then pulled out his survival radio and let Facing 44 know that he was with friendlies. An hour after arriving at a nearby field hospital, Ewald was on his way back to Kuwait in a helicopter from the 301st RQS. Two days later, he resumed flying combat.[20]

Overall, coalition fixed-wing aircraft flew 15,825 strike sorties during the war.[21] Only the one A-10 was lost to enemy action for a minuscule loss rate of .0063 percent, continuing a trend of ever-fewer aircraft lost per combat sortie that reaches back to World War II. Many reasons account for this trend: better-built aircraft; better tactics; better support equipment, such as electronic jamming pods and decoy flares; better crew training; and a well-established ability to seize air superiority by quickly destroying any significant aerial resistance.

The Iraqis, however, claimed to have shot down numerous coalition aircraft, at one point early in the war even staging what appeared to be the capture of coalition Airmen who had parachuted into the Tigris River in downtown Baghdad. The Al-Jazeera satellite-television channel duly covered the event as Iraqi troops combed the reeds growing along both banks and fired their rifles into the water in a vain attempt to flush out hiding Airmen. When queried, both US and British spokesmen denied that any aircraft or personnel were missing.[22] Truthfully, Iraqi air defenses did achieve some level of success, shooting down a number of unmanned aerial vehicles (UAV), which the United States and its allies had begun to use more frequently.[23] British forces used their Phoenix UAV extensively for artillery spotting and forward-air-control duties, losing four to enemy fire. Orbiting at low altitudes and slow speeds, these aircraft made easy targets. The British reported the loss of 23 UAVs in the conflict, several when they purposely flew them beyond range

because of operational necessity.[24] From a PR perspective, their losses were unimportant because UAVs do not need rescue operations. Obviously, the best PR tactic is to prevent any manned aircraft from being shot down.

Dedicated rescue forces were also used on several occasions for medical evacuation of ground personnel. Although such evacuation is not doctrinally a PR mission, CENTCOM commanders decided to use rescue assets when available for this vital task. In another action on 23 March, a rescue task force of HH-60s, A-10s, and an HC-130 tanker scrambled to recover critically wounded personnel in an Army special forces team trapped near Baghdad. Reminiscent of the recoveries of such teams along the Ho Chi Minh Trail during the war in Southeast Asia, the A-10s flew combat air patrol, suppressing fierce enemy action as the helicopters swooped in and extracted the endangered troops. The HC-130 then descended below the low clouds to refuel the helicopter so that it could return to home base.[25] The same scenario occurred almost verbatim on 7 April when a similar rescue task force recovered another trapped Army team. As one Air Force rescue pilot remarked, "It really comes back to that cliché that we don't leave anybody behind."[26]

Surely the most dramatic PR event of the conflict was the operation on 2 April to rescue the Army's Pfc Jessica Lynch, taken prisoner several days earlier when Iraqi forces ambushed her unit—a maintenance company—in the city of An Nasiriyah, killing several fellow soldiers and capturing five others. But rescue forces per se did not conduct this operation although the task force included a few Air Force PJs. Rather, Navy SEALs directly supported by Army Rangers carried out this direct-action mission, which also involved a large Marine diversionary action carried out by Task Force Tarawa nearby and an air strike by AV-8 Harriers on a Baath Party headquarters. Additionally, Marine snipers and special forces teams entered the city to kill Baathists and collect intelligence. Marine CH-53 and CH-46 helicopters inserted the large joint-force ground element as a large armada of Air Force AC-130 gunships, Marine AH-1W attack helicopters, and Army MH-6 Little Birds orbited above to provide immediate fire support. Moving quickly, the substantial force neutralized the area, entered an enemy-held hospital in the city, and recovered Lynch.[27] In terms of audacity, it rivaled the great Son Tay raid into North Vietnam in 1970—although, unlike that raid, it actually freed an American, the first one since World War II. More importantly, it showed to the world the lengths to which the United States would go to rescue its personnel.

At the same time, another task force of mostly intelligence personnel was combing through liberated Iraqi intelligence centers and prisons, looking for an American Navy pilot still missing from the Gulf War of 1991. Capt Michael Speicher's F/A-18 went down on the first night of the conflict. He never made contact with search aircraft or elements, and his precise position remained unknown until the wreckage of his aircraft was found after the war. Initially, he was classified as killed in action, but the secretary of the Navy reclassified that status as "missing in action, captured" in October 2001.[28] All efforts to date have failed to locate Speicher; however, what appear to be his initials were found scratched into a cell wall in the Hakimiyah prison in Baghdad. His case remains open, even as all personnel missing from the Gulf War of 2003 have been found.[29]

Rotary-wing (helicopter) losses were higher than those of fixed-wing aircraft, described above. Open reports indicate that as many as 15 helicopters were lost, although only three to enemy action. Regardless, all were tragic. Intraservice rescue operations recovered most downed personnel. The crew members of a special forces MH-53, the first coalition-aircraft loss of the war, was picked up by another special forces helicopter and flown to their home base. The aircraft itself was destroyed.[30] The same day, a Marine CH-46E of Helicopter Squadron 268 from New River, North Carolina, crashed in Kuwait as it ferried troops to Umm Qasr in southern Iraq, killing all 14 American and British soldiers aboard.

There was no rescue operation.[31] Also lost at the beginning of combat operations, an AH-64 Apache assigned to the 11th Aviation Regiment from Illesheim Airfield, Germany, was shot down as Army forces began their move into Iraq. Helicopters from Task Force Gabriel began to launch for recovery operations when they received notification that other Army units had recovered its crew.[32]

A second AH-64, this one assigned to the 1st Battalion of the 227th Aviation Regiment (1/227) from Fort Hood, Texas, went down in a multibattalion raid against enemy armored units near Karbala on 24 March. Commanded and controlled by the 11th Aviation Regiment, the attack was designed as a classic "deep-strike" mission, something that Army aviation has been developing for several years. Gen Wesley Clark, USA, retired, described it on Cable News Network as "the first Army doctrinal deep attack mission. We've trained for this mission for about 18 years. It was designed to go against the Soviets. We applied it against the 2nd Brigade of the Medina Division. We had good results on this mission. We took out a bunch of T-72s, artillery and infantry. On the other hand, it was a firefight, and we took return fire."[33]

Unfortunately, the raid suffered from poor planning. Supporting and suppressive fires lacked proper coordination, and the action was not synchronized with parallel operations by Air Force, Navy, and Marine fighter attacks. Additionally, instead of attacking from the west over a larger lake, the helicopters were routed directly over well-lit urban areas, affecting the night vision of the crews and alerting the Iraqis. Concentrated and massive enemy small-arms fire downed the Apache, call sign Vampire 12. Other Army helicopters tried to recover the crew, but fire from enemy forces in the area kept them away. Another Apache, Palerider 16, also sustained heavy damage but managed to fly out of the area as a wounded crew member blocked the emergency frequency with continuous calls for help.

Scheduled to launch with the strike force, Task Force Gabriel had no fuel because its tanker trucks had not arrived at the refueling point at Objective Rams, 80 miles south of Baghdad. Consequently, the helicopters remained on the ground 20 minutes away, unable to help. Alerted for the mission, HH-60s of the 66th RQS received quite a surprise when they learned that the downed aircraft was using the call sign Vampire 12—a confusing turn of events because the two rescue helicopters' call signs, assigned by the air tasking order, were Vampire 11 and 12. As a result, they did not launch, but two A-10s from Al Jaber did support the rescue effort. The 1/227 commander, flying in a UH-60, tried to get in to rescue the men; however, he had to abandon the attempt when blocked radio frequencies and stiff enemy resistance prevented him from either communicating with or finding the survivors. Crewmen CW2 Ronald Young and CW2 David Williams were captured.[34] The men of Task Force Gabriel were very upset about their inability to launch and at least attempt the recovery. In fact, their helicopters would not receive any fuel until 27 March.[35]

One enemy commander used a simple expedient to defend against the Apaches: seeing them in flight, he used his cell phone to call nearby units and warn them. Alerted, they concentrated fire from their massed guns against the interlopers, inflicting considerable damage on the aircraft as they tried to hover and direct their precision missiles against Iraqi targets. Army planners had just not dedicated enough support to eliminate or suppress the guns so that the Apaches could safely operate. This expensive lesson taught the aviation-unit commander to adjust tactics so that subsequent raids followed Air Force and Navy attack aircraft, which beat down the guns and achieved a level of air superiority sufficient for helicopters to operate. According to Lt Gen William Wallace, V Corps commander, "We learned from our mistakes, we adjusted and adapted based on what we learned, and we still used the Apache helicopter in a significant role during the course of the fight."[36]

Other instances of helicopter casualties, both combat and noncombat, occurred during Iraqi Freedom, all of them tragic losses. On 21 March two Royal Navy Sea King helicopters

collided over the northern Arabian Gulf, killing one US and six British personnel.[37] Nine days later, a UH-1N assigned to Marine Helicopter Squadron 169 from Camp Pendleton, California, crashed on takeoff at night from a forward operating location in southern Iraq and killed three troops on board. Rescue forces evacuated a fourth marine, critically wounded in the crash.[38] On 1 April a Marine AV-8 Harrier crashed while trying to land at night on the USS *Nassau*. A Navy search-and-rescue helicopter recovered the pilot, who had successfully ejected.[39] The next day a UH-60 from the 2d Battalion of the 3d Aviation Regiment, Fort Stewart, Georgia, was shot down by small-arms fire near Karbala. Task Force Gabriel was alerted for the mission, but an armored task force reached the site first, recovering the four wounded soldiers and seven bodies.[40] Two crew members lost their lives when their AH-1W, assigned to Marine Helicopter Squadron 267, also from Camp Pendleton, crashed in central Iraq on 3 April from noncombat causes. Overall, enemy fire badly damaged 49 Marine helicopters. None was lost, but some required extensive repairs.[41] Finally, after a US Navy CH-46E crashed in the Mediterranean during deck-to-deck resupply operations, local rescue elements picked up the crew.[42]

As the war sped towards its inevitable conclusion, allied intelligence sources searched in vain for the soldiers captured with Private Lynch and for the two helicopter pilots shot down in the massive AH-64 raid on 24 March. Had the soldiers been positively located, another special forces raid undoubtedly would have attempted to rescue them. But as Marine Task Force Tripoli moved north towards Tikrit, an Iraqi civilian informed one of the lead elements that seven Americans were being held in a small village just to the north. Moving cautiously, the marines entered the village and freed the soldiers—the five from Lynch's unit and the two Apache crew members. Helicopters from Task Force Gabriel flew them to their repatriation site. All seven were in good condition, although three had been wounded in the process of being captured. CW2 Ronald Young, one of the rescued pilots, said, "We feel like we won the lottery of life."[43] Advised of their release, President Bush stated, "Today is a great day for the families, comrades, and loved ones of the seven MIAs who are now free. . . . It's a good way to start the morning, to be notified that seven of our fellow Americans are going to be home soon in the arms of their loved ones."[44]

CENTCOM reported that 55 recovery missions—almost half of them medical evacuations—saved a total of 73 personnel. Additionally, it noted the following:

1. All personnel reported as missing were either recovered or accounted for.
2. The Lynch recovery was the first successful liberation of a prisoner of war (POW) since World War II.
3. The JSRC was the largest and most integrated ever.
4. The dedicated PR force deployed to the theater was the most robust since Vietnam.
5. SOF personnel employed nonconventional, assisted-recovery assets in many rescues, the liberation of the POWs, and all accounting actions.[45]

After the conflict, all major service components produced lessons-learned. Based on inputs from the combatant commands (especially CENTCOM), the Joint Personnel Recovery Agency at Fort Belvoir, Virginia, developed several such lessons specifically for the personnel-recovery mission area. They are now being addressed for corrective action.

