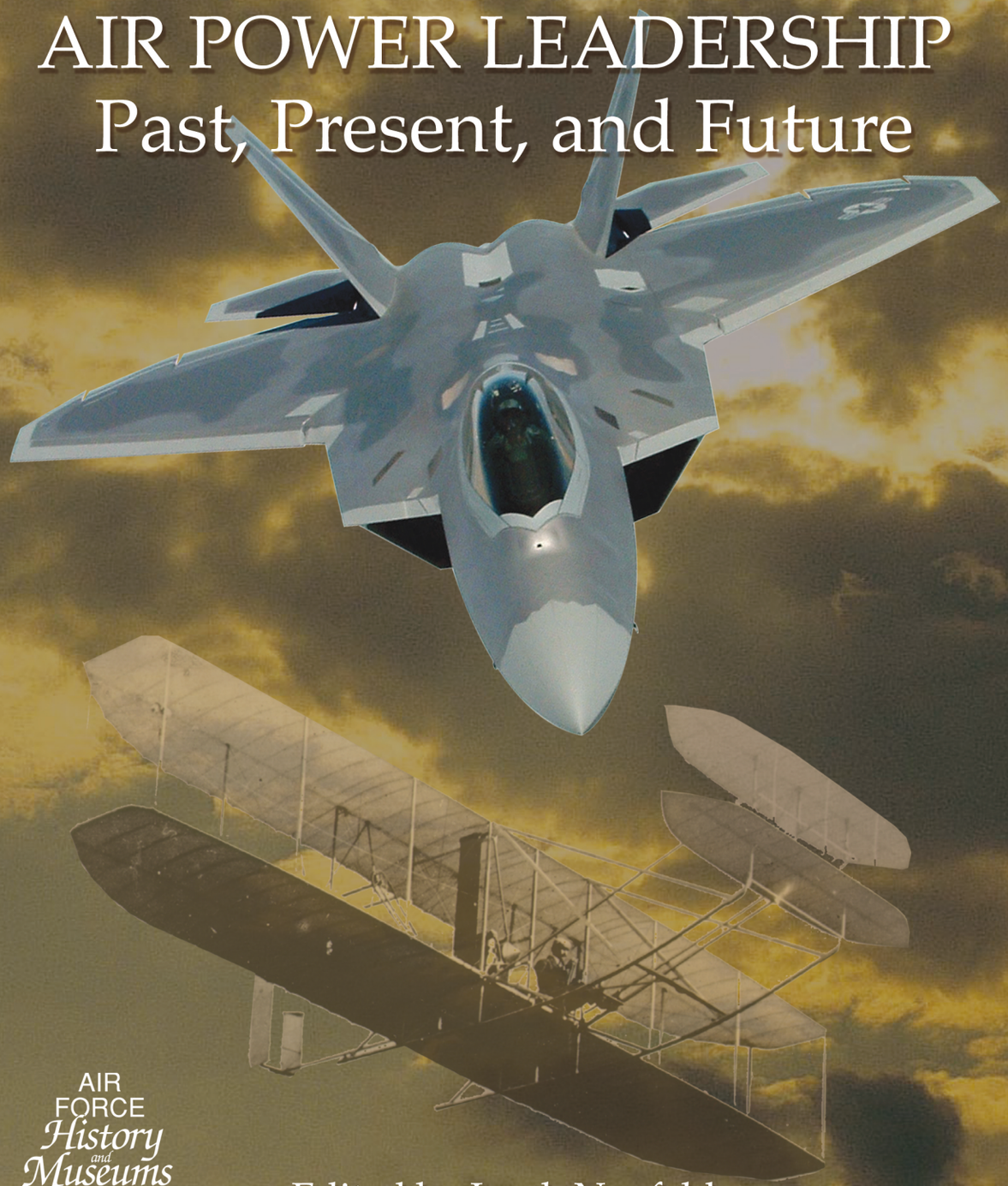
A CENTURY OF AIR POWER LEADERSHIP
Past, Present, and Future



AIR FORCE *History and Museums* PROGRAM

Edited by Jacob Neufeld

A CENTURY OF AIR POWER LEADERSHIP

Neufeld

AIR FORCE *History and Museums* PROGRAM

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A CENTURY OF AIR POWER LEADERSHIP
Past, Present, and Future

Proceedings of a Symposium

Sponsored by

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October 29–31, 2003

College Station, Texas

Edited by

Jacob Neufeld

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Note

Opinions, conclusions, and recommendations expressed or implied within are solely those of the symposium participants, and do not necessarily represent the views of the Air Force History and Museums Program, the U.S. Air Force, the Department of Defense, or any other U.S. Government agency.

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Preface

Orville and Wilbur Wright first flew from the sands of Kill Devil Hill near Kitty Hawk, North Carolina, in 1903. In 1999, to mark the first century of manned, powered flight, Congress created the Centennial of Flight Commission to coordinate national commemoration activities and to act as an international information resource. To manage its own participation in commemorative events around the world, the United States Air Force established a Centennial of Flight Office in 2001. The Air Force History and Museums Program, through its own activities, played a significant part in those events.

Recognizing that the centennial of flight celebration offered the public a golden opportunity to better appreciate air and space power history and the innovations and adaptations that have enabled aviation to transform the world, the George Bush School of Government and Public Service and the Air Force History and Museums Program jointly sponsored a symposium, *A Century of Air Power Leadership: Past, Present, and Future*. The symposium was held on October 29–31, 2003, in the Leonore and Walter Annenberg Presidential Conference Center at the George Bush Presidential Library and Museum on the grounds of Texas A&M University in College Station, Texas.

The Wright brothers brought to their great achievement—the development of a new technology—extraordinary inventiveness and diligence that still inspire America's commitment to aviation excellence. Aircraft changed the natural order of things, while the effective use of air power added a third dimension to war. The advances that took us from the Wright brothers' biplane to Neil Armstrong's and Buzz Aldrin's lunar lander occurred at blinding speed. No technical innovation has altered human affairs more rapidly, widely, or significantly than the science of flight. United States Air Force leadership in air and space has been essential to victory in war during the last century. Today, air and space operations offer unprecedented global reach, power, and vigilance in support of worldwide joint operations around the clock.

The symposium explored aspects of military leadership over the past 100 years, highlighting factors that encouraged success or inhibited innovation. Among the crucial issues discussed were problems in doctrinal, technological, and weapons innovation and differences among air power leaders. Although focusing on the past, the symposium proceeded from the proposition that air and space power leadership had revolutionary effects on strategy and security. This book is intended to help readers who are interested in the impact of lead-

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ership on military affairs. As the symposium and the book make abundantly clear, the role of the individual in the saga of air power has far outweighed any other single factor, including technology.

The symposium featured presentations by distinguished airmen, scholars, and public figures. All shared their knowledge and insights on key events, issues, and lessons before a diverse audience. Former President George H. W. Bush, Dr. James G. Roche, Secretary of the Air Force, and Gen. John P. Jumper, Air Force Chief of Staff, were keynote speakers.

Few American leaders can match President George H. W. Bush in dealing with the transformation of American air power. Before a crowd of 400 attendees, he spoke of what his World War II combat experiences meant to him and candidly assessed the leadership challenges ahead. Secretary Roche and General Jumper discussed the implications of air and space power for America's national security and, in tackling tough, politically charged issues, demonstrated those qualities of leadership we most admire.

Keith Ferris, renowned as "the dean of Air Force art," presented a marvelously illustrated seventy-five-year history of the Air Force based on his life as a military "brat" and his long career as an artist.

Taken together, the essays in this book constitute an introduction to the history of air and space power leadership, beginning with an exploration of the significance of Billy Mitchell. A session chaired by Dr. Roger G. Miller addressed issues that arose from Mitchell's quest for air independence, and the roles played by his contemporaries—Mason M. Patrick and Benjamin D. Foulois. Dr. James J. Cooke, Dr. Robert P. White, and Maj. John Beaulieu provided texture and context for the Mitchell legend with new and dynamic historical interpretations.

In the session on World War II air power, Dr. David R. Mets delivered a masterful lecture on the leadership qualities of Gen. Carl A. Spaatz; Dr. George M. Watson, Jr., covered the wartime contributions of Assistant Secretary of War for Air Robert A. Lovett; and Herman S. Wolk described Gen. George C. Kenney's leadership in the Pacific theater, stressing the commander's organizational genius in the face of a determined adversary. Lt. Gen. Daniel James III, director of the Air National Guard, gave a moving presentation on the Tuskegee Airmen and their leadership legacy. General James drew from his family history to give a candid assessment of the challenges African-American airmen faced during the twentieth century. Dr. Roger Beaumont in his paper, "Interpersonal Conflict Among Air Power Leaders," analyzed the relationships within a small coterie of fledgling airmen.

Dr. Wayne Thompson chaired the air and space power session on Gulf Wars I and II. Participating were the director of the Air Force History and Museums Program, C. R. Anderegg, and Dr. Perry Jamieson. Lt. Gen. Daniel P. Leaf, vice commander of Air Force Space Command, was unable to attend the symposium but produced a video detailing his wartime service and leadership phi-

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losophy. Few American military leaders can match this group's recent experience in grappling with the difficult and perplexing challenges to America's air and space forces.

Rod Thornton, deputy director of the George Bush Library Foundation, chaired the Aggie leadership roundtable. Gen. Patrick K. Gamble, USAF (Retired); Lt. Gen. Randolph House, USA (Retired); and Maj. Gen. Jay D. Blume, Jr., USAF (Retired) provided educational and inspirational discussions on the leadership questions facing Aggies in the future. The symposium honored another Aggie, Gen. Bernard A. Schriever, who established the foundation of our current space and missile capabilities. As an Air Force senior historian at the time, I was privileged to speak about General Schriever's outstanding leadership and career.

Dr. Everett Carl Dolman presented an exceptionally well-balanced treatment of strategic space power, developing the subject of space geopolitics, or as he termed it, astropolitics, and providing a glimpse into the leadership of the future.

The symposium on which this book is based was a singular event. Unfortunately, it was not possible to replicate entirely the fruitful discussions that took place over three days or to capture the debate that occurred during breaks at the Annenberg Conference Center and the College Station Hilton.

This book could not have been completed without the generosity of the symposium's contributors. Debts in the realm of ideas can never be repaid. Dick Chilcoat, dean of the George Bush School of Government and Public Service, and his team of professionals accomplished miracles to ensure that the symposium, *A Century of Air Power Leadership: Past, Present, and Future*, and the Thunderbirds' aerial demonstration went off seamlessly. From the Air Force History Support Office, the principal point of contact was Maj. Corvin J. Connolly.

Jacob Neufeld
Director, Air Force Historical Studies Office
August 2006

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Introduction of

The Honorable James G. Roche

Secretary of the Air Force

by

Dr. Arnold Vedlitz

Acting Dean, George Bush School, Texas A&M University

It's my distinct pleasure to introduce our opening speaker for this important conference. Secretary James Roche personifies the qualities of exemplary leadership, ability, and service that President Bush has said are so important for the success of our nation and all democracies. Dr. Roche is the twentieth secretary of the Air Force, and let me tell you what that means. That's a big deal! To put it in perspective, Texas A&M University is the fourth largest university in the United States and one of the largest public organizations in the state of Texas. We have 5,000 employees, or thereabouts, and a billion dollar budget. Secretary Roche oversees an organization of more than 600,000 servicemen and women and civilian employees and a budget of more than $90 billion. It's an extremely important enterprise. He came to this position from twenty-three years of distinguished service in the Navy, from executive service in the administrative branch of our national government, from service in our legislative branch as a principal staffer in Congress, and from the private sector where he was a senior executive in some of our major corporations and companies. His outstanding record and experience are built on an equally remarkable educational career. Secretary Roche is no stranger to the halls of academia, where he's also had great success. He holds a bachelor's degree in literature, language, and philosophy from the Illinois Institute of Technology, a master's degree in science and operations research from the U.S. Naval Postgraduate School, and a Ph.D. in business from Harvard.

Please join me in welcoming our very distinguished guest, Secretary of the Air Force Dr. James Roche.

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The Honorable James G. Roche

Secretary of the Air Force

Thank you. It's a pleasure to be with you. It's a pleasure not to be in Washington. Thank you, Dr. Vedlitz, for your warm remarks and gracious introduction. I want to salute you and your great team at the Bush School of Government and Public Service and our team from the Air Force History and Museums Program for putting together this intriguing and memorable event. As an avid student of history, as an airman, and as an American, I couldn't be more honored with the privilege of opening this symposium.

We have several special guests who'll be joining us this week, and I think it's a tribute to the school that you've been able to have that kind of draw. One of the founders of space operations, Gen. Bernard Schriever, is scheduled to be here. Former President of the United States George Herbert Walker Bush will join us. It's fitting that we should be talking about aviation pioneers this week because these two great Americans embody the finest examples of the spirit and vision of those responsible for a century of aviation achievement. I, for one, am always humbled to be in their company.

During this program, you'll celebrate and recollect the leadership, innovation, and accomplishments of the airmen who've made the past 100 years a time that could fairly be described as the first century of humankind's ascent into the third dimension. We'll explore the historical conditions, philosophies, and training of airmen that resulted in air power's rise to prominence during conflict throughout the century. And we'll hear perspectives on the frontiers and on the founders and influential people who forged an independent air arm and, through the power of their impassioned leadership, built a legacy of airmen who've fought bravely in our nation's wars since the earliest days of powered flight. It's an exciting agenda and one that should prove educational as well as inspirational. I salute you for bringing together such a distinguished group of speakers—present company excepted, of course—leaders, scholars of the past and present, and thinkers about the future of space and air power.

Just a couple of miles up Washington Boulevard from my office at the Pentagon and adjacent to Arlington National Cemetery is Fort Myer, home of the Old Guard and site of one of the formative events that led to the development of a military air arm. It was there on September 17, 1908, that the Wright brothers first introduced us to a new invention that would change the conduct of warfare in the twentieth century. On that day they demonstrated their new military flyer

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for the U.S. Army Signal Corps. It was clear to all present that powered flight offered a new medium from which to project power and conduct military operations. From those humble beginnings, we can trace the wonder of the F/A–22 Raptor, a technical marvel that's transforming the way we think about aerial and ground combat and how we apply technology to war fighting.

When President William Taft invited the Wrights to the White House in 1909 to accept gold medals from the U.S. Congress, the Smithsonian Institution, and the Aero Club of America, he said to them, "You made this discovery by a course that we in America feel is distinctly American, by keeping your nose right at the job until you had accomplished what you had determined to do."