Overall, as the results noted above show, our personnel-recovery efforts in Operation Iraqi Freedom were very successful. But the issues under consideration in these lessons-learned indicate that much work remains. Regardless, our strong and steadfast commitment to personnel recovery is encapsulated in the timeless motto of the rescue forces: *These things we do so that others may live—to return with honor.* □

Notes

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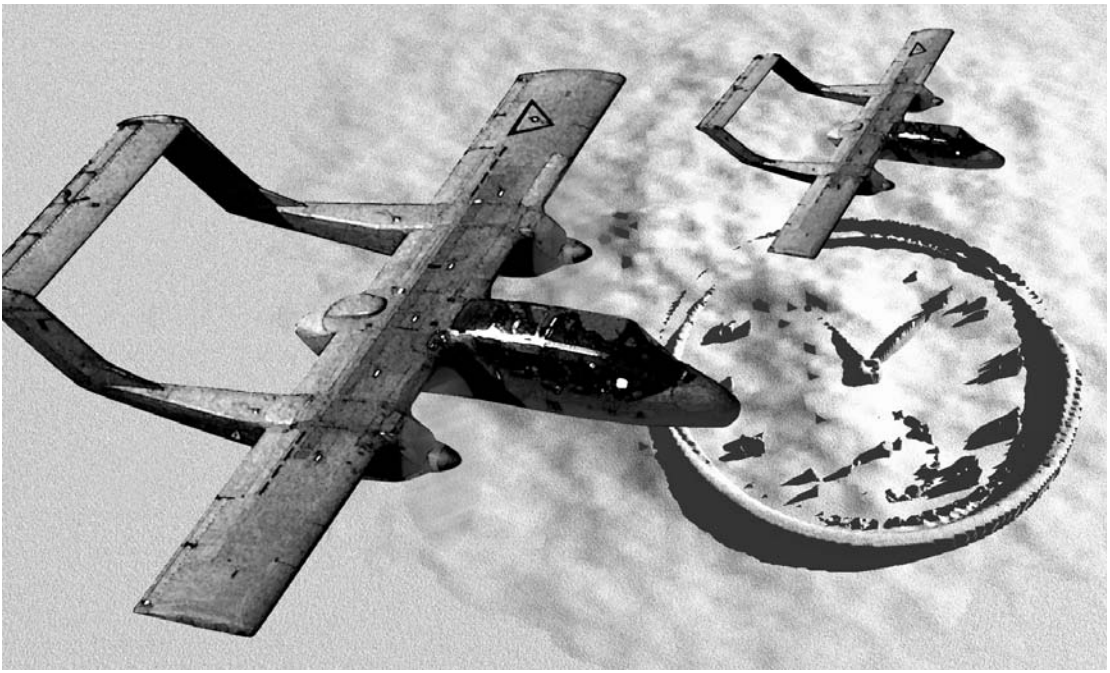
Effects-Based Airpower for Small Wars

Iraq after Major Combat

COL ROBYN READ, USAF, RETIRED

Editorial Abstract: The US military has tended, in the past, to focus on large-scale warfare. Though we must preserve and sustain this capability, the preponderance of our efforts in the foreseeable future will more likely fall into the lesser arenas of "small wars." The Cold War fallacy of the "lesser included case" has never been clearer—small-war demands are generally different from those of major combat. Frequently, they are unique. We need to examine our current equipment and doctrine to ensure that the necessary tools for small-war activities are available to commanders.



The political object is the goal, war is the means of reaching it, and means can never be considered in isolation from their purpose.

—Carl von Clausewitz, 1780–1831

IN OPERATION IRAQI FREEDOM (OIF), there can be no doubt that the combined strengths of coalition airpower were a devastating force during the "organized" phase of the Iraqi defense. Not only did the Iraqi leadership decline to employ their air force, they miscalculated coalition capabilities and the speed of their advances—again and

again. In the initial stages of combat, the coalition used its advantages in leadership, training, and technology to expose the types of strategic gaps in the Iraqi defense that would make almost any opponent seem unprepared. Moreover, with few exceptions, the Iraqis compounded these coalition advantages—through ineptly conceived actions and inactions—resulting in a singularly incompetent performance at the operational and strategic levels.[1] One of many such examples was the Iraqi attempt to reposition major units during an unusually fierce and blinding sandstorm. Imagine the dismay, confusion, and destruction when the maneuvering Republican Guard divisions discovered that coalition airpower could see not only in the dark but also through the false security of the covering sandstorm.

In the aftermath of major combat, there has been an increasing disparity between airpower's traditional vision of a "kinetic kill" and the remaining effects to be achieved. As a result, airpower's role in Iraq and Afghanistan—or perhaps more specifically, airpower's contributions to the effectiveness of the coalition campaign—should be discussed in relation to the actual phases of each campaign to avoid overly positive or negative assessments. In OIF, for example, airpower's overwhelmingly successful contributions in phase three have contrasted sharply to airpower's relative disuse in phase four (or "phase three plus" as it has been called).[2]

Airpower can do far more than destroy a particular target—it can profoundly influence the human condition. Through selective engagement, airpower can support a recovering population; encourage one element while discouraging another; monitor, deter, transport, and connect; and assist in establishing the conditions for a safe and secure future. These applications are not limitless in number, but there are literally dozens of potential uses for airpower that involve a broad operational spectrum including everything from kill and destroy to build and sustain. In a very broad sense, airpower can be grouped into two categories—*destructive* action and *constructive* action. The destructive uses of airpower are well known; however, it is the constructive side that lacks the recognition in doctrine, compatible force structure, and employment planning tools to make it as useful in our efforts as the destructive side. The difference in the two actions is largely dependent upon the effect desired—that environmental condition or enemy behavior sought—after the operation is completed. Effects-based operations (EBO) capitalize on this difference by embracing the political end state as the driving guidance in all endeavors. In short, highly efficient methods in the short term may or may not effectively contribute to long-term accomplishments that lead to the desired end state—planners must ensure that each mission supports the strategic goal. Airpower will not, rather cannot, fully support a coalition's desired end state until this dichotomy of focus in doctrine and understanding has greater balance. This article provides a short examination of EBO and then uses application-style illustrations of EBO with OIF as the principal scenario to show how airpower might have been used differently in OIF and how it might be used still differently in the future.

EBO continues to evolve as an organizing concept for military endeavors. Fortunately, there are several good sources for developing an understanding of EBO.[3] But because it is still evolving, EBO retains identity more as a mind-set, a way of thinking, or as an organizing framework rather than an intricately designed and lockstep planning cycle. EBO is most certainly not a checklist. Rather, it is a flexible and loosely adaptable process of affecting linkages within a system to achieve a predictable new behavior or condition. These linkages in most system-level environments are generally temporal in nature, which makes situational awareness (SA) the principal limiter and greatest enabler, when conducting EBO. This means that understanding when and how second-order effects are propagated in the targeted system can be very dependent on the currency and depth of one's real-time understanding of the real-world target. Buying into preformed box-set solutions can have disas-

trous consequences in complex-dynamic environments.

For OIF, Saddam Hussein's iron grip on Iraq was well known and his personality and cultural imperatives were well documented. Although his prewar statements may not have rivaled Winston Churchill's for their oratory, there was enough evidence to predict the subsequent refusal-to-surrender environment that followed the major combat. The coalition's prewar-textbook focus on defeating the Iraqi military left a gaping hole in plans for a protracted counterguerrilla campaign in such an environment. The belated transition to nonlinear and counterguerrilla operations and stability-driven objectives was the product of that incomplete vision. Even today, the full character of the enemy remains unknown. There does not appear to be either a national or even a regional leadership structure or organization that would lend itself to some nodal analysis or other center-of-gravity type process, and there is no single-enemy structure for logistics that might be susceptible to interdiction. Rather, the consequence of Saddam's refusal to surrender has been an atomized resistance to the coalition forces—numerous disparate groups and cells with common goals rather than a structured enemy with unified direction. Additionally, many individuals and groups have temporarily emerged and then disappeared or merged with other factions, thus stifling coalition opportunities for a substantial, long-term appreciation of their methods and operational styles. Since unity-of-effort styles of coordination and irregular associations for combined effect do not generally conform to patterning or prediction, the operational and strategic enemy has been largely invisible. In a practical sense, only the tactical is visible to coalition planners, yet insight into the tactical does not necessarily lead to actionable higher-level insights regarding the insurgency.[4]

Planning assumptions for such an environment must accommodate decades of state-sponsored indoctrination; state-controlled news; few unapproved international contacts or influences; and highly regimented, state-directed societies in which people are conditioned to expect that all decisions will come from the highest leaders. This is not the type of culture in which initiative, experimentation, freethinking, and an ambition to improve the process are met with enthusiasm. And these are not paradigms or cultures with which we are familiar.

Failure to understand the implications of such a fully regimented society in Iraq led the United States to falsely assume that the various service ministries would continue to function after the most senior Baathist leaders were removed. Instead, these centrally controlled and directed bureaucracies collapsed. None were able to function effectively without the established hierarchy of tight control. Airmen as well as soldiers and sailors need to consider such environments in detail and create viable options for the coalition force commander.

So what can airpower do for the campaign when "kinetic kill" comes off the table? The answer—really the operational art in EBO—is about finding and pursuing the path of least resistance to the political end state, caveated with a planner's full understanding that least resistance must successfully contend with collateral effects, unintended consequences, legal and moral restraints, and the well-being of the coalition's aggregate interests in the endeavor. EBO provides a functional yet flexible framework for thinking about this problem, or more correctly, this problem set.