The achievements of the aviators of this century, men and women in the military, civilian aviation, and industry, and the ideas propounded by great thinkers were born of a similarly determined pursuit. From a relentless quest for innovation and exploration we've created a remarkable capability for our armed forces and our nation. From modest beginnings at Kitty Hawk and Fort Myer, airmen have performed brilliantly on the front lines of America's battles: Billy Mitchell in his victory at the St. Mihiel salient during World War I; Jimmy Doolittle in his dramatic, fearless, and very important raid against Japan in 1942 (too often misunderstood, by the way, as merely a publicity and morale stunt. Very few realize the secular consequences of his attack, which turned out to be quite dramatic); thousands of airmen in the Eighth and Fifteenth Air Forces who sacrificed their lives to liberate Europe; and the partnership of Arnold and Quesada with Patton and Bradley, and that of Kenney with MacArthur.

In the last half of this first century of flight, America's airmen have continued to provide security for our citizens, assure our allies, and deter our enemies. From the Berlin Airlift to the liberation of Afghanistan and Iraq, air and space power have contributed to spread the promise of peace and freedom around the globe. In the most recent conflict, our joint forces moved more swiftly and decisively than at virtually any other time in our history. Our air-ground coordination and close air support can be compared to the historic cooperation demonstrated in the breakout from Normandy in 1944.

I'd expect that in the future historians will be saying the names Michael "Buzz" Moseley, who was our combined forces air component commander, and David D. McKiernan, who was our Army's combined forces land component commander, in the same breath as the leaders who preceded them in the conflict in northern France. Their accomplishments in the First Gulf War demonstrated our success in returning to the close relationships and integrated capabilities of that earlier era, and we see a future for our Air Force which increasingly is associated with the ground force of the United States.

It's my great honor to represent 700,000 active, guard, reserve, and civilian men and women of the Air Force; dedicated airmen who continue to serve in retirement; and members of the aerospace industry who make the delivery of air and space power their life's work. They're all "airmen," and our nation remains

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free today as a result of their bravery, excellence, and selfless service. My wonderful partner, Gen. John Jumper, and I are indeed proud to lead these patriots who've chosen to devote their lives to serving their nation.

During the most recent 100 years—a time of exceptional advances in science, technology, and industry—warfare has changed more dramatically than during any other century in the history of mankind. While countless innovations over the millennia have increased the lethality of warfare, perhaps none have advanced military capability more than air and space power. In this century of aviation achievement, countless leaders have advocated and promoted the capabilities of air and space power. While we recall the many towering figures of aviation history, we should never forget the many airmen whose contributions may not appear in the headlines or in popular history books but to whom we owe a debt a gratitude for recognizing the vitality of this new medium.

One of those early pioneers wasn't someone about whom we usually hear. He wasn't an American, nor was he an aviator, but he influenced both the development of the Royal Air Force [RAF] and the strategies of World War II. This aviation pioneer, Jan Christian Smuts, was a South African military officer. Not only was he a statesman and a soldier, he was also a man of daunting intellect who counted among his friends Winston Churchill and Mohandas Gandhi. During World War I, Smuts excelled as a field general in the southwest African campaign, and he served on the Imperial War Cabinet. He assisted in the development of the League of Nations and later, in 1941, was promoted to field marshal of the British Army. Among his many contributions to allied strategy and operations, the most significant was his work that led to early British recognition of the efficacy of air power as a strategic weapon for waging war. In April 1918, because of his research and the influential, far-sighted report he submitted, the British formed the RAF as the world's first independent air service. What was perhaps more important than this development, was the fact that Smuts's report sowed the seeds for a prominent role for air power in World War II, and it drove aviation development, strategy, and training for more than two decades.

Writing in 1917, General Smuts described a vision of air power's potential that was prescient: "There is absolutely no limit to the scale of its future independent war use. And the day may not be far off when aerial operations with their devastation of enemy lands and destruction of industrial and populace centers on a vast scale may become the principal operations of war."

Sir Hugh Trenchard, the first RAF chief of staff and a student of the architect of early military aviation, Giulio Douhet, adopted this philosophy as his own and made it the dominant theme governing the development of Britain's independent air arm for the next twenty years. In America, with advocates of air power winning victories as well, the early ideas promoted by Smuts, among others, found fertile ground for growth and development.

But the British made a terrible mistake. When they created the RAF, they incorporated it into naval aviation. Consequently, RAF officers didn't get pro-

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moted because they weren't in the Royal Navy. The Navy didn't get very well designed airplanes because ground and air arms dominated the RAF, and the Navy had little voice. So the British, who ended World War I as the leading theorists and leading technologists in carrier-based aviation, didn't carry through.

In fact, H.M.S. *Argus*—a ship that had arresting gear and catapults, an island, and everything but the angled deck characteristic of modern aircraft carriers—never got built upon as a follow-on ship. By the end of World War II, something like 80 to 85 percent of all of the aircraft on those British aircraft carriers whose names you can't recall were built in the United States.

It's fascinating to learn that the British had developed a plan to use torpedoes from torpedo bombers to attack the German fleet at Kiel. They never conducted the attack because the war ended too soon. But in Asia, some people had studied the British plan. Although the Americans thought it impossible, the Japanese in fact employed the identical attack against our ships at Pearl Harbor. So by creating an organization that was very good for one aspect of aviation in Britain, the same thinkers destroyed a complementary element. As we think about the future, and think we're very smart, we have to keep in mind that we just might not be.

In 1926 Maj. Gen. Mason Patrick, then chief of the Army Air Service, was successful in establishing an Army Air Corps, not fully independent but more prestigious and autonomous than its predecessor had been. Brig. Gen. Billy Mitchell's campaign to promote the utility of bombardment as a tool in our nation's defense, in line with Smuts's view, later gained the support of presidential candidate Franklin Roosevelt during his 1932 campaign. Roosevelt's early support as a candidate was transformed into bold action. As president, he pushed for a greatly expanded air power capability prior to America's entry into World War II, when the airplane's combat role expanded beyond the imaginings of all but its most enthusiastic advocates. Although the realities of warfare would later force strategic bombing advocates to change their tactics, Jan Smuts's early ideas were instrumental in our nation's substantial investment in air power. Too, we avoided the same mistake in naval aviation that the British had made.

In addition to our great uniformed leaders, about whom we'll hear a great deal later, some civilian leaders were similarly influential in promoting and advocating America's Air Force. So I'll advertise a bit for my own office. Fifty years ago last month our first secretary of the Air Force, the late Stuart Symington, took the oath of office and began the operation of the military department that would prove to the world, as our founders had predicted, that the Air Force could and would become a powerful and decisive fighting force.

Throughout our brief history, secretaries of the Air Force have advanced the cause of air and space power through many challenging times that saw the retrenchment following the post–World War II years, the Korean War, the resurgence of defense spending subsequent to the launch of Sputnik, the start of the Vietnam War, the "Hollow Force" of the 1970s, the renewed defense focus of the Reagan years, and the restructuring of our military after the Cold War ended. In

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partnership with their uniformed chiefs of staff, many of my predecessors continued the work that Gens. Mason Patrick, Frank Andrews, Benny Foulois, Tooey Spaatz, and Hap Arnold began decades earlier. Secretary Thomas Finletter, partnering with Gen. Hoyt Vandenberg, built a 168-wing Air Force in the 1950s that provided the deterrent backbone so crucial to maintaining the balance of power during the early days of the Cold War. Secretary James Douglas, with his partner, Gen. Nathan Twining, oversaw technological advances in missiles and satellites that were spurred by competition with the Soviet Union. These advancements have continued to serve us well as we use space assets across the spectrum of conflict and for peacetime capabilities like GPS [Global Positioning System] and the communications satellites that citizens of the world today take for granted. Secretary Douglas also brought to fruition the vision to build an Air Force Academy, an institution dedicated solely to educating and training future air and space officers.

Eugene Zuckert served as Air Force secretary for four years with his partner, Gen. Curtis LeMay. Together they strengthened the role of the Strategic Air Command as the custodian of the most powerful weaponry in the world, and they supported and expanded the Air Force presence in space. In the late 1960s Secretary Harold Brown continued the momentum, not only by applying the new technology to weapon systems but also by automating and improving such missions as target acquisition and intelligence processing, and by developing new types of weapons like air-to-air missiles and electronic countermeasures. The tenure of Secretary Robert Seamans in the late 1970s featured modernization and the scientific research and development of new and vastly improved weapon systems—the C–5, F–15, B–1, and AWACS—that at the time constituted an exponential increase in aerial battle management. During the two-year term of Secretary John McLucas, who also had served for four years as the under secretary, the Air Force procured an array of new aircraft, dramatically expanding the capabilities of our burgeoning force. In the 1980s Verne Orr, our longest serving secretary, presided over a period of modernization and investment unlike any in the history of the Air Force. When he left office after a five-year term, the Air Force had 650 more fighter aircraft and 30 more tankers than it had when his tenure began. His achievement laid the groundwork for our successes in the First Gulf War and in the Global War on Terrorism. And I'll bet you that he had an easier time getting tankers than I've had.

In the last decade, Secretary Donald Rice concentrated on developing a strategic framework for our Air Force. He and his chief of staff, Gen. Merrill "Tony" McPeak, consolidated the combat power of the Air Force into a single major command—Air Combat Command—a historic reorganization of bomber and fighter aircraft that serves us well today. Finally, I'll mention one more secretary of the Air Force, my predecessor F. Whitten Peters. Whit and Gen. Mike Ryan, his chief of staff and my first partner when I assumed this office, created the Air Expeditionary Force that we have today. Most notable of the Air Force achieve-

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ments of their era was the decisive role of our airmen in the victory over Serbia in 1999, the first conflict in our nation's history when air and space power almost exclusively delivered victory in combat.

Let me briefly point out one influential airman who played a significant part in the conduct of that operation and who cannot go unmentioned: the commander of U.S. Air Forces in Europe, Gen. John Jumper. You'll be hearing from him later during this program. Let me just set the stage for my partner's remarks by saying that he continues the tradition of great aviation leaders, and in my opinion, many years from now his vision and leadership will be the subject of speeches at gatherings such as these. When you hear him speak, I think you'll know why.

We've come a long way from the days of Mitchell, Douhet, Trenchard, and Smuts. Clearly, these great prophets of aviation have found vindication in the wars of the twentieth century and in our recent operations in Iraq and Afghanistan. It's important to put air and space power in perspective. Naval theorists like Alfred T. Mahan pointed out in the 1800s that for a nation to be a great sea power it had to be "sea-minded" and seafaring. Its people, culture, economies, and military had to embrace the importance of the sea. Billy Mitchell and the Air Corps Tactical School translated that same concept to air power. That same approach has been applied, and needs to be applied, to space power.

Only when our nation began to conceive of using the third dimension routinely did we begin to understand more fully its value for defense. America must continue to embrace the importance of air and space dominance and to recognize how control of these areas benefits the nation. That's not easy, given the speed of evolution. In a mere 100 years, we've gone from 12 seconds of powered flight covering 540 feet of North Carolina sand to 44-hour B–2 bomber flights that span the globe. We've gone from the 1926 liquid-fueled rocket launch ascending 185 feet to evolved expendable launch vehicles (EELVs), to advanced satellites that enable everything from weather forecasting and communications, to the timing and the navigation systems that control our aircraft and weapons, to the automatic teller machines you'll probably use at least once during this week.

Also, in these times of conflict against a new kind of enemy, we're reassessing how we think. We're adapting to a new form of warfare. As we develop thinkers, leaders, and professional airmen of high intellect and unquestioned skill, we're challenging them to adapt our Air Force to this emerging era. We must continually change as we've changed in the past, and it's a tribute to the Air Force that it's been able to adapt to new demands far more easily than people would expect it to, given its size and organization.

In the recent campaigns in Afghanistan and Iraq, our airmen demonstrated an appreciation for the need to adapt to new demands. Taking into account tribal history; religious concerns; the value of food, water, and humanitarian aid; and the enduring power that respect for human life can have on a people yearning for liberty, they carried out demanding missions with professionalism and excel-

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lence. Our relentless development of competent airmen who understand what's required, and who are prepared to operate in any environment will be the difference between excellence and mediocrity, between success and failure in combat.

As we enter a new age, we learn repeatedly that air and space capabilities can and do have a strategic, coercive, and compelling effect on our enemies, that they can dramatically assist our land and maritime forces in achieving victory swiftly and decisively, regardless of distance, terrain, or adversary. Our successes in conflict have demonstrated that the American way of warfare has undergone a remarkable transformation. Since the advent of industrial warfare, one would be hard-pressed to cite an example of greater speed, maneuver, and precision on the battlefield, all the while limiting collateral damage, delivering humanitarian aid, and saving the lives of combatants and civilians alike.

It's ironic that one of the issues being discussed today in the Iraqi conflict is whether we did too much. Did we have too much concern about collateral damage? Did we make our opponent's population suffer enough and so understand what the end of war was like? Now, some people question whether we've gotten too good, which I find rather bizarre, but they do present the opportunity for a continuing discussion.

This new age of waging American warfare—with manned aircraft, remotely piloted aircraft, and space systems—is a product of our Air Force core competencies; decades of sustained research; acquisition, strategy, and doctrinal evolution; and the demanding training of twenty-first century air and space warriors who understand the complexity of war fighting in the Information Age. If we've come this far in such a short period—just 100 years—we can only imagine what the future holds.

In the early days of air power development, some people held the view that the future would be devoid of the type of imagination that produced the Wright brothers' success and the expansion of our budding Air Service. Most notable among those who didn't quite get it was President Calvin Coolidge, a thrifty New Englander who, after receiving a request from the War Department to buy more airplanes, replied, "Why don't we just buy one airplane and let the pilots take turns flying it?" Sometimes we come upon modern analogues to that comment. Fortunately for our nation, his view failed to carry the day.

As we approach the historic anniversary of the Wright brothers' achievement at Kitty Hawk, we recognize that rarely in the history of humankind have we witnessed a more powerful innovation that has changed global society more rapidly or dramatically. These 100 years of powered flight have refined the way we fight our wars, have revolutionized travel and commerce, have pioneered the development of ground-breaking technologies, and have helped shape a world in which our nation's safety and prosperity would be accompanied by breathtaking scientific and technological prowess. Powered flight is, and will continue to be, one of humankind's most significant accomplishments. If properly guided with the same imagination and vision of its creators and those who nurtured its devel-

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opment—explorers in the tradition of Lindbergh and Earhart, innovators such as Curtiss and Northrop, warriors such as Rickenbacker and Chennault, and leaders such as Andrews, Arnold, LeMay, and Jumper—the second century of flight, now to include space operations, will most assuredly advance the peaceful and productive interactions of nations, continue to deter or destroy threatening and tyrannical leaders, and provide for the benefit of all humankind. This is our wonderful heritage, and it's our exciting future.

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Q&A

Audience Member: Mr. Secretary, as space is obviously an expanding business, do you think it could be the critical core competency of the Air Force in future years?