Some obvious operational limits (fig. 1) have historically reinforced a general reluctance to fully embrace EBO. This has been especially so for those war fighters locked into the sort of "if-then" mentality that craves a single decisive engagement, one strike to smash the enemy center of gravity, or a single strike on the one critical node in some system-of-systems. If it were ever true, the idea of identifying that one critical card in the enemy house has certainly evaporated in all current examples of military operations. Focusing on such linchpin concepts (or even some "tactical end state") is not wrong in itself; however, this tends to expand operations into areas where events can be measurably tracked and reported, or into areas where some current ca-

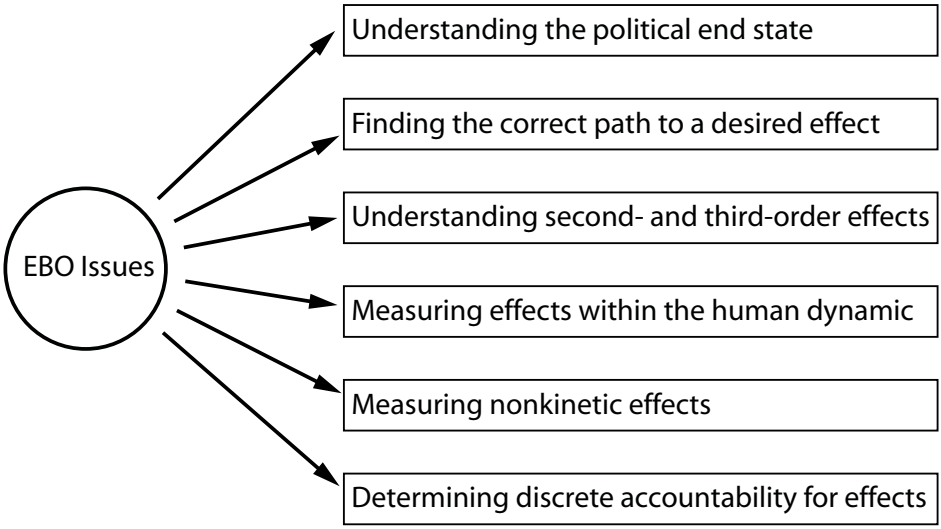


Figure 1. Knowing "EBO jargon" is no substitute for the hard work involved in understanding linkages in EBO. Much, perhaps most, of the value in EBO lies beyond direct "first-order" effects.

pability is most useful regardless of whether the results of that particular operation can be traced to the achievement of national and coalition objectives. Further, war fighters tend to be drawn to these tactical levels where they are engaged directly with the enemy—there is a real sense of accomplishment in seeing or receiving immediate feedback. The danger is in losing sight of the actual end state, effect to be achieved, or what the military was sent to do in the first place. Symptoms of such diversions can often be found in the style and type of reporting—enemies killed, tons of munitions expended, hours flown, patrols or convoys completed—data which explain fighting but not winning.

EBO accepts the imperfect knowledge of the operational environment but strives to mitigate its effects by demanding continuous assessment. This has the near-term effect of emphasizing SA as the driving force in decision making rather than prepared databases. Further, EBO attempts to keep the war fighters' focus on the political end state, which is the only end state that matters. Figure 1 is very much a simplified version of what it could be, and each of the six issues presented might just as easily have been shown as interrelated to, or as a subset of, some other issue. Unlike program evaluation review technique (PERT) charts[5] or even strategy-to-task frameworks[6] which assume a degree of control over milestones and prescribed—perhaps even linear—paths to success, EBO requires planners to combine an in-depth understanding of what they are attempting to achieve with an in-depth understanding of available capabilities, and a keen and current awareness that enables them to recognize opportunity, risk, and change in fleeting environments. Preferred paths exist; however, EBO planners are intensely aware that today's dynamic and politically charged environment may invalidate one preference and create another in the space of a single headline. One constant remains: the object of EBO is never the next milestone or the next target on the list; rather, the object of EBO is always the political end state. Because of this, EBO is principally concerned with understanding linkages rather than de-

stroying some individual target. Focused assessments and an operational pattern that sustains a high SA are clearly techniques to mitigate the effects of these system frictions.

In OIF, the enemy's desired effect cannot rationally be the defeat of coalition forces militarily—but that hardly matters. A historic truth remains valid today: war is politics. There is no such thing as military victory; there is only political victory. For the anticoalition forces in Iraq—given their willingness to kill innocents and on occasion themselves—the range of targets open to political effect is far greater than a traditional nodal analysis might suggest. In this circumstance—given initiative and sanctuary—time tends to favor anticoalition forces at the tactical level; however, if progress continues towards a reconstructed Iraq, time favors the coalition at the strategic level. Thus, control of time could be the key operational effect desired in OIF during this phase, perhaps the one critical aspect in the operation that so many are looking for. There is historic precedent for this frame of reference.

In 1948 and 1949, the Soviets blocked all land-route access to Berlin. The blockade was illegal according to treaty, but the United States was unwilling to enter a shooting war to clear a path to Berlin. The United States and allies were equally unwilling to cede Berlin to the Soviets. The Soviets' objectives were fairly clear as well—they wanted the ongoing economic consolidation stopped in western Germany. They coveted all of Berlin for themselves. It was clearly a test of wills between East and West. The airlift was an incredible success, as was the Army-led logistical miracles at each end of the air bridge in gathering and distributing the cargo. The success of these operations led to the Soviet capitulation. This coalition military operation did not clear a single roadblock in any direct manner, but by sustaining the flow of food, energy, and other staples for month after month to the Berliners, the airlift provided diplomats the critical time necessary for their political actions to succeed. Similarly, airpower in OIF today needs to find "time" for the new Iraq to succeed.

So, what exactly can airpower do? What actions can airpower take that will extend the time available to establish a new Iraqi government and create an enviable future for the Iraqis? There are plenty of potential answers, but each must be vetted using its effectiveness as a contributor to the end state—rather than its efficiency in hitting a particular target, moving short tons, or delivering bandwidth. One possible course of action is looking at the security problem from a theater perspective rather than considering how to secure one village or one convoy at a time (which leaves all of the unsecured villages and convoys as politically viable demonstrations of the government's weakness). What campaign-level airpower options are available to increase security across the theater? What can airpower do to increase the time available for diplomatic, political, and economic agendas to take hold? One option is to saturate the airspace above Iraq's worst areas—with Iraqis.

Getting the Right Tools

The illustration that follows is not a panacea for problems in OIF; however, it does suggest that there are different ways to approach the OIF political end state. It begins with the assumption that Iraqi nationalism is a force in OIF (as is religion, culture, etc.). The perception of America as an invader and occupier significantly inhibits our ability to complete our mission. It contaminates those with whom we would work, and it forms a bond of common effort among those who traditionally would never collaborate. It justifies actions and inactions that would not normally be tolerated in Iraqi society, and it creates a friction at the strategic level that is stagnating progress towards a new and legitimate Iraq. One solution that would have positive ramifications in all of these areas is to accelerate reinstatement of the Iraqi air force as a viable partner in the defense of the new Iraq. Such an action would provide momentum for changing Iraqi perceptions of the United States from occupier to ally and increase legitimacy of the Iraqi central government both

internally and externally. Near-term effects from that reinstatement would also include all or most of the following: a smaller in-country sanctuary for antigovernment forces; decreased popular support for antigovernment forces (including those that were simply government-neutral and thus tolerant of the insurgents); a smaller US fingerprint on Iraqi internal security; and greater security along Iraqi borders and internal pipelines.

A practical first step in this reinstatement process is to establish sector-specific forward air controllers (FAC) for the top 12 to 15 "hot spots" in Iraq with round-the-clock coverage. The actual implementation of such a concept would have to come in stages, since frankly, the Iraqi air force is not ready, and the US Air Force does not have the ready assets to fully put into practice the ideas that follow. The critical core capability does exist, however, within the US Special Operations Command, specifically, the 6th Special Operations Squadron (SOS) within Air Force Special Operations Command (AFSOC). Though limited in number, these combat aviation advisors (CAA) have the requisite language and trainer skills to lead the way; furthermore, they are acutely aware of the cultures in which they operate and can avoid the natural pitfalls to which an untrained American would be susceptible. The first products of such an implementation would be dramatic improvements in SA; significantly reduced reaction times; and ever-present, on-scene "eyes for the commander."

Sector FACs, using two-seat aircraft, would be assigned to the various hot spots in Iraq. Finding or predicting these critical junctions has not been a problem in the past; keeping them covered, however, has. Initially, there may be only CAA crew members in the cockpit, but this is simply a very short transitory stage while the CAAs validate training and system concepts. Using the North American Rockwell (now Boeing) OV-10D Bronco as a sample or baseline platform, the Iraqi participation begins with a CAA pilot in the front seat and an Iraqi sensor operator/communicator in the backseat. This would be followed with the CAA crew member in the backseat and the Iraqi air force pilot in front, and finally an all-Iraqi crew.[7] A critical weakness at this time, however, is the relatively small number of Arabic-qualified CAAs in the 6th SOS. The phased approach maximizes their training values; minimizes the transition time for building a credible Iraqi air force; and provides for an individualized, hands-on, and performance-based transition, rather than a schoolhouse approach to numbers production. Since every graduate must assume an immediate and critical combat role, the CAA approach is clearly the preferred method. Additionally, an all-Iraqi response to any trouble spot begins to positively contribute to the rationale presented above, and earlier is clearly better than later.

Looking Beyond the Immediate Future

Why is the OV-10D a good example platform? It can be fitted with a state-of-the-art sensor; it has good survivability in low-threat environments and has excellent characteristics for this mission (range, speed, persistence, adaptability, and weapons/cargo payloads); and it has a substantial power advantage over the OV-10A and can operate from forward/rugged environments. Additionally, the Bronco is relatively easy to fly and maintain and logistically simple to sustain. In short, the OV-10D is a very doable platform. These aircraft are also well suited to support Iraq's reintroduction into the Gulf community of nations—an Iraqi fleet of OV-10s cannot be viewed as a credible threat to neighboring countries.

From the intial sorties with a 6th SOS CAA pilot and an Iraqi sensor operator/communicator, the sector FACs can fly four-to-six-hour missions dedicated to border security, pipeline patrols, convoy escorts, and nontraditional intelligence, surveillance, and reconnaissance (ISR) missions. With an Iraqi communicator in the air talking to an Iraqi army communicator on the ground (in a convoy, pipeline quick-reaction force, or foot patrol), the operational environment changes dramatically

and immediately—Iraqis talking to Iraqis about defending Iraq. This is a major change from Iraqis talking about the American invaders who are occupying their country and killing their countrymen.

Sector FACs would create an environment of constant monitoring, thus enabling the crews to become intimately familiar with their zones of interest. In such a scenario, abnormal activity becomes an indicator as much as overt enemy action. This enhanced SA allows for warning or intensified scrutiny on the part of commanders. For example, if every day the FAC sees farmers working with animals in a specific area, children playing at certain spots, or people gathering at a particular market, the FAC has established a personal baseline for a sort of "traffic pattern analysis." On the day that these normal indications are missing, the FAC will immediately recognize the change and begin to search for reasons. An empty field for a sector FAC can be a critical trouble indicator; however, an empty field for a routine ISR mission is likely to be interpreted as just that—an empty field.

While sector FACs are likely to improve SA for the coalition and the new Iraqi government, the addition of an Iraqi crew member to the mix vastly increases the potential of this asset. Ideally, the Iraqi crew member would be indigenous—that is to say, not only from the specific assigned sector but an Iraqi who stayed during Saddam's regime. Using local assets immediately enhances the team knowledge of unique local circumstances and establishes a legitimate connection with the people of that region. Using outsiders—from another region, tribe, religion, or sect—offers the possibility of rival values, revenge, or simple indifference to local priorities and customs. The same could be said for returning expatriates. Additionally, they face the possibility of encountering a different sort of friction from locals who lacked the resources or opportunity to escape Saddam's Iraq.

A properly equipped aircraft would also include loudspeaker capability allowing the crew to communicate directly with people on the ground.[8] This could be part of a planned public affairs or information operations (IO) broadcast that results in a direct, nonlethal intervention or interaction with the local population. The scenarios where this might be useful are almost limitless. Any unusual crowd would draw the attention of the sector FAC. For example, if a number of men gathered in a plaza at 0200 carrying small arms and rocket-propelled-grenade launchers, using the loudspeaker would provide the opportunity to suppress or diffuse this event before it became newsworthy. The object is to gain time for the new government to solidify and establish itself. Attacking this crowd could have just the opposite effect. Using an IO-approved tactic, the FAC might be able to cajole, threaten, or persuade this crowd to delay their venture for a day, a week, a month, or permanently. The immediacy of the intervention magnifies its effect. The onboard sensor can also be used to record the event to justify lethal actions that become necessary later, or could be reconstructed as a narrated IO asset for other venues. However, if the preferred suppression technique does not work, the FAC can still transition and mark the target for destruction. In much the same way that military police are taught to push first and then shoot, the Air Force needs to explore all alternatives before deciding on which size Joint Direct Attack Munition to drop.

Equipping the aircraft to enhance support for coalition ground forces is also necessary. Radio and sensor-feed relays via the sector FAC would provide greater flexibility and SA to a ground force. While it would be prohibitively expensive to equip each aircraft with every sensor package, it makes sense to equip the aircraft with a package that can relay the onboard sensor and selected off-board feeds (e.g., Predator, Global Hawk, or other imagery) to the ground force.[9] The sector FAC's platform could also act as an automatic radio relay for the ground force by providing assured communications and sensor-feed links. Ground-force packages could be tailored to be lighter and would be capable of quicker reaction.

The OV-10 is well suited for its classic role as a FAC, but new technology has created new

opportunities to enhance that traditional role. The combination of a global positioning system (GPS) and a linked-laser designator with today's advanced communications could provide near-real-time inputs to time-sensitive planning or intelligence preparation for the region in question. Today's technology (forward-looking infrared [FLIR], blue-force trackers, laser designators, GPS, satellite-based communications, helmet-mounted reticules, etc.) could give even routine missions significant value.

There is no substitute for SA. With repeatable data, exact coordinates, supporting imagery, and familiar references, it makes the data more transferable; that is, exact locations generated by the laser-GPS combination can ensure that similarly equipped aircraft or ground troops will find exactly the same point of reference. The ability to transfer this advanced SA is a unique technological advantage. This is particularly important in nondescript terrain and especially so in an urban environment where combatants and noncombatants are frequently intermixed. In Iraq today, a high degree of confidence in sorting potential targets is critical and all too often missing. The coalition faces an evolving mix of terrorists, criminals, and members of the former regime who use indiscriminate violence to intimidate the population and targeted force to undermine the civilian government. Every engagement is potentially media fodder for antigovernment forces; therefore, every step must be taken to avoid simple errors that discredit the new government or the coalition.

At least initially, the coalition was particularly remiss in the arena of IO. Its largely reactive efforts generated distrust and failed to alienate the enemy from the population. However, sector FACs with suitably equipped aircraft could provide commanders with another opportunity to counter the success of antigovernment forces in this critical area. As an example, consider the car bomb that exploded last year at a police recruiting station. Seemingly only moments later, Iraqi "eyewitnesses" were providing detailed accounts of the missile attacks by American warplanes.[10] The extended time lapse between the alleged missile-attack and the coalition rebuttal ceded all initiative—and victory in this battle—to the enemy. The expected coalition denials simply fed local belief that the coalition in general or Americans in particular had something to do with the blast. At the very least, the coalition was to blame because it had not prevented the attack. Since this locale had been previously identified as high risk, an assigned sector FAC with real-time streaming video narrated by an Iraqi crew member just might have been of value in mitigating the disastrous perceptions engendered by the television broadcast.[11] At a minimum, the OV-10 could have broadcast the truth to crowds present—a car bomb had exploded.

The intent of this discussion and these examples is not to illustrate the value of fielding a 40-year-old aircraft for small-war environments. It is intended to show that EBO provides a valuable framework for ensuring that airpower is working up to its potential at the tactical and operational levels of war (as guided by the political end state). The ramifications are far reaching. In Iraq, we have the potential to meet coalition objectives and shorten redeployment times by allowing Iraqis to take the lead in establishing and maintaining internal order. This proposal also provides for a theater perspective on security that potentially eliminates the "balloon effect" of closing down one insurgent area only to have another expand into a crisis. Further, by using a "leave-behind" aircraft like the OV-10, we can provide Iraq with a strong internal capability without jeopardizing external relationships. Finally, creating a long-term use of US equipment has also historically created a long-term relationship in training, supply, and doctrine.

In some future period, these same dilemmas might be anticipated with the Democratic People's Republic of Korea (DPRK). Should hostilities ever commence—given the current DPRK leadership—there is no compelling reason to expect an organized surrender there either. Thus, at some point in phase III of that conflict, well over one million DPRK combat-

ants may choose to "go to ground."[12] However, as in OIF, the fierce combat envisioned for that war (should it ever occur) leaves little emphasis or time for the small war or constructive planning scenarios in the extended postmajor combat phase potentially on the horizon. Security aside, the humanitarian disaster awaiting such a war is nearly irreversible—famine will be the order of the day in the North. In a noncombat environment, importing and ensuring distribution of that much food and medicine would be a monumental, yet hopefully achievable, task. In a combat environment, near-combat environment, or postmajor conflict environment, the same task expands dramatically in complexity and purpose and may ultimately face insurmountable odds. Millions of people would suffer.

The DPRK is not Iraq; however, the problem is the same—Airmen understanding how to employ airpower in every phase of conflict. The perennial fallacy of the "lesser included case" has never been clearer. The ability of the United States and its coalition allies to fight and win large force-on-force engagements does not mean that these same forces and strategies can fight and win in the small wars. Sector FACs are only one way in which coalition airpower in OIF can improve its contribution to the political end state. Similar arguments might be made for a reorganized fighting concept for AC-130 gunships or modular gunships assigned to Air Combat Command rather than AFSOC or tethered sensors or any of a host of other innovative configurations. Every operational environment will be different, and Airmen cannot choose to fight in only one phase of war. They must use their expertise, combat capabilities, and unique understanding of airpower to engage and win whenever and wherever called. □

Notes

1. Tactical engagements cannot be so glibly reduced. Combat at this level is intensely personalized by the individual soldiers involved on both sides, by individual and team histories and experiences, and by the very specific conditions of the combat environment at that exact moment in time. Some firefights were very intense; even so, no Iraqi military action contributed to a change in the coalition's strategic end state.

2. Figure III-4, "Phases—Joint Campaign," in Joint Publication 3-0, *Doctrine for Joint Operations*, 10 September 2001, http://www.dtic.mil/doctrine/jel/new_pubs/jp3_0.pdf, depicts the four phases as follows: phase one: deter/engage (crisis defined); phase two: seize initiative (seize initiative, assure friendly freedom of action, and access theater infrastructure); phase three: decisive operations (establish dominant force capabilities and achieve full-spectrum dominance); and phase four: transition (establish civil control and rule of law; redeploy).

3. For example, Edward C. Mann III, Gary Endersby, and Thomas R. Searle, *Thinking Effects: Effects-Based Methodology for Joint Operations*, CADRE Paper no. 15 (Maxwell Air Force Base, AL: Air University Press, October 2002); Edward A. Smith, *Effects Based Operations: Applying Network Centric Warfare in Peace, Crisis, and War*, Information Age Transformation Series, vol. 3 (Washington, D.C.: Office of the Assistant Secretary of Defense [Command and Control Research Program (CCRP)], November 2002); and Christopher Finn, ed., *Effects Based Warfare* (Wiltshire, England: Defence Studies, Joint Doctrine and Concepts Centre, 2004).

4. Even the tactical is only fleetingly visible since the anticoalition forces (and insurgencies in general) retain the initiative. Not only can they pick the time and place of attack, but they can postpone an attack until other conditions are favorable. "Sappers" in Vietnam, for example, never took an approved target off of the list—they simply waited until conditions were favorable.

5. A PERT chart is a project-management tool used to schedule, organize, and coordinate tasks within a project. A similar methodology, the Critical Path Method (CPM) developed for project management at about the same time, has become synonymous with PERT. The technique is known by any variation on the names: PERT, CPM, or PERT/CPM. Whatis.com, http://www.whatistechtarget.com/definition/0,,sid9_gci331391,00.html.

6. The Strategy to Task Technique (STT) is an approach used to develop low-level, often system-specific, requirements for a system or capability through a process of decomposition. The approach, which is often implemented by using the Quality Function Deployment technique as an enabler, begins by utilizing high-level statements of requirement, typically national strategic goals, and then mapping responses against these requirements. Michael R. Bathe and Jeremy D. Smith, "A Description of

the Strategy to Task Technique and Example Applications," *Journal of Battlefield Technology* 5, no. 1 (July 2002): 32, http://www.argospress.com/jbt/Volume5/5-1-5.htm.

7. The OV-10D is an illustration, not a recommendation, and was chosen to avoid diverting the article into a comparison of current or "modern" aircraft. OV-10D strengths and weaknesses do make a good baseline for comparing any future aircraft considered for such a mission.

8. The OV-10 can routinely operate at slow speeds (e.g., 100 knots). But if required, the highly maneuverable aircraft can essentially stop its ground track by using a pylon turn or more exotic turning technique.

9. Additionally, the intent is to leave the aircraft behind. There are plenty of commercially available forward-looking infrared radars for export, but many other sensors are restricted. A "relay" system can provide the necessary data without obligating the United States to provide Iraq with certain advanced or restricted technology.

10. Edward Wong, "The Conflict in Iraq: Insurgency; Bombing Kills 47 at Police Station In Iraqi Capital," *New York Times*, 15 September 2004, late edition, A1.

11. Ibid. Perimeter security was enhanced, and checkpoints were established, but the car carrying the bomb penetrated the area and exploded near the line of candidates vying to join the new Iraqi police.

12. There is well-sourced scholarship that discounts this. However, there was well-sourced scholarship that discounted nationalism as a factor in Iraq as well. Ultimately, this is as much a moral dilemma as a military consideration. Plans must be driven by the stated political goals—that is, the desired end state for the peninsula.