Dr. Roche: You've triggered two points. One is the definition of core competency. This seems to be a "pet rock" of mine. If you go back to C. K. Prahalad and Gary Hammel, noted for their ground-breaking 1990 *Harvard Business Review* article on core competencies, you'd never hear space called a core competency. A core competency has to be something that distinguishes your product from any other. It cannot be encased in any one product; it must apply to many. It's something with a very, very high-barrier entry, and it's something that's viewed by your customer, not by you. So we have to be careful using terms. That's why in the first report, when our secretary had a footnote saying, "I don't agree with the Air Force definition above," we had some very good core competencies such as training and developing airmen, bringing technology to war fighting, and then integrating them.

Your point, though, is a good one. It's not that space is going to push aside, say, terrestrial flight. It's that space is an area where we assumed war wouldn't occur, except for those far-off, crazy thinkers who said there would be war in space. Well, we're starting to get closer to those far-off, crazy thinkers. All I can discuss is the fact that our GPS jammer is the first example of the beginning of war in space, trying to prevent something that denies us the use of our space assets. Another public situation is the jamming by Cuba of the free Iranian TV broadcast from the West Coast of the United States via satellite into Iran.

I tell cadets, whenever I meet them, "If for some reason you don't want to fly, don't think that the Air Force has no exciting future for you." I believe the space part of our Air Force will involve more three-dimensional chess thinking than probably any part of any other service. It'll be very much like chess when you have to plan your strategy further ahead than the next move. We look back at the design and number of our spacecraft and wonder, "Gee, why didn't we think two moves ahead?" For the future, we do. When someone says we're having a problem, "Oh, it must be sunspots," we say, "Maybe." But we can no longer just say, "Oh yeah, it must be sunspots."

How to think about this, how to deal with this, how to develop people who understand that sometimes turning on a switch is equivalent to pulling a trigger is going to be very, very interesting. That's part one. Part two is you could exhaust the treasury of the United States in space. There were those who used to accuse Adm. Bobby Inman of wanting to darken the skies with satellites. Some balance is required. It's also a mistake, I think, when people believe that everything will move to space. Increasingly, General Jumper and I are of the view that,

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as in a business, having a portfolio is typically best when dealing with an uncertain future. It's best when dealing with an uncertain future in your private finances and in your business dealings. It's also true with respect to military capabilities. Of course there's a major role for space. But it's the fusion, it's the tapping of space, remotely piloted aircraft, unattended vehicles, manned systems, and bringing them all together in an integration that really demonstrates the power of space.

Space has certain particular advantages. We can look at denied areas more easily from space than we can otherwise. The bandwidth available now is quite extraordinary. We've been fortunate in the last couple of conflicts that the predicted commercial demand on bandwidth was far less than we expected and bandwidth was therefore available to us. I once told Secretary Rumsfeld that if he gave the Air Force an unlimited bandwidth budget, we'd exceed it because our demand would rise to meet the supply, just as Parkinson's Law states. For instance, if we look at the first Global Hawk arrangement, the amount of bandwidth it consumed was extraordinary, enough to scare both John and me. The Air Force Scientific Advisory Board did a great study. Because we had to be more efficient, it led us to think of things like using the MC–2A aircraft as a satellite-like animal to control Global Hawks. It led us to the notion of the smart tanker, where we can have a local area network. Then, instead of putting everything on satellites; we can reserve them for what they're particularly good at.

Few realize that of the four Predators we've kept in the air over Iraq, two were flown from Nellis every day. That's right, from Nevada. So in the future, when we have a blended wing of remotely piloted aircraft, and the reserve officer turns to his or her spouse and says, "Honey, I'm going off to war," and the spouse starts to tear up and asks, "Where are you going?" he or she says, "Las Vegas." We can do that. The reach-back was really quite amazing. The point we make is that when we've taken any of these systems and turned them over to our young airmen, they've told us how to use them in ways we could never imagine.

We've tried to institutionalize doing that in a couple of areas, particularly in the unattended vehicle. (We tried to get away with that before the secretary of defense caught us. By the time he did, it was too late.) We replicated what happened in the late 1930s in the Army Air Corps when the final explosion of design occurred and companies were allowed to make some money on research and development. The Army Air Corps didn't really know what it wanted. Remember, the United States went into World War II in great shape on big planes but in bad shape on little planes. A company in the northwestern part of the United States in Seattle had a lot to do with that.

What occurred, and General Schriever is a terrific person to talk to about this, was that when that second lieutenant first got commissioned and got his wings and showed up at an air base, he saw clumps of different types of planes. Many were just mods [modifications] of the others, but with different names. The pilots were told, "Fly them, and tell us which ones really work."

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The Congress, in its infinite wisdom, passed a law that said we cannot have an airplane that flies more than 150 miles from the United States. It's kind of tough to think about a strategic bomber under those circumstances, so if you cleverly cut a deal with the Navy and say, "Look, why don't you develop this airplane as a patrol aircraft over the water? You'll only go 50 miles, but you'll stay there for seven hours," along came some of the earlier developments in our long-range bombers.

A future where we turn things over makes great sense. We've had examples of that in this past conflict where we've allowed some of these young people to have access to space assets, terrestrial assets, unattended vehicles, and they put packages together that sometimes are really awesome. I've got a good example. We flew Global Hawks sometimes from Beale Air Force Base in California and sometimes from Reno, Nevada. One day, going into Afghanistan, because of this wonderful satellite link, a truly unattended Global Hawk, not carrying a preplanned package, was to fly a predetermined route and come home. When you have a bunch of young pilots, something unexpected always occurs. In this case, the Global Hawk's pilot figured he could fly the thing with the arrow keys on his keyboard. Now, once you tell a pilot that he can fly a thing, a gizmo, guess what he wants to do? Fly the gizmo. This is what they started to do in Iraq, without telling us. They came off the preplanned flight and moved to western Iraq, where they were spotting things and getting involved. Because they had this reachback, they could sit there on the West Coast, pop in electronically via space to the U.S.S. *Kitty Hawk* in the Mediterranean, and say, "You know, we see an interesting thing over here. Do you want to put us together with so-and-so?" The next thing we know, we've got a Global Hawk involved in actual combat operations. It was only doable because of space.

Now the concern is, as Maj. Gen. Jasper Welch articulated many years ago, every time you develop a capability, you develop an inherent vulnerability. Thinking that through is part of why I think space is going to be three-dimensional chess. Its future is good, and our future in terrestrial operations will be equally dependent on our future in space, in my view.

Audience Member: How long do you think it'll be before we end up having an independent entity for space, like the Air Force.

Dr. Roche: A separate service? I hope it never happens. I'll use the analogy of a submarine force. If you were to allow a separate submarine force, you'd never see it again. All you'd get is the bills. You have to know how it thinks. You need to manage it organizationally. If you were to let space become a separate entity, you'd probably be unaware of its really quite dramatic ability to work with terrestrial and atmospheric systems. You could ask yourself, "Isn't space just a higher altitude?" We keep talking about moving things to space, and General Jumper and I keep wondering, "Well, maybe we can bring some things from

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space to lower orbiting satellites called Global Hawks." Why not? If you put a couple of Global Hawks—remember, when you get up at 65,000 feet, the slight angle to the surface of the Earth allows you to view a huge distance—just imagine what you could do with them in the AOR [area of responsibility] right now. At least in Iraq, you could do away with satellites. You could do all the relaying via systems carried at very high altitude, but not so high that they'd orbit.

Therefore, thinking of space as just higher altitude is very good. Also, thinking of space as higher altitude in terms of the things that can occur there and that can hurt you—and they can hurt you kinetically or nonkinetically—is very good. So I'd be very much opposed to the space people ever breaking off and becoming a separate force. The era of thinking that putting up a satellite and making sure it continues to go "bleep-bleep, bleep-bleep," is over. It's now how to think about what the satellite may do and what may be done to it.

Audience Member: Mr. Secretary, I know you've been a strong advocate of leasing 100 more tankers of the commercial version. Could you comment on how you expect this to play out?

Dr. Roche: Somebody once said that democracy's like sausage. You never want to see how it's made, as good as it might be. We're not wedded to a particular financing form; we're wedded to making the point that it's time to begin to recapitalize the tanker force. I mean, the bumper sticker is, "No tankers, no war fighting." The second bumper sticker is: "55 percent of our tankings in Afghanistan were to other-than-Air Force assets; 51 percent of our tankings in Operation Iraqi Freedom were to other-than-Air Force assets." The Army drops into northern Iraq, in the biggest parachute jump since World War II, with Navy CAP [Combat Air Patrol] on top. Well, Navy CAP doesn't get from the Mediterranean to northern Iraq without tankers; in fact, you don't fight any war at a distance without tankers. No tankers, no war fighting.

It's an interesting point of defense economics that if you want the most efficient purchase of something, you do it in an economic-order quantity. If you look at the period required to obtain, for example, 700 tankers, it's a short time, really, just a handful of years. Many years later, you have a massive number of aging airplanes. Look at those KC–135s that people want us to keep flying forever. You notice that the airlines don't fly 707s anymore. The airlines don't fly the successor to the 707, the 727 anymore. And many airlines are getting away from the successor-to-the-successor. Those airplanes had an average age of eighteen years when Harold Brown and the Air Force decided to hedge and acquire some KC–10s, to take the DC–10 line as it was ending, and buy some. Those KC–10s became the lifeblood for naval, marine, and coalition tanking because they can probe and drogue and boom. When a KC–135 is rigged in a way that doesn't work for one group, we can rig it the other way, but the KC–10 can do both, and it's a great lifter as well. We used 49 of our 59 in this most recent conflict.

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We have about 131 E-model 135s. We used fewer than 30, and then only in Atlantic bridges so they could arrive in places that had lots of spare parts. We're trying to make the case that it's time to recapitalize. We'd like to begin to recapitalize, whether it's to lease 100 airplanes or work with Senator Warner's idea and lease only 20 and then buy 80. After projecting budgets for the future, we proposed leasing 74 and buying 26. Regardless of the numbers, modernization at this pace would have us still flying airplanes that were more than 70 years old. No one has flown airplanes that old, so we don't know if it's possible. In the case of these E-model aircraft, if people say, "Well, you can keep fixing them and flying them," that's true; it just costs more money, as Maj. Gen. Ann Harrell, our director of maintenance and logistics, knows well.

I don't know anyone who wants to fly around in a 70-year-old airplane. By the way, why 70 years? Why don't we fly it to 100 or 150? Somewhere along the line, common sense says that this is getting crazy. I believe that when we have 500 airplanes that are older than the oldest combatant ship in the Navy, then it's time to think about recapitalizing. That's my position. Other people take the opposite position, and I don't know how this is going to come out. Our position is to support the secretary of defense's position, with which we agree, which is to get on with the lease, which is a very good financial structure, and then buy as many airplanes as we can in the course of the lease because we get the advantages of both. That may or may not come about. There's debate as to how bad the corrosion is; but at least there's debate.

To be very blunt, this is not a problem of outsiders. Because of budget constraints, our Air Force has delayed acting on this year after year. John Jumper and I have said, "There's no reason why we couldn't leave it for the next two guys. Why in heaven's name do we need to subject ourselves to this agony?" And then we've said, "If we don't have the guts to do it, why would we expect somebody else to?" So we're going forward, and we'll see how it comes out. But clearly, some people believe that we should begin to recapitalize the tanker force one way or another. I dread to predict the outcome if we can't do anything. We still have plan A, which is to develop a tanker a few years downstream. I guess maybe by 2009 we'd get the very first one if we were to procure it. My concern is that we'll have to have all kinds of studies. We'll have to have all kinds of paper. We'll do all of the R&D; we'll do this; we'll do that; we'll spend a couple of billion dollars, all of that insanity, and then we'll think about buying airplanes. I mean, I find it ironic that allies can come to this country, can cause technology to be developed, can cause whole new systems to be developed, and can have date-of-contract signed and take first delivery in less than six years. The F/A–22 is only twenty-one years old, maybe twenty-two. The V–22 is twenty-two years old. It's crazy how we acquire things, absolutely crazy.

Audience Member: Asymmetrical war with its focus on insurgency and terrorism, would be based on high technology, mass firepower. How do you deal

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with that from the Air Force perspective and fit it into digging out Osama bin Laden from his caves?

Dr. Roche: That's a terrific question, one we try to address constantly. We believe that for the most part we're past the inter-Germany-border-battle mentality, although when we took some of our F–15 pilots and put them into F/A–22s, they just wanted to play F–22. So we added to the cadre some F–16 pilots. At first, they didn't want to play F–22 as much, but they did, anyway. So now we're putting Strike Eagle pilots in there. We're going to get them to think that the future is air and ground.

And the air-to-air part, by the way, will be a deterrent or, if not a deterrent, certainly a killer against any airplane that we can see being developed in the next twenty years. The F/A–22 is the only aircraft that has a chance against cruise missiles. The future of the Air Force increasingly is tied to the future of ground warfare, which brings us to your point. We look at what occurred in Iraq during the Second Gulf War—with tremendous air-to-ground coordination—which we believe is the first time it's happened since Normandy. But we foolishly sent thirty-four Apaches to fight on top of bad people, and all were really shot up. It took that experience—one crashed and thirty-three came home, all sporting bullet holes—to realize that that was a misuse of the Apache, a very good system.

When someone asks me, "What is the Air Force?" I say, "Well, it depends." If you take the current conflict, you can note that in 76,000 sorties, 58,000 mobility aircraft have been flown, that's about 10,000 tankers and 48,000 airlifters. So one of the roles of the Air Force is to be the source of mobility and supply. But we're trying to think about how we apply technology to the circumstances of patrols on the ground. We created Project Eyes, which has looked at everything we have and how it can work with Army units. We note that if Striker goes in just by itself, it's lightly armored. What can we bring with Striker so that the combination actually enhances our ability to achieve success on the ground?

John Jumper came up with an idea. If we can have AWACS in with Army forces that control our aircraft for air-to-ground operations, why can't we have some Army urban warfare people in our, say, Predator huts, or in trailers, who control patrols on the ground the way we control aircraft in the sky? Why can't we just invert the approach? We're working with the Army to see if that makes sense. In a place like Afghanistan, where you're talking about small numbers of special operations forces, or in western Iraq, where we really have come a long, long way, we've used a single or a small team of combat controllers. We have air commandos on the ground using a BAO kit—a battle air operations kit—a technology we've developed for them.

But what we've been able to do is show the power of a single individual. Now this starts not with an idea of ours, in my mind. It starts actually with some early work in the Air Force that had been abandoned. A little team of thinkers called Longbow tried to replicate the situation of an individual soldier with a longbow,

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the power of an individual soldier at Agincourt, and what can be done to make each fighting person exquisitely good. We're using some of that. We can now do close air support routinely from 38,000 feet. We can do it without having to have the combat controller ever speak. We've reduced the weight on his back by 70 percent. Our goal is to increase the output of the direct-voltage power pack that he carries and achieve a sixfold reduction in the amount of lithium used. As we're reducing the pack's weight, our goal is to have enormous power available to an individual on the ground to work some of the counterinsurgency, some of the asymmetrical threats.

It becomes a real problem in an urban situation. As Buzz Moseley points out, in thinking of targets, a fixed-point target now is dead. When we get into debates over the number of bombers, our eyes roll because how many times do you want to kill a fixed-point target? In the Second Gulf War, with all the bombing we did, we only had 575 bombing sorties. We used about 13,000 fighter-bombers, but a lot of them were just CAP and ready aircraft.

The next hardest target is the moving target. So we orient the F/A–22 very much to try to catch mobile targets deep. The hardest target is the individual. If the individual has the camouflage of a city or any one of a number of villages, targeting becomes extremely difficult. So you have to start to wonder, to what degree can technology apply, in pattern recognition and other things, and at what point are you limited by your technology? Now you really have to depend on what I call, without being pejorative about it, "human geese," people who warn that there's a stranger among us and that the stranger is dangerous. That's the point we have to reach, but it's a devil of a challenge. For those of us who love to look for a technology and a doctrinal answer first, it's especially hard.

Audience Member: Mr. Secretary, I understand that last night you had the opportunity to dine with our cadets, and I really applaud you for taking the time to do it because we're very proud of them, which brings me to the question, What's the future of our academies? Can you tell us, with all the news we've had lately, what will happen?

Dr. Roche: I don't think the alumni organizations will ever allow the academies to be closed, and it's not clear whether or not they should be. We have no intention of closing them. The Air Force Academy is an institution to be respected. It's a tremendous institution, academically. It went a bit adrift in the last couple of years, the last decade or so.

Statistically, 20 percent of the population thinks that women shouldn't be there. Yet our Air Force is now roughly 20 percent female. There's no reason why that percentage can't go higher. Given the sort of work we do, and given how much of it's increasingly intellectual, gender becomes irrelevant. We first started training women pilots in 1978. The first Air Force Academy graduating class that included women was in 1980. People like Ann Harrell are some of the

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trailblazers in achieving flag rank, earning it because she was very, very good. I know her well. We've just awarded four Distinguished Flying Crosses to female aviators for heroism in combat in the Second Gulf War. These role models will start to come back to our academy, because we'll make sure they do. The academy was shortchanged by the Air Force, and it was not just the academy's fault.

My sense is it's sure to become an increasingly better place. There'll be a price to pay for that. One of General Jumper's daughters told him that he and I were destined to be here at this time to fix the problem. My line was, "John, if I'd wanted to choose a university to be a provost of, I'd have chosen a different one." (I wanted a place that had better restaurants.) Something we're trying to do is share what we faced with the other two academies. We're reaching out so that when we have a search committee, we specifically ask one of the other academies to put someone on it. We're forming such a committee to find a new academic dean because the current dean is retiring. We'll do that in a few other cases, trying to get best practices, trying to deal with problems. And the other academies will be the first to tell you that they, too, have had similar problems, and some of them simply didn't realize that we could be experiencing the same ones. We'll get through this, and the institution will be better for it.

The academy cannot be an elitist place. Elitism has to come from the performance of professional officers, not from where they went to school. As much as it upsets them, we give equal pilot slots to the Air Force ROTC [Reserve Officer Training Corps] and to the Air Force Academy. That's the right thing to do. I'm trying to blend the lineal lists, having a hard time getting people in the Air Force to understand what a lineal list is. I come from a program in which twelve hundred midshipmen went to the Naval Academy and twelve hundred midshipmen went to civilian schools. They graduated at the same time and both sets were commissioned in the U.S. Navy. Their lineal lists were blended, and their careers began. They even had a year group. We may not be able to do that, but we'll get close.

When General Ryan initiated the course for new lieutenants at Maxwell, the group who opposed him the most were alumni of the Air Force Academy. Why was the course needed? They've had four years in the Air Force. Why in heaven's name did they need it? Well, now they're not living in the Air Force, they're living in some other place. When they did the course, do you know what came out? People who were most impressed by the course were Air Force Academy graduates. By the way, they were given an entrance exam that measured how much they knew about the Air Force. ROTC students, on average, beat the academy graduates every single time. OTS [Officer Training School] wasn't that far behind. The average score for the Air Force Academy is 53 percent, ROTC is 51 percent, and OTS is 49 percent—statistically insignificant. So the other folks seemed to be able to learn rather quickly. But what's most impressive to the Air Force Academy graduates who go to this course, and what they write more often, is that they had no concept of the competence of the competition they'd be fac-

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ing in their careers as officers. Now we start to realize that we don't exploit our wonderful Enlisted Corps the way we should—in teaching our officers. If you're a naval officer, there's some chief or group of chiefs who are responsible for how you turn out. They're chief petty officers. In the Air Force, you become dependent on a first sergeant when you finally start to deal with people as a major, if you're a pilot.

General Jumper picked up on the idea. He said, well, let's take this same course, and let's put it together for at least a week with our advanced NCO [noncommissioned officer] Academy people. The first results of that were very good. From the young officers, we heard, "My God, these people are spectacular!" From the noncommissioned officers, the comments were, "They're as naive and as out of it as we thought they were." That's a very healthy beginning if one group knows it had better get off its tail and start to train the other group or else they're going to have to live with that group as majors, and if the other group is willing to listen.

Audience Member: Would you discuss the F/B–22 and F/A–22 and a possible commonality with the Navy, with the electromagnetic catapults and arresting gear that are coming on-stream in about 2011?

Dr. Roche: These are two separate questions. Let me take the second one first. The electromagnetic catapult is a design. I was very much involved with one of its competitors, and the British may be the first to really give it a try on their jump carriers. The F/B–22's wing size is such that putting hinges in it might be a problem. More important, we did some of the early, inexpensive development work on the F/B–22 to look at our bomber roadmap, which John Jumper quickly convinced me shouldn't be the bomber roadmap but should be the long-range strike roadmap. Which is to say, we're not sure what the future is. We know in the near term that we can do enormous things with weapons; we don't have to change platforms. Beyond that, if there's a great demand for platforms, one of the early off-ramps is the F/B–22, because everything you do to make the F/A–22 good makes the F/B–22 very good. Changes can go from carrying eight small-diameter bombs to carrying thirty-two.

If you go a little further downstream, you may want to have something that's suborbital. We're also wondering why such a thing has to have people on it. So if we're serious about a combat controller—this notion of Longbow—and you have a trooper on the ground who's highly trained, why can't you just build a big, stealthy bomb-dispenser that can stay over or near that ground-based trooper for twenty-four or forty-eight hours, because its little computer chips don't need sleep? That's just one off-ramp on the roadmap; but it's an off-ramp that we progress toward as we develop the air-to-ground capabilities of the F/A–22.

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Panel I
Billy Mitchell, Mason Patrick, et al

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Introduction of

Dr. Roger G. Miller

Historian, Air Force History

by

Col. Carol S. Sikes

Director, Air Force Historical Research Agency

It's my pleasure to introduce our first panel of the week, which focuses on Brig. Gen. William "Billy" Mitchell. In 1916, before the United States entered World War I, Secretary of War Newton Baker described his rather rambunctious, seemingly undisciplined men of the Aviation Corps to a group of the nation's leaders during hearings on Capitol Hill. He noted that the airmen were almost exclusively very young. They were engaged in desperate, daredevil behavior, and their attitudes toward life and toward themselves were characteristic of men exposed to especially hazardous conditions. As flyers they were disposed to chafe at restraint and discipline. Baker went on to say, "I do not want to be understood to criticize these young men. They are pioneering for the Army and the United States, and their exploits are superb." It's important to remember that early airmen were involved in an endeavor so new and revolutionary that in many ways it simply didn't fit within the ordinary boundaries of military experience. Army leaders accepted that this attitude existed, but they were unable to alter their perceptions of how future wars should be fought. Surely it's appropriate today as we examine a century of air power leadership to assess General Mitchell's dynamic and controversial career in the context of the evolution of air power in the twentieth century. Although Mitchell's drive for independence and his court-martial made headlines, his contributions can also be seen in his thinking about how air forces should be organized and controlled. His career brought the role of military aviation to the attention of the American people, and eleven years after his death, the United States Air Force was established. I suspect that our panelists may look at General Mitchell from various angles, emphasizing different facets of his leadership. I'll introduce our first panel's chairman, who will then introduce his panel members.

Ladies and Gentlemen, Dr. Roger Miller.

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Dr. Roger G. Miller

Historian, Air Force History

Thank you very much, Colonel Sikes. It's really wonderful to be back in Texas, and I say back in Texas because I was here in September speaking at a conference at the Nimitz Museum in Fredericksburg, up in hill country. I had a panel of veterans at that time, and sitting next to me was a great fighter commander, a squadron commander with the Flying Tigers, Tex Hill. In the middle of the proceedings, Tex kind of leaned over to me and pointed to the pitcher in front of us and whispered, "That water's awful nice, but I wish there was some bourbon in it." He's about ninety years old. Have you guys checked that water yet, by the way?

Billy Mitchell probably stands third in reputation among the great pre–World War II aviators, his reputation exceeded only by the those of the Wright brothers and Charles Lindbergh. It's no pun when I say that he's flying in very high company indeed, but he's remembered as a prophet, a revolutionary, a propagandist, and a troublemaker. I don't think we often think of him and talk about him as a leader. We've been very fortunate today to assemble an outstanding panel to look at him from that perspective.

We'll start with Prof. James Cooke, Professor Emeritus at the University of Mississippi, who's written an excellent book on Mitchell that I highly recommend, and he'll talk about Mitchell as a leader. We'll follow with Dr. Robert White from the Air Force Office of Scientific Research. He'll talk about another individual, Maj. Gen. Mason Patrick. I hope I'm not giving away too much of his story when I say that, talk about leadership, he may have been the only man available who could control Billy Mitchell.

Then we're going to look at the practical side of Air Service leadership in those early days through the work of Maj. John Beaulieu, who'll talk about the famed 1924 round-the-world trip.

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Billy Mitchell: Air War Fighter

Dr. James J. Cooke

Professor of History, University of Mississippi

It's been said that Billy Mitchell could start a fight in an empty room. His personality was tremendous; his vision, great. What I'm going to address is Billy Mitchell as an air war fighter in the first air campaign ever waged by the U.S. Air Service, the St. Mihiel campaign in 1918. First, I should note how far the Air Service had progressed by September 1918. When we entered the war in April 1917, we had one aero squadron. Although its planes were not particularly serviceable, within a little more than a year we were able to execute a highly successful air campaign, largely because of William Mitchell.

Mitchell held various positions while he was in France. He'd always thought he should have been chief of Air Service of the American Expeditionary Force. That was not to be. Those in charge tried to assign him somewhere so he could be what Gen. John J. Pershing, the commanding general, and others believed he could be—a great air war fighter. Mitchell eventually led an air brigade, but because the assignment added an extra layer within the command and control hierarchy, the arrangement proved unsatisfactory. Eventually, Mitchell went on to become chief of Air Service, First Army, and that was where he was when the planning began for St. Mihiel.

St. Mihiel absolutely had to work! Pershing understood this, and he made certain his subordinates did, too. It was the first American campaign in an American sector under American commanders. During a very short period, Mitchell began to develop the plan for capturing the salient that Germany had controlled since 1914. He had an excellent staff, and he was able to use it pretty well in developing what became Battle Order Number One, the first air campaign of the war. He spent most of his time on tactics. His staff dealt with logistics, with how to support this particular operation.

To plan the St. Mihiel operation properly, Mitchell drew on a decision that Pershing had made and a commitment the general had gotten from the allies of supplying aircraft, crews, and materiel. Within a month, Mitchell and his very small staff assembled 1,481 aircraft—American, British, French, and Italian—supported by 30,000 men—flyers, ground crews, and individuals providing logistical support. Fourteen major airfields from which the U.S. Air Service and the allies would fly were all under his control. Mitchell was a colonel at the time,

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so his authority was fairly secure. He'd achieved mass and he was ready to go. He was very orthodox, and he made it very clear that air was there to work with ground to accomplish the mission, which was to reduce the St. Mihiel salient.

Battle Order Number One specified a three-phase operation that would kick off on September 12. Mitchell considered it of primary importance to win the reconnaissance-counterreconnaissance battle. Several days before the beginning of the campaign, he launched pursuit aircraft into the air to blind the enemy to what exactly was happening on the American side of the line. In winning the counterreconnaissance battle, the first order of business, air observation flies, takes photographs, and reports back on enemy dispositions.

The second phase basically focused on day one. When the troops left their soggy trenches, air was there to go with them. Problems arose, however. Some men reported, "We really didn't have the kind of liaison we needed. We were being shot at from the ground." Many times pilots who were doing their dead-level best to accomplish the mission would fly into artillery barrages. But on day one, when the troops left those trenches, air was there to accompany them.

Now what were the airmen supposed to do? They were to attack enemy formations on the ground, disrupt any movement of reinforcements, and provide information to the ground units, both infantry and artillery. Working cooperatively during that first day was absolutely critical to this first American campaign. Were they successful? Absolutely. There were problems, but this was the beginning, the start!

The third phase was a follow-on phase, rather open-ended. What Mitchell proposed to do within the salient, and within the salient only, was delay the enemy from reinforcing, disrupt his command and control, and destroy his supply lines, ammunition dumps, and railheads. Delay, disrupt, and destroy, all in coordination with the ground forces.

Mitchell also made absolutely certain that each one of the attacking American divisions had an aero observation squadron and a balloon company so that commanders could immediately look out across the battlefield for information on, for example, targets of opportunity for the artillery. When I was writing a book on the 82d Division, one artillery commander, a General Rose, a very sharp guy, talked about targets of opportunity. Such opportunities wouldn't have presented themselves had it not been for balloons and aero observation squadrons.

The three-phase operation of Battle Order Number One set the air campaign in motion. Coordination between Mitchell's headquarters and the allies was pretty good, and he had some good liaison officers with him on his staff. Everything worked fairly well, all the way down the line.

By 1919 Mitchell had come to certain conclusions. He was convinced that the St. Mihiel operation—despite criticism from some of the ground troops—was successful. He was also convinced that air and ground worked well together, but then he went further. To him, St. Mihiel worked so well because the Air Service had an independence that was vital. The Air Service faced certain problems that

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the ground forces did not. It consumed a tremendous amount of fuel and oil; its ground crews were overtaxed; and its equipment was strained. Mitchell became convinced that an independent Air Service was very important to the great success of St. Mihiel, and to the lesser successes in the Meuse-Argonne.