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• *Air & Space Power Journal – Arabic*
http://www.airpower.maxwell.af.mil/apjinternational/aspjarabic.html

Desert One and Air Force Special Operations Command

A 25-Year Retrospective

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AFTER THE VIETNAM War, the Air Force's special operations forces (AFSOF) had deteriorated so much that they could not respond to a situation in Iran. On 4 November 1979, supporters of Ayatollah Khomeini stormed the US Embassy in Tehran and held the staff hostage. In response, the US government scrambled to assemble an ad hoc task force to rescue the hostages. Although an elite Army counterterrorism unit had completed certification training that same month, it had no Air Force counterpart. Because of the near-eradication of the SOF community in the 1970s, the American military could not respond adequately to this emergency.

The rescue attempt went no further than its initial landing site, code-named Desert One. Although the mission failed, it called attention to a preexisting problem. The United States had neither the resources nor the capability to counter the emerging threat of terrorism. Thus, Desert One became *the* catalyst for reprioritizing US SOF units within the Department of Defense (DOD).

From a purely Air Force perspective, Desert One clearly demonstrates the service's neglect of its special forces after Vietnam. The Air Force had invested heavily in revitalizing its aging fleet of fighter aircraft in the late 1970s but considered SOF units a diversion of valuable resources. Although this position is understandable in light of overall Cold War strategy, Desert One provided the impetus for a change in behavior and made revitalization of these forces a prominent item on the DOD's agenda.

We see significant differences in AFSOF units before and after Desert One. Veterans of that mission argue that before 1980, almost no one considered SOF missions integrated joint operations. After the rescue attempt, air commandos developed the modern notion of a joint SOF unit focused on counterterrorism. In short, Desert One and Project Honey Badger—code name for a second rescue mission never attempted—established the paradigm for "Black SOF" units, the dominant tribe within the SOF community that focuses on counterterrorism.

Ultimately, congressional persistence and support from key DOD leaders led to the creation of United States Special Operations Command (USSOCOM) and Air Force Special Operations Command (AFSOC), its air component. As both commands strove to establish their organizational relevance, Black SOF dominated USSOCOM's agenda and steered that command's force structure, training, and priorities, using Desert One as its raison d'être. To the contrary, "White SOF" units—noncounterterrorism-oriented special operators—have been overshadowed and considered secondary to their more clandestine counterparts.

Amy Zegart, author of *Flawed by Design*, argues that national security organizations are deeply affected by circumstances and factors associated with their creation. But as America continues to fight a global war on terrorism (GWOT), the SOF community will have to move from the single-mission focus of Desert One to a campaign-oriented strategy. The Desert One paradigm cannot accommodate

the current security environment because it depends on habitual relationships among "fenced in" assets that surge occasionally rather than deploy continuously. Since 9/11, USSOCOM has tried to create a better balance between Black and White SOF units. The first is essential in crisis management, and the latter fundamental in augmenting the stressed Black SOF community as well as taking a leading role in the ever-growing arena of foreign internal defense.

Similarly, AFSOC must adjust its campaign strategy to the GWOT by transforming AFSOF resources and newly acquired combat search and rescue forces into a capabilities-based force. Ultimately, AFSOC should create "buckets" of special air-warfare capabilities that include "rescue" and AFSOF assets. The Desert One model has served the SOF community well for the past two decades, but 9/11 should change AFSOC from a platform-based, single-model force to a capabilities-based force.

To Learn More . . .

Kyle, James H., with John Robert Eidson. *The Guts to Try: The Untold Story of the Iran Hostage Rescue Mission by the On-Scene Desert Commander.* Phoenix: Primer Publishers, 1995.

Marquis, Susan L. *Unconventional Warfare: Rebuilding U.S. Special Operations Forces.* Washington, DC: Brookings Institution, 1997.

Zegart, Amy B. *Flawed by Design: The Evolution of the CIA, JCS, and NSC.* Stanford, CA: Stanford University Press, 1999.

Creech Blue: Gen Bill Creech and the Reformation of the Tactical Air Forces, 1978–1984 by Lt Col James C. Slife. College of Aerospace Doctrine, Research and Education (CADRE) in collaboration with Air University Press (http://aupress.maxwell.af.mil), 131 West Shumacher Avenue, Maxwell AFB, Alabama 36112-6615, 2004, 162 pages (softcover). http://aupress.maxwell.af.mil/Books/Creech/Creech.pdf.

Lt Col James Slife's book about Gen Bill Creech is a combination of biography and the history of airpower, with much of the two woven together to present a coherent picture of what influenced General Creech's priorities and the challenges of satisfying those priorities. The author describes in some detail the general's contribution to the development of tactical airpower and to the transformation of the broader Air Force, doing so with laudable authority and accuracy. That aspect of the work by itself would be well worth the reader's attention. Slife singles out and illustrates the key attributes of General Creech's philosophy of management and leadership—explicit goals based on a certain grasp of what is important; clear standards; individual accountability; reward for success; and no reward for failure. He also captures the general's dedication to the principle that leaders can expect professional performance at all levels only if they provide a proper environment and full commitment to teaching, teaching, and teaching. This portrayal, however, would have benefited from a more compelling presentation of the intense focus that General Creech brought to each task. By any standard, he was the most demanding boss that I worked for in 37 years in the Air Force, although he managed to be demanding and supportive in the right balance.

Colonel Slife's tendency to paint the general as an apostle of decentralized management is justified but incomplete. He did indeed believe that accountability demands decentralized authority and responsibility, but he also believed in strongly centralized standards and the education of leaders. In some respects, decentralized authority had such a strong basis in common education that after the latter had time to take root, there was little risk of making a serious mistake in exercising such authority. By the second year of his tenure as commander of Tactical Air Command (TAC), we had schools for wing commanders, for deputy commanders for operations, for deputy commanders for maintenance, for combat support group commanders, and others—personally taught by General Creech and his principal deputies. Those who failed to benefit from the education did not last long in senior positions.

The book's description of the major airpower issues that shaped the general's thinking and the development of tactical airpower, although less authoritative, is still valuable and of interest to readers. It is not surprising that the author had somewhat more difficulty with sources for this treatment, which are often decades-old memories of a period of intensely conflicting perceptions and rapid change. Specifically, the airpower-history approach overplays the significance of the strategic-versus-tactical argument on the outcome for Air Force combat capabilities and performance. It also spends more time on the Defense Reform Movement (DRM) than is warranted by its influence on outcomes.

As to the strategic-tactical matter, senior airpower leaders of the 1980s had decided that it was not worth that much attention. Fighter aircraft had been attacking "strategic" targets, and bomber aircraft had focused conventional attacks on "tactical" targets for decades, so it was not an equipment

issue. As to the doctrinal aspect, there was growing awareness that the focus in the battlespace needed to be on the joint campaign with priorities set by the joint commander—not on an air or ground campaign—tactical or strategic.

Regarding the DRM, I was TAC's deputy chief of staff for operations, commander of Ninth Air Force, Air Force component commander for the Rapid Deployment Joint Task Force, deputy chief of staff for programs and resources, and vice-chief of staff during the period covered in this book. Although the DRM succeeded in extending the workday of people who had better things to do, the Air Force was never in danger of being overrun by this movement. Col John Boyd, often cited as a leader of the DRM, was more than a little conflicted by some of the issues. As the principal architect of the requirements for the F-15, he helped describe the need for range, weapons payload, and sensors for this aircraft. He also drove the acceleration and maneuvering demands on the design, which met requirements that grew out of his pioneering energy-maneuverability analyses. Later, he expanded the fog-of-war argument into a thesis that only simple systems will work well on the battlefield. The Air Force made a forceful case that complexity in the battlespace comes from the need to integrate large numbers of low-capability entities rather than from the mechanical complexity of those entities—a clear lesson from the strategic campaign/interdiction effort in Vietnam. Air Force leadership, which stayed solidly on course in the face of the DRM, carried the day in virtually every case.

The conclusions in chapter seven place both the issues and General Creech's contributions in perspective. *Creech Blue* is well worth the time and attention that readers must invest to absorb its relevance to today's events and those of the future.

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Stray Voltage: War in the Information Age by Wayne Michael Hall. Naval Institute Press (http://www.usni.org/press/press.html), USNI Operations Center, 2062 Generals Highway, Annapolis, Maryland 21401-6780, 2003, 272 pages, $36.95 (hardcover).

This book, written by a retired brigadier general with 30 years' experience in Army intelligence, points out that asymmetrical warfare is really about gathering knowledge and applying information in such a way that one defeats an unconventional enemy. Although the text has something of a homeland-defense flavor, it discusses at length the requirements for winning in the arena of information operations. The twenty-first century has changed the face of warfare. Because no current enemy of the United States is willing to confront it in terms of conventional warfare, we must prepare to fight on the battleground of Ethernet fibers that link the modern world. Hall believes that information may have the greatest leverage in warfare in this century.

Both homeland-defense and military commanders confront the challenge of enabling decision makers to act on knowledge—by its nature a transient commodity. Analysts, key to any successful information operation but in short supply, make mistakes by mirror imaging rather than studying underlying cultural events. America will also have to do a better job of preparing itself for attacks by opponents who are more capable and better equipped than the ones it now faces. Furthermore, we must come to understand the constantly shifting realm created by technological change, just as we must become familiar with two overlapping environments: national security coupled with asymmetrical warfare and a global competitive environment populated by transitory friends or allies. The latter, currently participants on an economic battlefield, will soon move to access water and power resources.

Hall lays out the task of understanding what information operations constitute and how asymmetrical foes will manipulate data. If US command and control personnel begin to doubt the validity of information contained within the system, asymmetrical foes will have won, since this country and its forces will find themselves paralyzed. Today, the have-nots of the world have access to the same information as we do and can manipulate that information to their own ends. Clearly, we need to develop new forms of analysis and data synthesis. To function in this environment, cyberstrategists and other information-operations specialists must find people who have in-depth knowledge of an opponent's thinking, perceptions, decision making, feedback mechanisms, and information-support apparatus. Furthermore, these predictive analysts must not mirror-image our opponents but think and act as they do, skills that require much training and that are currently in short supply.

Knowledge weapons include software or other implements of warfare that deny the opponent data. The new challenge will take the form of manipulating data and information, coupled with knowledge of what the opponent may possess. Disrupting the flow of information is a central theme of

information operations. Hall points out that we lack strategy and doctrine for such operations, especially those dealing with new and emerging asymmetrical threats.

The book's chapter on knowledge management, which covers all of the current "computerspeak," shows how we need to integrate each part of the process into the bigger information-operations picture. Search engines, retrieval of data, and data mining are all presented in such a way that the nonpractitioner can understand and grasp the importance of knowledge-based warfare. Data mining, networks, and database management are vital parts of this type of war, in which security is paramount and in which defensive and offensive information operations go hand in hand. Hall argues that the US military needs a new cadre of cyberwarriors—people comfortable with technology, capable of creating man-machine interfaces currently found only in research institutions, and accustomed to operating differently than the mainstream military.

The military community needs to read *Stray Voltage*. This is especially true of personnel outside information operations, who must understand the types of changes in doctrine and strategy that we will have to undertake. Moreover, members of the intelligence, surveillance, and reconnaissance community should study Hall's book closely since its subject—a battleground we must conquer to defeat the asymmetrical foes we face—may well be their bread and butter of the future. Envy, religious fanaticism, and economic inequity motivate America's opponents, who will adapt quickly and manipulate information flows. We must be ready to respond.