Mitchell was orthodox in a lot of ways, and the first air campaign worked extremely well. However, some individuals, like Hugh Drum, Dennis Nolan, and others, denigrated and downplayed it. So what was the problem, when we look back on it? In examining unpublished memoirs, one finds a tendency on the part of these individuals to say that such-and-such didn't really happen; that the events were in Mitchell's mind. When you study the after-action reports of combat units from both ground and air, the three-phase approach did indeed work. Mitchell also understood the importance of independence for air because of the very critical observations that he'd made during air combat.

How do we categorize Mitchell? Yes, he was indeed a prophet. His growing emphasis on an independent air force comes from his experience in the Great War, his very great success at St. Mihiel, and then the operations in the Meuse-Argonne. I agree he was a prophet. More important, he understood the necessity of mass and the need to work with ground forces to accomplish the mission. Also, Mitchell looked at the type of aircraft he had and the missions they were to fly. He brought together synchronized (as much as could be synchronized in 1918) pursuit, observation, and bombardment planes. He brought them together and, when they encountered reconnaissance, battled with pursuit and observation—pursuit on day one, plus observation, and feeding information back to the ground forces—and with bombardment itself to help delay, disrupt, and destroy enemy forces. He brought these all together. Mitchell was much more than just a prophet of air power, he was a prophet of organization for the Air Service in World War I.

We remember Billy Mitchell as a controversial character, court-martialed, and resigned from the Army, but we oftentimes neglect to look at him as the first air war planner. He was a young staff officer at the outbreak of a war. He'd paid for his own flying lessons; the Army wouldn't do it for him. Look how far he and his staff went from April 1917 to September 1918—to 1,481 aircraft —tying together aircraft from four nations and accomplishing a mission to clear and secure the St. Mihiel salient.

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Mason Patrick: A Foundation of Air Force Independence

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Leadership takes different forms and is personified in various ways in different individuals. In the formative years of the United States Air Service, two leaders—Billy Mitchell and Mason Patrick—were instrumental in shaping opinions about the future of air power. But the two manifested radically different leadership styles and approaches in getting their message across. Billy Mitchell was very vocal about his desire for an independent air force and garnered much attention from the popular press. Mason Patrick worked behind the scenes, and it was he who was in great measure responsible for concrete changes leading directly to a semiautonomous Air Corps and, ultimately, to an independent Air Force. In this regard, Patrick's transformation of Air Service organizational elements, officer professionalization, and operational doctrine was critical. Patrick recognized air power's potential during war and peace because he understood the inherent symbiotic relationship between military aviation, commercial aviation, and the aviation-manufacturing base. His initiatives in these areas remain with us today.

General Patrick agreed completely with Billy Mitchell, his confrontational second-in-command, about the need for air force independence. Patrick and Mitchell had a common goal. Their main difference was over when the goal should be reached. They also differed over how to achieve it. And the *how* of the independence equation had a lot to do with Mitchell's and Patrick's personalities and, therefore, their approaches to leadership. No doubt, Billy was, as his biographer Professor Cooke described him, "brash, contemptuous of superiors, unwilling to work within the Army system, [and] incapable of giving credit to others."[1] To emphasize the zealousness of his character, we need only note what Sir Hugh Trenchard, chief of the Royal Flying Corps during World War I, said of his friend Mitchell, "If he can only break his habit of trying to convert opponents by killing them, he'll go far."[2] Mitchell was an air power zealot of the first order, or, more politely, he was a "loose cannon." Although he wanted independence for the Air Service just as Mitchell did, Patrick cultivated his opponents to gather support for what was realistically

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achievable for the Air Service, given the technological, doctrinal, and budgetary realities of the day. Let's take a look at Mason Patrick, at what he accomplished while he was Billy Mitchell's commanding officer.

Mason Patrick ranked second in his 1886 West Point graduating class, the class that also included John J. Pershing. While at West Point, both men were friends. In fact, Pershing and Patrick commanded their third- and fourth-year cadet classes as the first and second captains, respectively. Patrick's high class standing entitled him to choose his career field, and he chose engineering.[3] He performed with drive and administrative skill up to the moment Pershing asked him to take over the American Expeditionary Force [AEF] Air Service in May 1918. By then, both Billy Mitchell and Benny Foulois, because of their antagonism toward each other, had become severe sources of aggravation to Pershing as they attempted to organize the Air Service into a war-fighting combat element.

For several months in the midst of World War I, Pershing, as the AEF commander, had been tolerating the inflated egos of Mitchell and Foulois.[4] He fully realized the capabilities and disabilities of his two top Air Service officers: Mitchell was dogmatic, flamboyant, and an excellent combat commander; Foulois, while less capable as a combat leader, was the best homegrown senior officer the Air Service had ever produced. Neither was a good administrator. Pershing put the AEF Air Service leadership problem into perspective by noting that the Air Service had "good men running around in circles."[5] To get the Air Service to fly in single formation, Pershing appointed one of the strongest administrators he knew, his trusted friend and West Point classmate, Mason Patrick, to head it.

When Patrick took over the Air Service, his no-nonsense approach brought order to the chaos that had prevailed during the clashes between Mitchell and Foulois. Pershing decided to go outside the organization to find a commander because of a major shortfall that would continue to plague the young air arm: the dearth of capable senior leadership.[6] As Patrick later noted in his diary, Pershing might well have dismissed both Mitchell and Foulois had other experienced airmen been waiting in the wings.[7] With Patrick in charge, the AEF Air Service began to provide the much needed support that Pershing desperately required. Pershing's selection of a capable nonflyer to whip the Air Service into shape emphasizes the point that Mitchell's aggressive management style and divisive personality were entrenched characteristics; they didn't suddenly appear in the early 1920s with the heated debates about Air Service independence. Mitchell's bombastic operational style, no pun intended, was integral to his personality. In fact, when the earliest AEF Air Service and AEF general headquarters staffs were being formed, then-Col. Billy Mitchell did little to inspire the confidence and trust of newly arrived General Pershing or the trust of Pershing's key staff members.[8] Acceding to his staff's recommendations, Pershing allowed Mitchell to be given "charge of tactical aviation when nec-

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essary," in a rather lukewarm endorsement.[9] While Pershing successfully prevented the piecemeal utilization of American doughboys, regardless of allied blandishments and bluster, Billy Mitchell found much to admire in how French and British aviators fought the war. An Anglophile, Mitchell was very taken by the presence of Maj. Gen. Hugh Trenchard who, while commanding the Royal Flying Corps in France, had convinced Mitchell of the absolute necessity of both the offensive and strategic nature of air power.[10] Mitchell's especially pro-British attitude was all the more reason that Pershing and Patrick didn't view him as a complete team player.

Indeed, it seemed as if Mitchell went out of his way to offend many in key positions who could have been of immense help to him. Among his detractors were Pershing's one-time chief of staff, Maj. Gen. Hugh A. Drum, and Brig. Gen. Dennis E. Nolan, the AEF's G–2. The Air Service itself held many Billy Mitchell detractors. First and foremost was Brig. Gen. Benny Foulois and most of the 130-odd members of the Washington, D.C., staff he brought with him. Col. Frank P. Lahm, a veteran aviator who flew with the Wright brothers and was chief of Air Service, Second Army, was also not enamored of Mitchell. In late May 1918, when Foulois "bumped" Mitchell from his position as chief of Air Service, First Army, Lahm characterized the Foulois-Mitchell switch as: "a good thing . . . Someone [else] should have been appointed to that position long ago."[11] Col. Edgar S. Gorrell, author of the famed World War I Air Service histories, was one of Mitchell's early friends. As a member of Pershing's staff, he pulled no-notice inspections of Mitchell's squadrons; doing so earned him Mitchell's enmity.[12] On the other hand, Mitchell had the support of Hunter Liggett, former commander of I Corps, First Army, whom he had ably served as I Corps Air Service chief. All in all, Mitchell was simply not regarded as a team player. One cannot fault Pershing for emphasizing teamwork, given the almost overwhelming challenges facing the AEF commander: "loyalty . . . was a cardinal virtue in Pershing's hierarchy."[13]

At the close of the war, Patrick, as Mitchell's superior officer, writing to Pershing, characterized Mitchell as someone who

> thinks rapidly and acts quickly, sometimes a little too hastily. He is opinionated but I have usually found him properly subordinate and ready to obey orders. While he has worked well with the men and material which it was possible to furnish, his own ideas of what were necessary to accomplish his tasks I have found sometimes exaggerated. In other words, he has asked for more in the way of personnel and transportation than I believe to have been absolutely necessary for the performance of his duties. He has some tendency to act on his own initiative; it is not meant that this is a fault, as it is frequently a virtue, but there have been a few times when it has been uncertain just where he was or what he was doing. He is at all times enthusiastic and full of energy.[14]

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The words Patrick used to describe Mitchell at the close of the war can very well be applied to other aviation advocates generally: opinionated, exaggerated, and uncertain of just where it was all going. Personalities, to a great extent, drove those perceptions, and those perceptions of a somewhat go-it-alone Air Service lingered far after war's end. It was something with which Patrick would have to contend when he once again took command of the Air Service.

When at the close of the war Patrick remained in Paris to assist the American peace delegation, he made it clear to Pershing that he did not wish to continue as head of the Air Service.[15] Maj. Gen. Charles T. Menoher, a straight-laced infantry officer who'd commanded the Rainbow Division on the Western Front, was appointed Air Service chief, the job Billy Mitchell coveted. The inevitable clash of wills between Menoher and Mitchell ultimately resulted in the removal of Menoher by Secretary of War John Weeks.[16] In October 1921 Pershing once again asked Mason Patrick to head the Air Service. This change in command was not a spontaneous response to Menoher's resignation. Secretary Weeks and Pershing had been planning for Patrick to take over since July, when Pershing became the Army's new chief of staff.

Without exception, the Army's flag-rank fraternity welcomed Patrick's appointment. Capt. Henry H. "Hap" Arnold also approved, noting, "If there was any officer in the Army who should be able to control Mitchell, Patrick was the man."[17] Not everyone endorsed the appointment. Eddie Rickenbacker, the noted American air ace, said: "General Patrick is a capable soldier but he knows nothing of the Air Service." He commented further that "the appointment is as sensible as making General Pershing Admiral of the Swiss Navy."[18] But Rickenbacker was in the smallest of minorities. Patrick accepted the position of Air Service chief effective Wednesday, October 5, 1921, and he was on duty at his desk at Air Service headquarters on Friday.[19]

The duties Patrick assumed included, of course, command over his deputy, Billy Mitchell, precisely what he intended. Both Pershing and Patrick were well aware of the positive and negative factors regarding Mitchell. Pershing discussed them with Patrick, much as he discussed them during the critical AEF days.[20] Patrick's marching orders certainly didn't include the requirement to put an end to Mitchell's career or to stifle his creative genius. Patrick thought too highly of Mitchell, describing him thusly:

> Mitchell is very likeable and has ability; his ego is highly developed. He has an undoubted love for the limelight, a desire to be in the public eye. He is forceful, aggressive, spectacular. He had a better knowledge of the tactics of air fighting than any man in this country and would lose no opportunity to take a fling at the Navy. I think I understood quite well his characteristics, the good in him—there was much of it—and his faults.[21]

On his first day in the office, Patrick called in the entire staff for a general discussion of Air Service matters.[22] At the meeting's conclusion, he asked

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Mitchell to remain. During the ensuing discussion, Mitchell commented that in anticipation of Patrick's arrival he'd taken the liberty of preparing a new organizational plan for the service and asked for Patrick's review. Mitchell delivered it to Patrick that afternoon. Patrick noted that even the most casual reading of the plan revealed that if it were put into operation, Mitchell "would practically have charge of most of the Air Service activities while the chief of the Air Service would have but little control over him." The next day Patrick returned the plan "disapproved" and told Mitchell: "I [will] be chief of the Air Service in fact as well as in name." In addition, he told Mitchell to give no order without his approval. Patrick would "in every case" make all decisions. When Mitchell threatened to resign, he was escorted by a nonplused Patrick to the office of Maj. Gen. James Harbord so that he could formally tender his resignation to Pershing's deputy chief of staff. Harbord's absence from the office, as it was Saturday, allowed Mitchell a grace period to think over his threat. On Monday, October 10, Patrick, with Mitchell in tow, returned to Harbord's office and explained Saturday's turn of events. Harbord immediately offered to accept Mitchell's resignation. As described by Hap Arnold many years later, Mitchell "backed down and agreed to Patrick's terms."[23] Before the meeting, Patrick had already put those terms in writing and reviewed them with Harbord, who asked if Mitchell would abide by them.[24] In essence, in addition to accepting a detailed delineation of Harbord's responsibilities, Mitchell acknowledged that General Patrick was the final authority within the arm concerning all Air Service matters. He also agreed to the review of all of his speeches and written work destined for public release. Mitchell reiterated much the same thing in the presence of Pershing and Patrick when the chief of staff returned to his office on October 17.[25] Indeed, the whole affair must have been very unsettling to Mitchell, for he immediately requested permission to perform an unscheduled, and very leisurely, inspection of Langley Field, returning to Washington only at week's end.

In the short term, Patrick had immediately established his command legitimacy and also demonstrated that he'd be supported by the chief of staff, General Pershing. In the longer term, Patrick was faced with controlling Mitchell and coming to grips with the current and projected condition of the Air Service. Patrick characterized his new command as being in "as chaotic a condition as I had found it when some three years before I had been placed in charge of it in France."[26]

When Patrick took over the Air Service, it was close to death's door.[27] With little more than 200 officers, it was a mere skeleton compared to its size during the AEF days of World War I. It was embroiled in doctrinal disagreements, fiscal deficiencies, and personal antagonisms as well. Other long-standing factors—the evolution of aircraft technology, new air war fighting concepts, and inadequate funding—heightened tensions within the Air Service and between the Air Service and the War Department. Patrick certainly faced a difficult

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challenge, so one of the first things he did to address these myriad problems was quite obvious: at the age of fifty-nine he learned how to fly and earned his wings. General Patrick still holds the record for being the oldest active duty U.S military service member to become a pilot. He may have earned his wings, but, more important, he earned the respect of the men in the Air Service that included a pantheon of future air leaders—Benny Foulois, James Fechet, Hap Arnold, Frank Lahm, Ira Eaker, and Tooey Spaatz.