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Just War against Terror: The Burden of American Power in a Violent World by Jean Bethke Elshtain. Basic Books (http://www.basicbooks.com), 387 Park Avenue South, New York, New York 10016-8810, 2003, 256 pages, $23.00 (hardcover), $14.00 (softcover).

In this book, Jean Elshtain, Laura Spelman Rockefeller Professor of Social and Political Ethics at the University of Chicago, makes a case for the application of traditional just-war thinking to the global war on terrorism, steering between pacifist and realpolitik approaches. In doing so, she seeks to weave a number of argumentative threads into one fabric: (1) the main one (that just-war thinking can and should be applied to the current war), (2) a retrieval of some classical and recent just-war thinking, (3) a rejoinder to critics of the war on terror, and (4) a kind of exposé of some of the intellectually irresponsible behavior of some of these same critics (fellow academics and fellow theologians). As interesting as each of these threads is, the result of her weaving sometimes becomes confusing; occasionally the reader loses sight of one of them, only to see it reappear several chapters later. For example, with regard to just-war theory's legitimate-authority criterion, on page 61 she seems to maintain that a sovereign state such as the United States suffices without addressing the concerns of multilateralists or United Nations (UN) enthusiasts; on page 92 she does appeal to the UN charter's authorization of state self-defense. Not until the last two chapters (pp. 150–73) do we learn her deepest reasons for thinking that the United States has sufficient authority to act on its own.

Elshtain's main argument is fairly straightforward:

1. The first task of government is to ensure basic order—stability and security—for its people.
2. Terrorist organizations such as al-Qaeda constitute a grave and implacable threat to this order.
3. Since peaceful negotiation is neither desirable nor even possible, the government must consider the use of force to maintain order and protect its people.
4. The current situation meets traditional *jus ad bellum* criteria.
5. Fighting this war in accordance with *jus in bello* criteria is feasible.
6. Therefore, recourse to war, carried out with discrimination and proportionality, is morally justified.

This argument is plausible, and some of the premises are well supported. Indeed, one of the strong points of the book is her portrayal of the implacability of the terrorists (often by citing their own words and deeds) and her argument that they hate what America *is* even more than what it *does*; thus, negotiation and appeasement are not real options. Now, appeasement and what she calls "pseudo-pacifism" are not temptations of the average military reader. From this standpoint, it is regrettable that she did not devote equal time to debunking so-called political realism (the constant temptation for the "military mind"). But some of Elshtain's points do bear on the issue: especially the one that

sheer, relentless interdiction of the armed terrorist enemy—without minimization of noncombatant casualties and damage to the civic infrastructure, and without subsequent civic aid (she speaks of a new sort of Marshall Plan)—will result only in havens and breeding grounds for more terrorists. Here, as is so often the case, moral considerations are also prudential.

In the third and fourth chapters, Elshtain makes a fairly persuasive case that America's recourse to and conduct of the war in Afghanistan were substantially just. However, it seems to me that she ducks some of the tougher issues, such as the legitimacy of preemption or prevention, unilateralism, and the Bush Doctrine—some of the new or newly urgent topics that contemporary just-war theory must consider. Elshtain goes on in subsequent chapters to demolish a number of bad antiwar arguments (these are not straw men; rather, they are arguments that people have actually made), but there are also better, subtler arguments out there. The latter include arguments criticizing the legitimacy of preemption or especially prevention, contending that it is not feasible to wage war (properly speaking) against nongovernmental organizations like al-Qaeda, or asserting the lack of clear criteria of success in such a broad undertaking as a war on terror. Elshtain does not do enough to consider and refute these.

I will pass over some features of *Just War against Terror* that some readers would find interesting—the exposé of media and academics (the "herd of independent minds") behaving badly, the review of recent Christian thought (good and bad) on war and peace—because I want to focus on the bombshell she drops at the end of the book: the claim that the time has come for an American Empire. Like other contemporary advocates of American imperialism, Elshtain does not call for the use of American power for conquest or world domination, but to enforce international law; to protect the weak; to enable nation building; and to interdict, punish, or deter wrongdoing—call this more benevolent program *just-order imperialism.*

Her argument for this position is that nation-states are still the main players in world politics. The UN has failed to maintain order, and without the basic order that only governments can establish, nongovernmental organizations are ineffective. Among nation-states, only the United States has the power and constitutional commitment to justice to play the role of enforcer. In a nutshell, international order is necessary and can be secured only by America's practicing just-order imperialism: therefore it should. Some premises implied here are not explicitly stated or defended. First, does it follow from the claims that, if some task is important and only one entity can accomplish it, that entity has the right to do it (without any further authorization by other concerned parties)? Second, does it follow that that entity, willy-nilly, has the obligation to do it? Is this a new form of noblesse oblige? Is just-order imperialism a new, liberal-democratic form of holy war?

Although I have been critical, I can still recommend *Just War against Terror* as worthwhile. Despite some organizational flaws, its prose is very clear and readable. It contains a valuable retrieval of just-war thinking and does a service by reintroducing some classical distinctions (e.g., between intentional and merely foreseen killings of noncombatants) and debunking a number of bad, yet influential, pseudo-pacifist arguments. Further, it builds the backbone of a just-war theoretical argument that the war on terrorism can and should be conducted justly. Even if she is wrong in some particulars, this is a point worth noting for both pacifists and realpolitikers.

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Violent Peace: Militarized Interstate Bargaining in Latin America by David R. Mares. Columbia University Press (http://www.columbia.edu/cu/cup), 61 W. 62nd Street, New York, New York 10023, February 2001, 398 pages, $70.00 (hardcover), $23.00 (softcover).

During the mid-twentieth century, the United States developed national strategies and policies to deal specifically with the Cold War adversaries of the time. Within the world's democratic community, the United States was best suited to combat *that specific threat.* The collapse of the Soviet Union in the 1990s opened the eyes of many policy makers and military strategists to the fact that the threat had evolved and a new course of action was needed. Particularly since the attacks of 11 September 2001, there is an incredible emphasis on developing strategies to combat substate actors. Volumes of national policy, military doctrine, and academic literature regarding this new threat inundate the media. Nation-states, however, still form the significant part of the global community, and the complexity of interstate affairs still offers the potential for war. Will the United States be unprepared to counter this threat if it maintains a myopic focus on the substate actor?

In *Violent Peace*, David R. Mares offers a prescriptive model to assess the potential for interstate conflicts and determine policy measures to control them. Using a framework that appears largely founded on Alexander L. George's models of deterrence and coercive diplomacy, Mares provides a well-researched and compelling argument on how interstate disputes may become militarized and how the scale of the conflict can evolve. He uses a cost-benefit framework for his model that, simply put, says force may be used when the costs of using force are less than or equal to the costs acceptable to the leader's constituency. The author utilizes the Latin American regional-security arena to support his hypothesis.

Mares hypothesizes that the cost of using force is the sum of the political-military strategy, the strategic balance between the players, and the characteristic of the force employed. The costs that members of a leader's constituency will accept are also reduced by the lack of accountability they hold over that leader, based on their governmental system. This model also states that policy makers consider employing force only to meet the interests of their constituency. Mares lists five political-military strategies for his model: keep the issue alive, affect bilateral negotiations, defend the status quo, attract the support of third parties, and impose a solution (p. 17).

In chapter 2, Mares provides a historical framework for the development of the Latin American regional-security environment. Although the account is somewhat dry, this chapter is very important to understanding the foundations of Latin American security issues, international influences, and conflict history. Chapters 3 through 5 provide some of the most interesting and compelling arguments in the author's work. Here he offers both qualitative and quantitative analyses of hegemonic management, democratic peace, and theories on the distribution of power for explaining the presence or absence of interstate conflicts. Mares even admits that the quantitative analysis is somewhat weak due to empirical irregularities in the militarized interstate dispute records. Nonetheless, his use of the data, combined with detailed qualitative analysis, creates a solid argument that these widely accepted conventions do not necessarily correlate with the employment of military measures in interstate conflict.

In the remaining two chapters, Mares puts his model against two case studies from South America: the Beagle Channel dispute between Argentina and Chile in 1978 (as well as a brief comparison of that dispute with the Argentine/British conflict over the Falkland Islands in 1982) and the recurrent border dispute between Peru and Ecuador between 1950 and 1995. These case studies effectively illustrate the complex interaction of domestic factors with military capabilities to determine the level of military escalation in the resolution of interstate conflict. Except for the distraction of an obviously misscaled graph (p. 137), Mares presents his cases articulately and with excellent detail in a process-trace evaluation.

Mares concludes that "the militarized bargaining model ultimately suggests that we may be best off with a combination of policies that affect power and values" (p. 208). Following a single-track policy prescription based on widely accepted yet flawed theories of hegemony, democratic peace, and balance-of-power influences on the development of militarized conflict may create more increased tensions than intended.

Although this model is currently tested only against the Latin American regional-security environment, it may be applicable to other global areas of concern. The model allows for flexible interpretation of the different strategic conceptualizations of various leaders and their constituents' interests. Areas with strong secular influences, such as East Asia, the Middle East, and Africa, still manifest the potential for escalating interstate conflict that could once again overshadow the substate threats currently captivating world attention.

Strategic decision makers, operational military planners, and academic professionals would all benefit from reading *Violent Peace*. It is probably the most current and applicable work dealing with conflict between nation-states since the events of 9/11. At a minimum, Mares's model will help maintain awareness of the potential for interstate conflict and the development of a framework on how it is considered in military strategy.

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Ernie Pyle's War: America's Eyewitness to World War II by James Tobin. Free Press (http://www.simonsays.com), 1230 Avenue of the Americas, New York, New York 10020, 1997, 320 pages, $25.00 (hardcover), $15.25 (softcover).

Millions of Americans found themselves riveted to television sets as elements of the US Army and Marine Corps ventured into harm's way at the onset of Operation Iraqi Freedom. Helmeted re-

porters sent home live reports from behind dusty tanks, thanks not only to new technology but also to the US military's renewed commitment to "embedding" reporters. As the war raged, we heard again and again—and still do today—tales of GI Joes still fighting the good fight, longing for home, and complaining about the food but never challenging the authorities who sent them there. This reporting was a far cry from that done by "hotel warriors" during the first Gulf War.

Journalists have written about the common soldier for a long time, but the formula story of the American GI Joe—attempted with varying degrees of success by today's reporters—originated with the legendary Ernie Pyle. *Ernie Pyle's War*, James Tobin's insightful biography, gives us a well-written view into how a talented travel reporter became the paradigm of war correspondents. More importantly for students of military history, culture, and current events, the book reveals how Pyle was as much a creation of his times as of his talents.

Tobin treats his readers to Pyle's homey style extensively throughout the well-researched book, sometimes to prove a point and other times just to give them a look at the little man from Indiana whom Americans came to love in the 1940s. Pyle's popularity derived from his simple though distinctive writing and his concentration on personal details that gave parents, siblings, and sweethearts back on the home front an almost rose-colored view of the war. Tobin includes a sampler of Pyle's columns in an appendix that readers should turn to first.

We find that Pyle's reporting style differed from that of most World War II correspondents, whose dispatches from Allied headquarters bear strong resemblance to those of the Pentagon press corps today. He was not the only reporter to live with the troops, exposing himself to the same dangers and living with their deprivations and fears. But Pyle could make battle-hardened troops comfortable, listen to them talk, join in their activities, and then weave yarns about them, casting these citizen-soldiers as simple heroes in an epic struggle between good and evil. He developed his style while traveling the small towns of America, writing about common people and homelike situations. His travel pieces and war dispatches gave readers a Norman Rockwell view of America as it climbed out of the Great Depression; they held out hope to many Americans who just wanted their boys to come home safely.

Pyle's popularity with high-ranking officers helped him get in on major operations, including the invasion of Sicily. Not free to roam the battlefield, however, he stayed in constant contact with military press officers. He was also subject to the same military field censorship that prevented reporters from discussing most of the negative aspects of an industrialized war that cost millions of Allied and civilian lives. Pyle did write of death and vicious injury, but always in the context of an acceptable sacrifice—as part of a larger, righteous campaign in which good would inevitably prevail.

On a personal level, though, the carnage took a heavy toll on Pyle's psyche. Tobin uses the journalist's letters to his beloved wife, Jerry, and to his editors and friends to shed light on Pyle's fears that he himself suffered from "battle fatigue," like so many of the bleary-eyed GIs he lived among. Recounting Pyle's departure from Europe for the last time, the author notes that "after the constant drumbeat of death in Normandy, he told a reporter later, 'I damn near had a war neurosis. . . . About two weeks more and I'd have been in a hospital. . . . I'd reached a point where I felt that no ideal was worth the death of one more man.' " Although Pyle wrote in his columns of his personal fatigue (after all, he was in his early 40s and had no military training before setting off to war), his readers saw him as a link to family members serving overseas. He received letters by the thousands asking him to look up a relative serving somewhere in Europe and, later, in the Pacific.

Modern wartime audiences—and military public-affairs officers as well—long for Ernie Pyle's positive perspective on war. War reporters are not members of the military team, as they were in Pyle's time (nor should they be). Today's reporters struggle to replicate his style, access to troops, and commercial success. However, both America and American journalism have become so cynical and have changed so much since the 1940s that we may never see another journalist like Ernie Pyle.

Tobin's biography, the product of extensive research, is an easy read—especially for students of World War II. But one need not have intimate knowledge of the war's intricacies to be able to understand this very human reporter who covered mankind's greatest inhumanity. War veterans will find that Pyle's reporting—and his conveyance of personal impressions of the war to friends and family—rings true even today. The simple fact then and now is that no one can prepare for the experiences of war, either on the front lines or on the home front.

Not since Ernie Pyle died, late in the war, cut down by a Japanese machine gunner, has any reporter duplicated his personal connection with such

a vast wartime audience. Students of World War II and of journalism during modern war should take note of his unique talent and unique moment in history. Ernie Pyle has become the standard for the American war correspondent; it may very well be that no reporter will ever reach the mark he set.

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Fighting with the Screaming Eagles: With the 101st Airborne from Normandy to Bastogne by Robert M. Bowen, edited by Christopher J. Anderson. Stackpole Books (http://www.stackpolebooks.com), 5067 Ritter Road, Mechanicsburg, Pennsylvania 17055-6921, 2001, 240 pages, $29.95 (hardcover), $19.95 (softcover).

Robert Bowen may have never finished high school, as he mentions early in this book, but *Fighting with the Screaming Eagles* is one of the best-written pieces about World War II to come out in years. Although not entirely free of historical error or narrative shortcomings, once this memoir gets going, it becomes difficult to put down. Aided by scores of letters he wrote to his wife, Bowen's descriptions of places, names, and battles come to life as his articulate prose makes this book a valuable contribution to our World War II literature.

The author recounts his experiences in one of the more obscure branches of the US Army. An infantryman by training, Bowen sees the Army convert his battalion into glider infantry early in the war to augment paratrooper units in the 101st Airborne Division, where he shares the dangers with paratroopers but without the extra pay, distinctive jump boots, or insignia. The literature about World War II includes numerous recollections of paratroopers, but to my knowledge, this is the first from a glider troop. For that reason alone, *Fighting with the Screaming Eagles* is worth reading.

The book starts slowly, and Bowen's narrative seems a bit pedantic for the first few chapters as he slogs through the typical stories of induction, training, and transfer to the airborne. However, the closer the tale gets to combat, the better it becomes. Once he enters battle on D-day (interestingly, his battalion lands in Normandy via US Navy landing craft instead of gliders due to a shortage of tug aircraft), the narrative starts afresh with accounts of a soldier's life in France that are both highly lucid and thoroughly engrossing. Although each chapter is unique, a common theme throughout the ones dealing with combat addresses how the carnage and brutality of war disturb Bowen. Indeed, he comments continually on the wounded, the dead, and the apparent randomness of death, the grim reaper who harvests both the pious and the impious, the competent and the incompetent, family men and bachelors, as well as "patriotic" volunteers and draftees. For some, combat strengthened their religious convictions, but its inhumanity seems to have pushed Bowen away from spirituality.

Interestingly, the ever-present violence hones his skills as a soldier. A natural leader, blessed with courage, common sense, and the willingness to use both, Bowen instinctively takes charge on his second day in combat and helps capture several German strongpoints. Later, in Holland, he is promoted to squad leader and then platoon commander over more senior NCOs because he knows how to deploy his men to counter enemy attacks and how to direct and lead attacks of his own. Stalwart in combat, Bowen holds an untenable position outside Bastogne until he is wounded and taken prisoner.

Unfortunately, once the war ends, so does the gripping narrative—almost as if he recites his story as part of an exorcism or an act of catharsis. Bowen then breezes through repatriation and recovery from his wounds, both physical and mental, leaving the reader wanting to know more. How did he struggle with and overcome the chronic pain caused by his 60 percent disability? How did he (or did he) recover from the posttraumatic stress he alludes to?

Perhaps these minor criticisms, especially those that reflect our desire to know more, are the sign of a good memoir. Weak at both the beginning and at the end, *Fighting with the Screaming Eagles* nevertheless tells a fascinating story in between. The book should interest World War II enthusiasts as well as readers looking for examples of strong leadership.

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Two Minutes over Baghdad, 2d ed., revised and updated, by Amos Perlmutter, Michael Handel, and Uri Bar-Joseph. Frank Cass (http://www.frankcass.com), Taylor & Francis Group, 11 New Fetter Lane, London, EC4P 4EE, United Kingdom, 2003, 184 pages, $34.95.

In 1981 Ronald Reagan became president, Iran agreed to release American prisoners after confining them illegally for 14 months, and for some reason *Time Magazine* declared Hall and Oats the band of the decade. But that year also saw controversy in the Middle East after an Israeli preemptive strike

on the Iraqi nuclear plant at Osirak. This aerial attack marked a pivotal moment in the history of that region, and its effects remain deeply woven into contemporary global politics. If not for this intercession by the Israelis, Iraq would have become a nuclear power before it attacked Kuwait in 1990, and some individuals believe that Saddam Hussein might have launched a nuclear strike against Iran or Israel before the twentieth century closed. It's difficult to imagine the outcomes of the Iran-Iraq War or of Operations Desert Storm, Southern and Northern Watch, and Iraqi Freedom if Saddam had acquired nuclear weapons in the interim.

Two Minutes over Baghdad tells the story of the raid on the Osirak reactor from tactical and strategic perspectives. Although authors Perlmutter, Handel, and Bar-Joseph discuss nitty-gritty tactics, they spend most of their analysis exploring important political and military questions. The book also describes the doctrine of preemption and Israel's security problem—issues that sound far too familiar today. According to the authors, "All these factors make the Osirak raid one of the most important, and formative, events of the twentieth century's second half, with a legacy extending well into the twenty-first century as well. Clearly, the attack on the Osirak reactor may well be the most important single bombing raid in history, perhaps save only the far bloodier atomic bombing of Hiroshima in 1945" (p. xi). My sentiments exactly.

This new edition merits consideration due to its excellent historical treatment of proliferation and preemption. The authors have significantly revamped the first edition, which appeared in 1982, adding discussions on preemption doctrine and relating the attack on the reactor to contemporary politics after 9/11. They also include details gleaned from formerly classified Israeli documents written in Hebrew, which many researchers normally overlook.

US Airmen, strategists, and military decision makers have two good reasons to read *Two Minutes over Baghdad*. First, the decision-making process that led to this event, as well as the political and strategic outcomes, are instructive. Readers will see that, although the analogy might seem legitimate at first blush, our security dilemma today differs from Israel's in 1981. Thus, our calculus—the risk/benefit calculation that yields policy—must be different. Indeed, it is dangerous to use any historical analogy without closely considering the differences in assumptions and in the strategic environment.

Second, preemption and nuclear proliferation are the most important political debates of our age. Our security-strategy documents now make preemption a policy option. This book provides insight into how a democracy can choose a preemptive strategy, the intelligence necessary to execute it, and the information campaign that must accompany the strategy. Some of the faces were different, but Israel was battling the same nexus of terrorists, despots, and weapons of mass destruction (or mass effects) that we face today. (Some faces were the same—Saddam and Jacques Chirac, president of France, for instance. Moreover, the roles of the French, Italians, and Russians were eerily similar and well documented.)

The authors offer an exceptional discussion of *casus belli* (justification for war). Was an Arab bomb, Saddam's stated objective, a legitimate *casus belli* for Israel? The usually quiet Israeli chief of staff painted a compelling picture of the situation: "If the Iraqis get the bomb, it will be as though all the countries in this region are hanging from a light sewing thread, high above. Any attempt to use the nuclear bomb will lead immediately to the tearing of that thread and the crashing of the states" (p. 59). The book goes on to describe internal debates and opposing viewpoints, as well as political and military results of the attack.

The authors note that, at the time, the US media failed to recognize Israel's security dilemma, which we now confront: "Nuclear weapons in the hands of fanatic dictators and unscrupulous terrorists committed to the annihilation of Israel was a *casus belli*. . . . There was no way Israel . . . would allow itself to be at the mercy of ultimate weapons owned by the most degenerate regime in the Middle East" (p. 152, emphasis in original). In fact, America formally condemned the attack on 8 June 1981, calling it "unprecedented" (p. 154). However, Senator Alfonse D'Amato (R-NY) differed with the administration, presciently remarking that "the bombing was perfectly proper, legitimate and it was a preemptive strike that should have been expected" (p. 155). Senator Daniel Moynihan (D-NY) agreed: "The Israelis did what they had to do. Anything that takes out a nuclear installation I am in favor of" (p. 155). Portions of the debate over preemption in 1981 read just like the accounts of that subject in current newspapers.