Patrick's junior pilot rating was more than just symbolic. He had definite ideas about air power. As I mentioned, his ideas were quite similar to Mitchell's. Patrick knew the value of air power, but, most important, he grasped its limitations as well as its capabilities. This isn't to say that he saw air power as relatively static; quite the contrary. Patrick was a professionally schooled engineer with an agenda, an agenda that concerned commercial aviation development, Air Service officer professionalization, development of air power doctrine, and legislative initiatives that would set the Air Service on the path to independence. With regard to the first issue, commercial aviation, when Patrick became chief of the Air Service, he decried the abysmal condition of the aircraft industry. He was a firm believer in the vitality of the commercial and civil aviation infrastructure, and he set to work, in his own way, to turn promise into reality. It was obvious to Patrick that a viable aviation industry had to be in place prior to conflict; to play catch-up after the start of war would almost guarantee failure. During the war, Patrick had learned that the average life of a single-seat fighter was six weeks.[28] He was determined to assist the aviation industry by eliminating a source of direct competition with the commercial manufacturers, that is, the Air Service's Engineering Division at McCook Field, which was tasked with design and prototype production of new aircraft. Patrick ordered that the Air Service division halt current and future design work on new Air Service aircraft. Instead, the Engineering Division became responsible for the testing and acceptance of new aircraft designs submitted by commercial manufacturers. As he attested during the influential Lambert hearings in 1922, Patrick was convinced that the aircraft industry could design and produce first-rate military aircraft.[29]

Patrick also initiated a move to eliminate the requirement for aircraft companies to sell their design rights to the government and thereby lose all patent protection. Patrick successfully lobbied Assistant Secretary of War Dwight Davis, who supervised all War Department procurement, to change the rule concerning proprietary design rights. Davis eventually ruled that the government would "recognize the principle of proprietary design rights" for aircraft manufacturers.[30] Thus, Patrick could invoke a sole source requirement, due to the patent on a particular aircraft design, and be assured that a company would be relatively well positioned to provide a good product. The competitive bidding process, in which the lowest bid almost invariably won out, had led to major quality control problems and numerous bankruptcies.[31]

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The need for separate Commerce Department oversight and control of commercial aviation in the United States was another of Patrick's initiatives. Here, Mitchell and Patrick differed. Mitchell campaigned for an all-inclusive Federal Department of Aeronautics that would control all aviation assets—military, commercial, and civil.[32]

Mitchell may have been ahead of his time, as was Patrick, but Patrick was ahead of Mitchell in realizing what time would allow. Patrick initially envisioned an Air Corps and Army relationship that was analogous to what the Marine Corps and the Navy enjoyed: separate services within the same department. He supported full autonomy, a unified and separate air force, achieved through a gradualist approach. He had a roadmap to get there, and the route was through legislation. A December 19, 1924, letter to Secretary of War Weeks explained in a nutshell what General Patrick had in mind for the future of the Air Service:

> I recommend that legislation be prepared at once to create an Air Corps; although I believe the ultimate solution of the national defense problem is a Department of National Defense, with the air, land, and sea forces as coordinate parts thereof. In the interim the best solution to the immediate problem with regard to the Air Service is the passage of the proposed legislation to create an Air Corps. Operating under the Second Assistant Secretary of War, it can be advancing toward the position it would logically assume in a Department of National Defense.[33]

Unequivocally, Patrick was for an independent air force; unlike Mitchell, he had a precise roadmap to get there—his 1924 proposal that ultimately led to the creation of the Air Corps in 1926. If anyone could claim bragging rights to such a success, it was Patrick. Granted, because of political pressures, he didn't get all he wanted, but it was a major step toward recognition of the unique status of the air force as a whole, the need for rated officers to fill command positions, and funding for a massive aircraft acquisition program.[34]

Patrick not only engaged on the legislative front, he entered into a raucous and tenacious struggle involving new technology and new doctrine, both of which collided with hard political realities. In his attempt to institutionalize new doctrine, Patrick spoke and lectured regularly at Leavenworth and the Army War College about the capabilities of air power. The emphasis on new doctrine was facilitated by the professional education of a relatively small coterie of Air Service and Air Corps pilots at the Air Corps Tactical School. Patrick didn't agree with every idea coming out of the school, but he heartily endorsed its educational and professional benefits. An intense camaraderie developed among the school's graduates, especially among its faculty. This group of officers and their beliefs set them squarely at odds with the bureaucracies of the War Department and the Department of the Navy. They called for resource reallocation and developed a war-fighting doctrine that inherent-

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ly internalized the rationale for service independence, both causes supported by Patrick. In effect, the professional military education of the time, rationalized via doctrine, justified the need for service independence.

What made this doctrinal and independence debate so interesting is that it was based to a great extent on unproven theories, what many would say were futuristic fantasies. If the Air Service was largely, if not exclusively, tied by doctrine to the ground force mission, there existed no rationale to support autonomy, and there would be no need for additional monies to support the infrastructure and mission of a separate service. General Patrick keenly appreciated the critical aspect that doctrine played in the resource debate, and he judiciously supported principles that best supported an independent air force. He never underestimated the importance of the airman's support of troops on the ground. In his final report at the conclusion of World War I, he urged that ground attack (close air support, and interdiction to a lesser extent) be greatly enhanced, and he was true to this belief throughout his tenure as chief of the Air Service and Air Corps.[35]

Patrick proved to be a far-sighted Air Service chief. He implemented a detailed plan to obtain independence that contained the critical aspects of legislation, education, doctrine, commercial and civil aviation initiatives, and a good mix of public and private politics. He was practical in his outlook, but he was also a progressive in his vision to obtain as much autonomy as possible for the Air Service. His was a balanced and successful approach to air power advocacy. Unlike Billy Mitchell, Patrick represented an era of planned evolutionary change, accomplished through competitive revolutionary theories within a conservative regulatory tradition. Against immense odds, the Air Service, under Patrick's guidance, was put on a precise heading—a flight path to independence.

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Notes

1. James J. Cooke, *Billy Mitchell* (Boulder, Colo.: Lynne Rienner Publishers, 2002), p. xi.
2. H. R. Allen, *The Legacy of Lord Trenchard* (London: Cassell & Co., 1972), p. 82.
3. *United States Military Academy, Official Register of the Officers and Cadets of the U.S. Military Academy, 1885–1892, Class of 1886,* USMA Archives, p. 10.
4. John J. Pershing, *My Experiences in the World War* (N.Y.: Frederick A. Stokes Co., 1931), vol. 2, p. 50; Mason M. Patrick, *The United States in the Air* (Garden City, N.J.: Doubleday, Doran, and Co., 1928), pp. 3–8.
5. Patrick, *United States in the Air,* p. 6.
6. If it were not for the actions of Congress, the Air Service would have had even fewer experienced officers come World War I. Before the war, neither the War Department nor the Signal Corps supported the Aeronautical Division to any great extent. In fact, the Signal Corps had to be prompted by Congress in 1913 and again in 1914 to submit legislation concerning flight pay and expansion of the military aviation program. Even then, the 60 officers and 240 enlisted men who were approved for the Aeronautical Division constituted less than 0.4 percent of an Army with a personnel total of 98,544. What exacerbated the situation was that most of the officers were volunteers from other branches, serving four years and then returning to their original career fields. See Alfred F. Hurley and William C. Heimdahl, "The Roots of U.S. Military Aviation," in *The History of the United States Air Force,* Bernard C. Nalty, ed. (Washington, D.C.: Air Force History and Museums Program, 1997), pp. 26–28.
7. Daniel R. Mortensen, "The Air Service in the Great War," in *History of the United States Air Force,* Nalty, pp. 54–60.
8. James J. Cooke, *Pershing and His Generals, Command and Staff in the A.E.F.* (Westport, Conn.: Praeger Publishers, 1997), p. 31.
9. Pershing to Brig Gen George O. Squier, Chief Signal Officer in the War Department, Jul 29, 1917, in RG 18, National Archives (NA), Washington, D.C., as cited in Cooke, p. 44, n. 1.
10. Alfred F. Hurley, *Billy Mitchell: Crusader for Air Power* (Bloomington: Indiana University Press, 1975), pp. 25–26.
11. Frank P. Lahm, "The World War I Diary of Col. Frank P. Lahm, Air Service, A.E.F." (Air University, Maxwell AFB, Ala.: Historical Research Division, December 1970), p. 80.
12. Ltr, William Mitchell to Benjamin Foulois, Jul 19, 1918, Mitchell Papers, Special Collections, Library of Congress, Washington, D.C.
13. Donald Smythe, *Pershing: General of the Armies* (Bloomington: Indiana University Press, 1986), p. 79.
14. RG 94, File 201.6, NA, Washington, D.C., as cited in Edward Coffman, *The*

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War to End All Wars (New York.: Oxford University Press, 1968) pp. 207, 369.

15. Patrick was indeed adamant about not continuing as Air Service chief, stating in his diary while still in Europe: "I do not want to have anything more to do with the Air Service after I get back. I shall be glad to lay down the burden I have been carrying . . . and then at home to fall at once from my high estate. It will be quite a fall, but I am not going to mind it much, provided I get off in a[n engineering] district somewhere and can just have enough to do . . . not too much." Unpublished diaries of Maj Gen Mason Patrick, Jan 8–Jul 14, 1919, entry for May 6, 1919, United States Air Force Academy (USAFA) Library.
16. Robert Frank Futrell, *Ideas, Concepts, Doctrine: Basic Thinking in the United States Air Force, 1907–1960* (Maxwell AFB, Ala.: Air University Press, 1989), vol. 1, p. 37.
17. Henry H. Arnold, *Global Mission* (New York.: Harper & Row Publishers, Inc., 1949), p. 90.
18. Burke Davis, *The Billy Mitchell Affair* (New York: Random House Inc., 1967), p. 120.
19. War Department Special Orders No. 231–0, 5 Oct 1921, Series 228, Box 6, File M-P, RG 18, NA.
20. Patrick, *United States in the Air,* p. 73.
21. Ibid., pp. 85–86.
22. This confrontational episode between Patrick and Mitchell is detailed in Patrick, *United States in the Air,* pp. 86–89.
23. Arnold, *Global Mission*, p. 106.
24. Patrick, *United States in the Air,* p. 88. Isaac Don Levine, in his book *Mitchell, Pioneer of Air Power,* p. 273, claims (contrary to Patrick's and Harbord's version of events) that Mitchell alone was responsible for insisting on a written statement of his responsibilities, with the Mitchell-inspired memorandum being finalized and dated October 18. The final memorandum (in Billy Mitchell Papers, NA, Special Collections) is dated October 18, the majority of which was produced by Patrick prior to Monday's meeting with Harbord. The revision incorporated some minor changes made jointly by Patrick and Mitchell at the meeting's conclusion. What is noteworthy, and until now, overlooked, is that Harbord wrote to Menoher on September 17 and requested "the difference between the duties of the Chief of Air Service and the Assistant Chief of Air Service" (see RG 18, File 321.9, Box 402). Harbord's request may have been initiated by Patrick; regardless, it demonstrates exceptional prescience. Burke Davis, in citing this incident, characterizes the Patrick-Mitchell relationship thusly: "No one routed [Mitchell] so completely in a personal clash as Mason Patrick did." Davis, *Billy Mitchell Affair*, p. 120.
25. MS 33, Box 11, Card 2.30, "Mitchell and Mason Patrick Seek a Modus Vivendi," paragraph 2, U.S. Air Force Academy, Special Collections.
26. Patrick, *United States in the Air*, p. 89.
27. Ibid., pp. 82–85, 89–91.

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28. "Report of the Chief of the Air Service," in *United States Army in the World War, 1917–1919* (Washington, D.C.: GPO, 1948), p. 278; Lee B. Kennett, *The First Air War, 1914–1918* (New York: Free Press, 1991), p. 94.
29. U.S. Congress, House, Report of the Select Committee of Inquiry into Operations of the United States Air Services, House Report No. 1653 (Washington, D.C.: GPO, 1925). (Otherwise known as the Lambert Hearings.)
30. John B. Rae, "Financial Problems of the American Aircraft Industry, 1906–1940," *Business History Review* (Spring 1965), pp. 46–48.
31. Edwin H. Rutkowski, *The Politics of Military Aviation Procurement, 1926–1954* (Columbus: Ohio State University Press, 1966), passim.
32. William Mitchell, *Our Air Force* (E. P. Dutton & Co., N.Y., 1921), pp. 200–203.
33. Memo for the Secretary of War, Jan 29, 1926, with attachments,. RG 18, Series 321.9, Box 484,"Air Corps Act," NA.
34. Billy Mitchell thought very little of Patrick's 1924 initiative, and when it was passed into law in 1926, Mitchell derided the results as inadequate because they did not achieve total independence. Mitchell's attitude was unfortunate in that Patrick had helped him smooth things over during an ugly incident in the last months of his first marriage, when Mrs. Mitchell contacted senior Army officers about her husband's "recent erratic conduct." Patrick also went to bat for Mitchell with Secretary Weeks and supported Mitchell's reappointment as assistant chief in 1925. See Davis, *Billy Mitchell Affair,* pp. 128–31, 203–4.
35. Patrick, "Report of the Chief of the Air Service," pp. 231, 234.

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The Douglas World Cruisers, 1924

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Air Force Historian

I once heard it said, "If you're a leader and no one's following, then you're just going for a walk." That was definitely not true, I think, when you look at Billy Mitchell, Mason Patrick, and some of the key figures of the time. These men were truly leaders; they had distinct followers. Today I'm going to look at a forgotten element in our aviation history, a very proud moment that we've often overlooked—the 1924 World Flight.

In April 1924 eight intrepid and courageous airmen embarked on a journey of more than 26,000 miles in four open-cockpit biplanes, battling blizzards, sandstorms, typhoons, and blinding fog. During their journey, they lost two of their planes, fortunately with no loss of life. The men finished their five-and-a-half-month flight at the end of September 1924 and landed in Seattle, Washington. This remarkable event occurred three years before Charles Lindbergh's epic flight from New York to Paris.

As background, let me tell you what was going on in the world at the time, at least in Europe. In Europe, government support for commercial aviation was growing, and air progress seemed to be advancing more rapidly than it was here. England had its own air terminal by 1920. By 1924 more than 15,000 paying passengers had crossed the English Channel, and airlines had direct connections with most of the continental capitals at the time. Italy's Benito Mussolini had quickly seized the political implications of possessing air power. He hoped to block out the sun with planes.

During this time, Britain had given financial aid to the new imperial airways, and France was pouring $3 million into commercial aviation. While commercial aviation flourished in Europe, American aviators had also done remarkable things. Specifically, they'd monopolized most of the world records for altitude, speed, endurance, and distance. As chief of the Air Service, Mason Patrick thought that a good way to battle low budgets was to enter his aviators in these aeronautical events and attract national attention; that was exactly what he did.

The man who taught Mason Patrick how to fly had originated the idea of flying around the world, and as early as 1922 Maj. Herbert A. Dargue had proposed the idea to Billy Mitchell. Mitchell later called a press conference and announced his idea to have a squadron of six planes fly around the world. Well, it may have

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been Mitchell's idea, but it was Mason Patrick who executed it. I'll look at how Mason Patrick did three key things still done by leaders today.

First, he set out by clearly defining his task. Knowing what was involved, he developed a masterful plan. Second, if he didn't engineer the plan himself, he assembled a team to carry it out. Patrick persevered in his mission despite the many naysayers who insisted that too many obstacles prevented flying around the world. Third, he put his vision into concrete form and made it a reality.

A strong motivator, he confronted all obstacles, tore them down, and made the round-the-world flight possible. Patrick realized that Congress wouldn't support an independent Air Service, as Dr. White has mentioned. He wanted to work within the existing framework. He also realized that a round-the-world flight to emphasize military objectives wouldn't go over well with Congress either, particularly in view of the nation's war-weariness at the time. Plus, plenty of practical problems presented themselves: bad weather, equipment limitations, inexperienced pilots, poor communications, lack of bases, and logistical nightmares. All of these merely represented challenges to be overcome. Although Rear Adm. William A. Moffett's Bureau of Aeronautics proposed the idea to fly around the world with air ships, the Navy's concept was mothballed, and Mason Patrick's more practical plan was pursued.

International pressure for the expansion of aviation was being exerted, particularly by Europeans. Interservice rivalries were ongoing. These strong undercurrents pushed the notion of a World Flight. Many Americans were no doubt eager to boast that their countrymen would be first to complete it. Certainly, the Army would have loved to beat the Navy in this race, and vice versa.

In fact, at about this time, an international round-the-world race that Mason Patrick never formally acknowledged was brewing in five other countries. Ever mindful of politics and publicity, he could have gone to Congress and said, "Look, if we learn to fly around the world it's a great opportunity to test our pilots and their endurance. We'll also see if they can hold up to long bombing missions." Instead, he decided to express the objectives of the mission in peaceful terms. For him, probably the most important reason for the flight was the testing of men and planes in demonstrations of what they could do.

Obviously, as aviation was in its infancy, testing was essential. No one knew whether an airplane could be built to withstand extreme temperatures of cold and heat that might be experienced during a round-the-world flight. No one had any idea of what would happen to the wings, the engines, or to the pilots that had to endure temperatures that ranged from intensely hot to below freezing.

Patrick's idea was approved by the War Department, and he was allowed to implement his plan. His first step was to form a committee, a typical starting point in all Air Force projects, but this committee had one important difference: A first lieutenant chaired it. Originally, the World Flight was to be commanded by a lieutenant colonel, but he crashed in Alaska and his second in command, a first lieutenant, took charge. That's why the chairman of the World Flight Com-

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mittee was a lieutenant and the pilots who carried out their amazing achievement were all lieutenants. The point is that the displays of great leadership we're discussing don't rest solely with Mason Patrick; they devolve to even the most junior officers, whose execution of their responsibilities was fantastic.

The World Flight involved a great many questions and far too few answers. What airplanes should be used? Should they be from the current inventory? Would an expensive procurement process be necessary? The committee decided to generate competition. Donald Douglas proposed using a modified Navy torpedo plane, which he renamed the Douglas World Cruiser. In fact, that's what was flown. The Army had a prototype built that would be used for test flying and acquainting the pilots with taking off from water, something none of them had ever done before. They had to find a sturdy, nearly indestructible craft that could handle extreme temperatures and climates.

Mason Patrick could choose among many fine pilots—Clarence Tinker, Horace Hickham, or Tooey Spaatz, to name just a few—but during one of his inspections he chose Fred Martin. Sadly, Martin crashed very early in the harsh Alaska environment. Hap Arnold recommended a pilot named Lowell Smith, who eventually became second in command and then commander of the expedition. Two other pilots were chosen; one of them was a brilliant mechanic who could take apart a Douglas World Cruiser and reassemble it. He could probably do the same with any plane in the Army. Eric Nelson was just a phenomenal pilot and mechanic. Perhaps the most skilled pilot among them was Lee Wade, at the time probably the best-known individual on the World Flight; he later became a general. These pilots and mechanics teamed up to comprise a list of eight. They chose a couple of alternates to go along, which turned out to be a good decision because one of the mechanics took ill (he had a lung infection and had to bow out). They also took an alternate pilot to fly with Lowell Smith.

The pilots trained at Langley Field for about six weeks, learning first aid, survival, aerial navigation, and meteorology. They devoted their mornings to academic studies and their afternoons to flying the prototype Douglas World Cruiser from the coast of Virginia to learn how to bounce safely off the ocean.

After they finished their training, they moved to Washington, D.C., and met President Calvin Coolidge. Although he approved of the idea of the flight, Coolidge was otherwise a cold individual and no fan of aviation. He reportedly asked why the United States bought so many planes: "Why don't we just buy one airplane and let the pilots take turns flying it?"

After their meeting with the president, the pilots went to Santa Monica, California, where they actually teamed up with the machines they were going to fly. Douglas rolled out four airplanes, stamping them *One*, *Two*, *Three*, and *Four*. Mason Patrick reasoned that Americans were unlikely to wrap their minds and hearts around those appellations, so he came up with the brilliant idea of renaming the airplanes. *One* was changed to *Seattle*; *Two* became *Chicago*; *Three* was called *Boston*; and *Four* emerged as *New Orleans*. In this way, Patrick hoped to

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get the entire nation behind the effort. In a single press announcement, he designated the four corners of the nation.

The time for liftoff was approaching. The date originally selected was April 4, 1924, but bad weather forced postponement to April 6. At take-off Lee Wade was unable to get airborne from the water because he'd added an extra item or two to his inventory. In this era of prohibition, he thought it was a good idea to bring along a case of Scotch. (He didn't reveal this at the time, but during a subsequent interview, he finally admitted as much.) Ultimately, Wade had to leave his whisky behind, along with some winter underwear. You can imagine that they'd taken the barest of essentials—pliers, screwdrivers, hammers, wrenches, flashlights, survival items, fur-lined suits, gloves, two changes of underwear, socks, and shirts. The maximum ceiling for the World Cruiser, with wheels, was 10,000 feet; with pontoons, it was 7,500 feet. Flying in an open cockpit to Alaska, with temperatures well below freezing, and then on to various places, like Calcutta, with temperatures as high as 120 degrees Fahrenheit, was challenging. Still, the key to the flight was logistics. Supply areas were filled in advance and prepositioned to be ready to supply and service the World Cruisers.

As they made their way north to Alaska, Fred Martin crashed, in one of those rare instances when no one got hurt. (Actually, I think he got a black eye.) There was a 50-knot wind, and the plane, traveling at 75 miles per hour and powered by a Liberty engine just cranking away, plowed headlong into a mountain loaded with snow. It was as if the plane had hit a large pillow. How Martin and his mechanic survived the subsequent ten-day hike is an amazing story in itself, but because my presentation time is short, I'll only tell you now that they eventually managed to cross the Pacific. It was the first time we'd ever done that, crossed from the Aleutian Islands to Japan. It was on May 17. They then traveled down the Asian coast and made it to Calcutta, in India. Refitting their aircraft with wheels, they flew on to Europe, and then to England. After the wheels were replaced with pontoons, it was Lee Wade's turn to encounter difficulties.

He had to make an emergency landing. Here was this phenomenal pilot performing an outrageous landing in thirty-foot swells off the coast of Scotland. Somehow, Wade survived and was rescued by a nearby U.S. Navy destroyer. Fortunately, he'd taken along a rifle. Stranded in the water, he started taking potshots at the Navy vessel, and after its crewmembers heard pinging off the hull, they responded. Amazing.

Anyway, so now the flight was down to two aircraft. *New Orleans* and *Chicago* made it through to Iceland, Greenland, and on to Nova Scotia. In Nova Scotia, Lee Wade had a gift waiting for him—a prototype plane nicknamed *Boston II*. Soon, he was back in the show, flying with the others as before.

They flew down to Maine, and next to Washington, D.C., where President Coolidge, who'd received them coolly before, awaited their return. He waited for three hours in a cold rain to greet them. Perhaps he did so to make a strong political statement, or maybe he was motivated by the death of his sixteen-year-

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old son, an avid aviation fan. In Washington, Coolidge, Secretary of War John Weeks, and Mason Patrick were photographed with Lee Wade and some of the other world flyers.

The eight went cross-country and landed in Seattle on September 28, doing what no one had thought possible. They'd circumnavigated the globe. Their trip took five and a half months, but the important thing is, they did it. And your heritage and mine are linked with those guys.

I wish I could tell you that somehow the 1924 World Flight has direct ramifications on the Global War on Terrorism. But, frankly, I don't have a clue as to how they could be melded. I do know that the leadership characteristics exemplified in Mason Patrick—characteristics that enabled him to define a task and complete it by bringing the right people together to make things happen—instilled a vision, motivated his airmen, and helped build a heritage that's everlasting and that certainly will be applied to any warfare in which we're engaged.

I'd like to leave with you this thought, although I don't know its author: "Societies are renewed by individuals who believe in something, care about something, and are willing to take a stand for something." Such individuals were Mason Patrick, Billy Mitchell, and the others who'll be discussed by subsequent panelists.

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Panel II
The Second World War

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Gen. Carl A. Spaatz: A 21st Century Air Leadership Model

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School of Advanced Air and Space Studies

My purpose in exploring the life of the first chief of staff of the U.S. Air Force, Gen. Carl A. "Tooey" Spaatz, is to suggest ideas by which one could enhance one's own potential for air leadership, develop programs for the education of future air leaders, structure private, but organized, professional reading programs, and plan informal mentoring efforts at the unit level.

No leader is perfect, and hardly anyone is totally lacking in leadership virtues. The Wright brothers were leaders in science and technology, albeit without the formal education one would think necessary. Gen. Curtis E. LeMay was a main pillar of nuclear deterrence in the 1950s and an exemplary combat leader in World War II. He inspired many of his Strategic Air Command followers to do great things. Gen. John P. McConnell, chief of staff during the Vietnam War, is remembered for saying, "The business of the Air Force is to fly and to fight, and don't you forget it!" An abrupt and forceful man, he'd been first captain in the Corps of Cadets at West Point. Gen. Michael E. Ryan, the second Air Force Academy graduate to become chief of staff, commanded air operations in the Balkans in the mid-1990s with great care and effectiveness. Carl Spaatz, a "cleansleeve" (without cadet rank) at the U.S. Military Academy, was famously taciturn. All of these men were different; all were effective; all had human defects.

The study of the life of General Spaatz can provide us no more than a model for air leadership.[1] Any model is merely an abstraction of reality, an approximation that's much simpler than reality. A model gives direction to the study of leadership, but never completes the picture. No matter how good it is, a model doesn't give pat answers for the problems of leadership; it only suggests what seems to have worked in the past and what might work in the future. It's handy for instruction and discussion, and it facilitates communication through a common vocabulary. It can add to our knowledge, but it can never give wisdom.

With respect to the six leaders cited,[2] I suggest that they provide models for leadership that vary from the very simple to the complex. To structure the

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remainder of this presentation, I've selected a model of medium complexity. It may be easier to discern the causes of leadership's failures than the causes of its successes, so I'll suggest some anti-models, some negative models. In general, they should be avoided, but sometimes folks have succeeded in spite of negative factors. For a long time Napoleon Bonaparte succeeded, although no one would ever suggest that his career was a model of integrity.

I intend to use the career of General Spaatz to illustrate, explain, and test the validity of the medium-complexity model. I'll also discuss the usefulness and limitations of biographies, Spaatz's as well as those of others.

The model one chooses for any study is of necessity an extension of what one knows from one's own experience, situation, and education. Many sources of ideas and information are available, some of which I'll briefly recommend. Both positive and negative aspects attend using biography to develop a model, so I'll close with remarks about both probable and improbable outcomes and about methods on the development of leadership potential, one's own and that of aspirant commanders.

Apparently, the U.S. government believes that leaders can be made and it has invested enormously in building four great service academies based on that assumption. Yet arguments abound that some inborn attributes make one a great leader. Abraham Lincoln is an example. He was an avid reader, and his self-education was considerable. His career also demonstrates growth in his capability as a leader that was derived from experience in the "school of hard knocks." Many great leaders seem to have attributes that education cannot change. Being tall is said to help. But Napoleon was short and, late in life, rather plump, and he was among the world's greatest leaders until the eve of his final downfall. My own view is that some immutable assets help, but few if any are absolutely essential. Napoleon himself once uttered these words:[3]

> Read and reread the campaigns of Alexander, Hannibal, Caesar, Gustavus, Turenne, Eugene, and Frederick. Make them your models. This is the only way to become a great general and to master the art of war. With your own genius enlightened by this study, you will reject all maxims opposed to these great commanders.

Clearly, Napoleon thought that, at least in part, great leaders can be made by experience and study.

Assuming we can, if not build a leader completely from scratch, at least improve an individual, I'll move on to suggest how we might do so. But no individual can improve himself or his mentorees without some understanding of what his objective is.

As I stated, a model is an abstraction of reality, a simplification. A roadmap showing the route from Denver to Kansas City certainly doesn't look anything like the reality we see when we fly above the terrain, or even when we drive along the highway.[4] Reality is much too large and complicated to use inside an

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automobile, and it contains a great deal of unnecessary detail. The roadmap is an abstraction of reality; it's a model, in other words. Does it depict every possible way of getting from the mile-high city to Kansas? Certainly not; few maps contain every street and side road that could be used if a detour were necessary. Furthermore, a roadmap would be of little use to an aviator flying above the clouds; aeronautical facility charts would be needed, and they little resemble a roadmap. But a roadmap serves its purpose because of its simplicity. The inclusion of the location, frequencies, and call signs of tactical air navigation system aids would be superfluous. So, also, with leadership models. Too abstract, they're useless for study; too complex, they're excessively cumbersome and often inapplicable.

Because a model is, again, only an abstraction of reality, any number of them are certain to be floating about. The one I remember from attending Squadron Officer School [SOS] in 1959 was "Body, Soul, Mind." It was simple enough that I still remember it, but it was maybe so simple as to constitute a set of truisms. One should be strong, dedicated, true, and smart. Well, yes, and motherhood is good, too. Many can remember the United States Military Academy model: "Duty, Honor, Country," and the United States Air Force Academy model is similar: "Integrity, Service, Excellence." In thinking about models, my boss, Prof. Dennis Drew, elucidated some that I'll use in my examination of the life of Carl Spaatz. They can be encompassed in the three categories of the 1959 SOS model, and they'll serve as the roadmap for my study of Spaatz's leadership: knowledge, courage, decisiveness, dependability, initiative, loyalty, judgment, endurance, and bearing

President Harry Truman once defined leadership as "getting people to do what they don't want to do, and liking it." Thus, a leader necessarily must establish goals for the group and then strive to get the group to accomplish them. Spaatz, like most airmen, had only one goal in the beginning—to fly. He declared that, in the early days, neither he nor his flying buddies knew anything about organization, politics, and strategy and that they couldn't have cared less as long as they could fly.[5] However, by the time Spaatz was involved in the defense at the Billy Mitchell court-martial in 1925, he was exposed to the ideas of his mentor. From then on, in addition to flying, he was concerned with the achievements of national security, an autonomous air force, and a "unified" department of defense. This last element entailed a single air force.