As for the bombing mission itself, the authors offer up details of the tactical decision making and the planning process, in addition to providing a quick overview of the mission as flown. They also include a good synopsis of the history of the Israeli air force. Interestingly, the Israelis' central tactical theme mirrors what we teach daily in squadrons

across the US Air Force and at the USAF Weapons School: "*KISS—Keep It Simple, Stupid*" (p. 87, emphasis in original). Yet, despite the pivotal nature of the attack on the reactor, it was only one event in an 80-year conflict (pp. 75–86). For that reason, readers should consider this book political analysis as well as history. Taken as a whole, it is really a strategic case study, not a tactical analysis of one air strike.

Regardless of the musical tastes of the time, I'm glad I returned to 1981 while reading *Two Minutes over Baghdad.* Policy makers and professionals who execute that policy through the military instrument of power should become very familiar with this case study. It stands as one of the few instances of preemption that achieved its desired effects. On the one hand, any country that chooses a strategy of preemption must remember that—by definition—such action is *always too early* and that the political costs will be high. On the other, one second late is *always too late*, and the cost can be catastrophic. The ultimate calculation must weigh the costs of action against the costs of inaction. Political foes will judge preemption harshly, regardless of the evidence, because no one can conclusively prove an event prevented—or a tragedy thwarted.

Col Merrick E. Krause, USAF
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Improving the Practice of National Security Strategy: A New Approach for the Post–Cold War World by Clark A. Murdock, principal author. Center for Strategic and International Studies (http://www.csis.org), 1800 K Street, NW, Washington, DC 20006, 2004, 196 pages, $21.95.

Like other think tanks in the Washington, DC, area, the Center for Strategic and International Studies (CSIS) produces studies and papers of interest to policy makers. Clark Murdock—senior fellow in the CSIS International Security Program, who previously worked in policy planning in the Office of the Undersecretary of Defense for Policy and as a policy advisor to the chairman of the House Armed Services Committee—has assembled six contributors from academe, the military, and government to discuss aspects of improving the formulation of national security strategy (NSS). Part one covers methods of analysis, while part two includes case studies of Somalia, Kosovo, and other conflicts that tested America's policy makers. (Dr. Andrew Marshall, director of net assessment at the Office of the Secretary of Defense, who has spent a lifetime pushing the envelope of strategic thinking within the Department of Defense, arranged for the funding of this study.)

The book opens with a historical look at how a formal statement of strategy has become such a commonly accepted practice that Congress mandates the publication of an NSS yearly and a review of defense strategy at the beginning of each administration. The 9/11 Commission reaffirms this practice, writing glowingly of the Goldwater-Nichols Department of Defense Reorganization Act, which codified this requirement as well as others. *Improving the Practice of National Security Strategy* then delves into the basics of how an NSS that orchestrates elements of national power (diplomatic, economic, and military) supports the national interest.

Murdock argues that hierarchical strategic thinking—for example, the "strategies-to-task" model pioneered by Lt Gen Glenn Kent, USAF, retired—dominates the US military and that at war colleges, the ends, ways, and means approach to formulating strategy has become a mantra. Although these tools prove useful for debate in classrooms, the formulation of an NSS is never quite that simple—witness Andrew Marshall's account of the Eisenhower administration's Project Solarium, a superclassified endeavor designed to prioritize the nation's grand strategies, and the fact that the Clinton administration had no fewer than three draft documents of the NSS in wide circulation.

A section on the do's and don'ts of exercising US power provides an excellent look into how strategies often emerge from the unfolding of events; it also offers valuable tips on the difficulties of converting words into deeds and decisions. The book culminates with a checklist that focuses on seven basic questions a policy maker must answer before embarking on a new endeavor: (1) What is the United States trying to achieve in this particular instance? (2) Will the means under consideration ensure success? (3) Are the costs of achieving the desired effects worth the benefits? (4) Are there satisfactory answers for the three what-if questions? (5) What if we do nothing? (6) How will the stakes change if the United States becomes involved? (7) What if something unexpected happens? The study then applies these inherently subjective questions, designed to elicit different responses from policy makers, to 11 case studies to illustrate their use in analyzing a conflict.

Improving the Practice of National Security Strategy is an excellent book for individuals who wish to expand upon what they learned in a staff-college course on national security decision making. It can also serve as an excellent refresher for officers with

orders to the Joint Staff or the Office of the Secretary of Defense.

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Spaceflight Revolution by David Ashford. Imperial College Press (http://www.icpress.co.uk), 57 Shelton Street, Covent Garden, London WC2H 9HE, United Kingdom, 2002, 204 pages, $56.00 (hardcover), $25.00 (softcover).

Although three years old, *Spaceflight Revolution* is actually quite timely. This review comes on the heels of the historic SpaceShipOne flights into space and the successful conclusion of NASA's X-43 scramjet experiments, some of which author David Ashford addresses in his book. Despite the wording of the title, his ideas are not revolutionary but evolutionary. They follow a time-honored sequence of events that other high-dollar, high-technology programs have already trodden—migrating from management under a government agency into the private sector as soon as the program becomes commercially viable.

Still, *Spaceflight Revolution* is visionary. Ashford goes to great lengths to persuade the reader that space will soon—in 10–20 years—become commercially viable for tourism and extensive research and, soon thereafter, for commercial applications (some not yet thought of). Imagine a space plane that transports passengers to an orbiting hotel where they spend two or three nights marveling at the earth below and the wonders of zero gravity (or low gravity). Ashford does a good job of walking the reader through the mechanics of what it will take to realize this vision.

In his zeal to convince us of this outcome, however, he appears to take some statistical and analytical liberties. Several times Ashford estimates production or development costs of a space-plane project with rounded up or grossly estimated numbers. For example, figure 12.1, "Development Cost Trends," uses a scatter plot of various programs on a logarithmic scale. The author combines multiple data types in an attempt to illustrate the point he wants to make—that development costs of a modern space plane fall well within a country's or company's affordable realm. However, his chart is at best confusing; at worst it is statistically inaccurate. Several other examples similar to this one tend to make readers question the credibility of the book's very extensive analysis. Additionally, Ashford seems to make too much of the X-15. Granted, it was the only fully reusable "space plane" for several decades (even the space shuttle cannot make that claim), but readers get the message after the first few pages.

Nevertheless, this book appeals to my desire that mankind not only reach for the stars but also dwell among them. Given time, I too would seriously contemplate a brief trip to space—perhaps even to a space hotel or stopover (not unlike a visit to the top of the Gateway Arch in Saint Louis or the Washington Monument)—just to relish our fragile home from a new angle. *Spaceflight Revolution* is a well-thought-out book that drives toward a logical conclusion. If the reader takes the statistics and some of the other analysis with a grain of salt, Ashford's argument becomes very convincing.

Maj Paul G. Niesen, USAF
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Luftwaffe: The Allied Intelligence Files by Christopher Staerck and Paul Sinnott. Brassey's (http://www.brasseysinc.com/Books/Features.aspx), 22841 Quicksilver Drive, Dulles, Virginia 20166, 2002, 392 pages, $31.96 (hardcover).

Authors Christopher Staerck and Paul Sinnott take a straightforward approach in their discussion of the prewar roles of British Air Intelligence, the Secret Intelligence Service, and the Air Ministry regarding Germany's Luftwaffe. They also explore American intelligence as well as the tactical intelligence resulting from daylight bombing by the US Army Air Forces and night bombing by the Royal Air Force. Knowledgeable military historians, the authors have produced a fine historical document. They include both background information and then detailed data on German fighters, bombers, reconnaissance aircraft, seaplanes, and transports, profiling 47 different aircraft types in all. Each analysis addresses the aircraft's war record, performance characteristics, and intelligence history—the latter reflecting the amount of actual information we had on German aircraft during the war, some of it just now declassified from the British Public Records Office. Augmenting the text are excellent photographs, line drawings, and black-and-white artwork of many of the aircraft. Although a bit pricey, *Luftwaffe: The Allied Intelligence Files* is a very good resource book that would make a great addition to any Luftwaffe historian's collection.

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Mission Debrief

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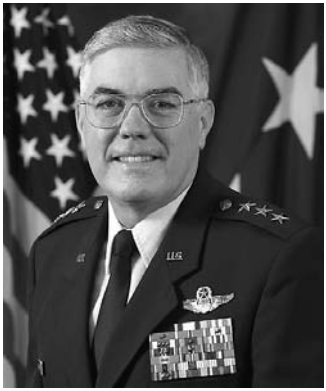
Gen Hal M. Hornburg, USAF, retired (BBA, Texas A&M University; MS, University of Utah), served as commander, Air Combat Command, Langley AFB, Virginia, and air component commander for US Joint Forces Command and US Northern Command until his retirement in January 2005. The general commanded at all levels—flight, squadron, wing, numbered air force, and major command. He also commanded a composite fighter wing during Operation Desert Storm and the first Air Force composite wing during the service's reorganization in 1991–92. General Hornburg directed air operations over Bosnia, commanded the Joint Warfighting Center, served on the Joint Staff, and directed operations at Headquarters US Air Force. He also served as Tactical Air Command's F-15 demonstration pilot for the East Coast, as Air Force liaison officer to the US Senate, and as chief of the Air Force Colonels' Group. Prior to assuming his final position, he commanded Air Education and Training Command. A command pilot with more than 4,400 flight hours, General Hornburg is a graduate of Squadron Officer School, Air Command and Staff College, National War College, Seminar 21 (Foreign Political and International Relations) at the Massachusetts Institute of Technology, and the National and International Security Program at Harvard University.



Lt Gen Michael W. Wooley (BBA, Northeast Louisiana State University; MS, Webster University) is commander, Air Force Special Operations Command (AFSOC), Hurlburt Field, Florida. He is responsible for a major command of the US Air Force and the Air Force component of US Special Operations Command and leads approximately 20,000 active duty, Reserve, Air National Guard, and civilian professionals. He has served as commander of Third Air Force, RAF Mildenhall, England, the 375th and 86th Airlift Wings, the Tanker Airlift Control Center, and the 17th Military Airlift Squadron. He also served as vice-commander of Air Force Special Operations Command and chief of Strategy and Policy, US Forces Korea. General Wooley received his commission from Officer Training School. A command pilot with more than 4,000 flying hours, he is a distinguished graduate of undergraduate pilot training at Vance AFB, Oklahoma. General Wooley has piloted 10 aircraft types, to include fixed wing, helicopters, and VTOL, the latter the V-22 scheduled for future use in AFSOC. He completed the Executive Program for General Officers of the Russian Federation and the United States and the Black Sea Security Program at the John F. Kennedy School of Government, Harvard University. He is a graduate of Squadron Officer School, Air Command and Staff College, Air War College, and the Industrial College of the Armed Forces.

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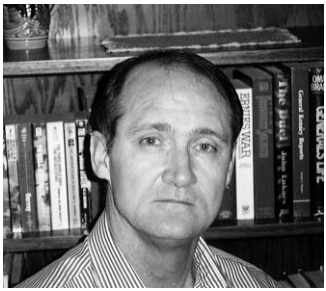

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