Again, nobody's perfect. Was Spaatz the complete model for the twenty-first century cadet? No. He smoked all his life; he loved gambling at cards, although he wasn't very good at it; and he drank Scotch, perhaps sometimes too much, until his last days.[6] He was an avid player of squash in his early years, but he gave up the sport in the 1930s. Thereafter, he didn't have a regular exercise program.[7] Would I advise a prospective leader to smoke, drink, gamble, and forgo exercise? There's a story that goes like this: Just before World War II, in 1939, a flight surgeon warned Spaatz that if he didn't give up drinking and smoking, he'd die. Spaatz died in 1974; the younger doctor died in 1960.[8] The point is, no

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leader can ever be perfect in all things for all times. The best we can hope to be is good enough to meet the challenges that come our way.

Discovering the reasons for failure is usually easier than discovering the reasons for success. Hardly anyone claims that good luck didn't have something to do with his or her success, and Spaatz was no exception. Arguably both Ira Eaker and Haywood Hansell[9] were on the cusp of success when Gen. Henry H. Arnold, as Army Air Forces commanding general, ran out of patience and fired them. To some extent, their successors, Spaatz and LeMay, were fortunate to come in just as the units were on the verge of winning. Too, there are some things like health and physique that one often cannot do much about. Equally frustrating is the fine line that exists between hesitance and recklessness, between reticence and brashness, or between honesty and tactlessness,[10] and so forth. Of course, a leadership model that tries only to avoid mistakes is all too common and tends to guarantee the avoidance of decisions, with the consequence of stagnation.

Returning to Spaatz as a potential model for leadership, his family, unlike Douglas MacArthur's, had no connection with military service.[11] His father, Charles, was a small-town newspaper editor, and it's difficult to see the effect of that on the development of the boy. Carl was an adequate writer, but, because of a slight stutter, he disliked speaking in public.[12] Certainly, the family of five children, plus a dependent grandmother, was not well-heeled. Carl's mother said that her son attended West Point principally for a free education.

Spaatz didn't stand out as a cadet, either academically or militarily. He graduated with mediocre grades in the lower half of his class, and he was a clean-sleeve; his conduct record was near the bottom. But his timing was right. He emerged in 1914 and, after a short tour in Hawaii, went through pilot training on North Island in San Diego, qualifying as one of the "Early Birds."[13]

Spaatz deployed with Capt. Benjamin Foulois and the 1st Aero Squadron to Mexico on the Punitive Expedition of 1916.[14] (At that time he also met Gen. John J. Pershing and offered to give him an airplane ride; the general declined.) Not long after, he deployed to France where he commanded the Issoudun training center for fighter pilots, handling up to 1,000 aircraft and 5,000 men. This was but three years out of West Point, and he already held the rank of major. He also became well acquainted with Billy Mitchell. What was perhaps most important was the fact that when ordered back to the United States for a training assignment, he took the initiative to get himself sent temporarily to the front line as a pursuit pilot. In the process, he came near death twice. Only fate and his squadron commander saved him, but he shot down three Fokkers. That experience and the resulting medal also qualified him to keep his temporary majority when nearly all other veterans lost their wartime rank on returning home. This was important. Because so few majors were left in the service and because so few promotions were forthcoming to anyone, Spaatz was available for a string of important assignments. So at a crucial early time he showed courage and initiative. He also benefited from a healthy dose of good luck, professionally and

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personally. The judgment to continually "check six" wasn't then demonstrated.[15] A key assignment for Spaatz came soon after World War I when he was selected to command the 1st Pursuit Group—the only pursuit group—at a time when fighter aircraft were deemed the mainstay of the Air Service. He was almost destroyed by a corrupt finance officer in the group,[16] but he survived to go through the Air Corps Tactical School and be assigned to the Air Staff under Mason Patrick and Billy Mitchell. After participating in the famous Mitchell court-martial, he was retained on the Air Staff when his friend Hap Arnold was sent to Fort Riley.[17]

It was then that the aerial refueling stunt was conceived, with a Fokker trimotor, *Question Mark*, rigged for the task. Lowell Smith had proved aerial refueling in 1923, but the new effort was to be an endurance test to establish the reliability of aircraft in the late 1920s, ostensibly for a doubting public. Spaatz was appointed to command the crew. The mission was successful at no little risk to him and especially to Sgt. Roy W. Hooe, the airplane mechanic who had to service the engines while working outside the cockpit. According to Ira Eaker, on New Year's Day the men were flying over the Rose Bowl when Spaatz, grappling for the refueling hose, got soaked with gasoline, thought at the time to have deadly effects on the skin. He disrobed, put on a parachute harness, and asserted that if his skin started to burn, the mission would not be aborted. He told the crew he'd bail out, and that they should continue without him. Eaker told me that it was the only time in his life he'd ever seen a nude in a parachute harness. Spaatz had come close to streaking the entire Rose Bowl. I suppose a 150-hour flight demonstrates courage, selflessness, and endurance, and we might wonder how to cultivate those qualities in ourselves and our successors.[18]

People are important. Ira Eaker also remarked that, unlike many others, Henry Arnold didn't have lieutenants. He had only one, according to Eaker, and that was Spaatz. Although some have doubted it, Spaatz's wife, Ruth, has asserted that one important basis for this special relationship occurred in 1920 when her husband had just returned from France. The only exception to a general reversion to peacetime permanent rank was made for individuals who'd been awarded the Distinguished Service Medal as a result of combat in France.[19] Spaatz and two or three others had received the award, but Arnold hadn't. Thus, when Arnold reverted to captain and was then promoted to major the next day, Spaatz became senior to him because of several years' date of rank. According to Mrs. Spaatz, her husband immediately charged off to the Army Corps commander and requested a transfer to avoid any inversion of command. Spaatz's action made a huge impression on Arnold, who forever looked upon him as one of the few who wasn't trying to get his job.[20] Whether the story is accurate or not,[21] it's true that from a very early date Spaatz became Arnold's trusted agent, and both were a part of the Mitchell clique.

Strangely, when Benjamin Foulois, who hated Mitchell,[22] became chief of the Air Corps, he hired Spaatz to serve on his operations staff. Oscar Westover,

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Foulois's assistant chief and also none too fond of Mitchell, thus became Spaatz's rating officer. Westover, nevertheless, gave Spaatz the highest possible evaluation on his effectiveness report at a time when such "firewalling" was rare. When Foulois retired in relative disgrace, he recommended Henry Arnold as his replacement, but his recommendation was ignored. (Foulois had thought Westover too accommodating to the Army General Staff.) When, as the new chief, Westover offered a farewell party for Foulois, the old aviator declined, but when Spaatz organized an informal party, Foulois accepted the invitation.[23] Perhaps this account suggests that Spaatz was hardly a careerist, as evidenced by his relating very well to various bosses who were often at odds with one another. Clearly, Spaatz and Arnold were disciples of Mitchell. Foulois hated him; Westover didn't like him either. Mitchell was still alive when Westover became the new chief, although he had only a few more weeks to live. Maybe these facts substantiate the notions that Spaatz was relatively selfless and certainly dependable and loyal to whoever happened to be his boss.

When Arnold became commanding general of the U.S. Army Air Forces [USAAF], that theory was further supported because he repeatedly gave the most crucial assignments to Spaatz as commander of the air forces arrayed against Germany. Arnold then turned over the whole U.S. Army Air Forces to him. When, after the war, Dwight D. Eisenhower became president, he went out of his way to instruct Spaatz to continue calling him "Ike" instead of something more formal—eloquent testimony of character on both sides.

Spaatz's West Point schoolmate and number-two man at Issoudun was Charles C. Benedict. In May 1925 Carl and Ruth Spaatz were standing near the flight line at Langley Field when Benedict crashed his aircraft into an observation balloon and was killed. Benedict's wife also witnessed the accident. Later, it fell to Spaatz to send his condolences again to the widow when her son, Charles C. Benedict, Jr., went down with a Twentieth Air Force B–29 in China. In 1933, as a member of the Pursuit Board meeting in Dayton, Spaatz was again standing on the flight line watching two of his friends, Hugh Elmendorf and Monk Hunter, test a two-seat aircraft. They got it into a spin and couldn't recover. Although Hunter parachuted out at the last second, Elmendorf died in the wreck before Tooey's eyes. During World War II, when Elmendorf's son died in combat, Spaatz again had to send his condolences to the widow and bereaved mother.[24]

When General Spaatz took over the air forces in England in January 1944, the crews were in a bad way, having recently suffered through the second Schweinfurt raid. The U.S. Strategic Air Forces in Europe[25] staff estimated that a bomber crew member had no fewer than one in four chances to complete twenty-five-missions; half the force could expect either death or prison camp before completing a tour.[26] Finding a way to sustain the crew force assumed great urgency. A scheme to send aviators home for thirty-days' leave and then bring them back for a second tour was tried. (It was also tried in the RAF [Royal Air Force]

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Bomber Command.), but it didn't work and something had to be done.[27] Statistics "proved" that one's survivability during the last ten missions was far superior to what it was on the first ten missions. Increased survivability related directly to crew experience, but selling the individual tail gunner the idea that a longer tour would improve his survivability was tough. Spaatz's oldest daughter (and the others say his favorite) was then serving as a Red Cross volunteer at Snetterton Heath, an Eighth Air Force base, at the time her father ordered the lengthening of a tour from twenty-five to thirty-five missions. She flew to London and tearfully begged her father to rescind the order that she considered a death sentence for her friends.[28] Her father, however, knew that the Luftwaffe was hurting, too; Ultra was reading the Luftwaffe's loss reports so Spaatz knew that its crew force was rapidly declining. Because Operation Overlord was in the offing, the imperative was to achieve air superiority before the landings—to reduce the suffering of the soldiers on the shore and perhaps prevent their being shoved back into the sea in another Dunkirk. Spaatz stuck to his decision. In April and May the loss rate took a dramatic turn for the better,[29] and the soldiers at Normandy found the Luftwaffe conspicuous by its absence.

Just after the war, when Spaatz, as commanding general, had taken control of the U.S. Army Air Forces, the Yugoslavs shot down a stray USAAF C–47, killing the entire crew. When the bodies were brought back to Arlington for burial, Spaatz and his boss, Assistant Secretary of War for Air Stuart Symington, rode to the ceremony in Symington's staff car. Symington confessed to me that as he gazed on the caskets being lowered in the presence of the widows and young daughters, he broke down in tears, while Spaatz stood at attention alongside, apparently with a rigid, emotionless face. When they returned to the Pentagon in silence, they arrived at Symington's office first. As Spaatz turned to leave, Symington called him a cold fish to be able to behave that way. Then, according to the secretary, it was the only time he'd ever seen Spaatz's face turn red as he responded: "God damn you, Stu. I've been attending the funerals of my friends all my life," and he whirled about and stalked off to his own office.[30]

My point is that he was a humane man, one who grieved mightily for his subordinates and fellows and, because he did, damned the secretary to his face. But he was also a leader who had the moral courage and the decisiveness to do what had to be done to save lives, notwithstanding great personal pain.

At the end of the day, then, did Carl Spaatz achieve his goals? He succeeded in spending a great part of his life in the operational part of the flying arm, although he did have repeated tours on the Air Staff, usually protesting that he didn't want to be there. He was involved in the sustenance of national security during combat in both world wars, and he was a major player in organizing the Air Service and Air Corps. The U.S. Army Air Forces by all measures was a significant force in winning World War II, both in Europe and in the Pacific. Those goals were satisfied. As for the goal of autonomy, it was an incomplete victory. A separate air force was achieved, but it was one among four American air

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forces. Spaatz's influence as the first Air Force chief in terms of organization, ideas, and service culture remains with us still. Too, he had a role in the initial foundation for nuclear and arms control doctrine that lasted through the whole of the Cold War.

Although we cannot lay the blame for it at Spaatz's door, the goal of a unified department of defense was not achieved. At the time of Spaatz's retirement, an organization known as the National Military Establishment existed, but it was far from the ideal that had been posited by President Truman, Billy Mitchell, Generals Marshall and Eisenhower, and most Army airmen. The military services have been more centralized and unified by various acts of Congress since then, but that came after Spaatz's watch. Adm. Arleigh Burke has argued that it was fortunate that the airman in charge in 1947 was Spaatz, for he was a pragmatic and flexible man who was able to accept the half loaf that made the compromise possible. Secretary Symington declared most strongly that the 1947 outcome ought to be depicted as a major triumph, but Spaatz's daughter has equally strongly declared that Spaatz, on his retirement, didn't see it as such.[31] In my opinion, Tooey had it about right when he told Arnold, who was definitely disappointed, that because both sides felt short-changed, the compromise was probably about the best that could have been achieved.[32]

The study of the art of leadership through the life of a man like Spaatz has significant advantages. First, we all inevitably must look at the world through the eyes of the individual. A bird's eye view of the big picture is fine, but we're not birds and must think and learn as individuals. In a way, this is to "train like we fight." Moreover, when our model follows a human life rather than abstract words and ideas, it generally makes for an easier and more interesting read. Publishers know this. For each theoretical study of leadership, at least ten biographies must hit the market. Too, biographies of leaders are more available in base libraries from Adak to Kuwait, and that makes a difference. We want the truth, of course, but usually the positive half of the truth is more discernable in biographies than the negative half. Yet the good things are just as important as the bad things. Spaatz is particularly useful to us because he lived a long time. That's important. He knew Orville Wright and Charles Lindbergh. He also knew moonwalker Neil Armstrong. Thus, a study of his life yields a more comprehensive view of the history of air leadership than a study of the lives of many others.

Biography can be only one approach to the study of leadership. One reason it sells better in America than other kinds of books is that ours is an individualistic society. We have a disproportionate need to find a hero for everything good that happens, and an equal need to find someone to blame for what's bad. The consequence is that biographies and society as a whole have a tendency to overemphasize the role of the individual. Sometimes heroic leadership gets the credit that really belongs to dumb luck. Sometimes it gets the credit that really belongs to overwhelming numbers of people or stocks of materiel. Sometimes it gets the credit that belongs to dumb leadership on the other side.

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In practically every model, one finds integrity and professional knowledge to be important attributes. The latter is much easier to measure and cultivate than the former, which is intangible and subject to great bias: Everyone more casual than I am is corrupt; everyone more rigid than I am is a martinet. Spaatz was a "square shooter" in the minds of practically all who knew him.[33] He escaped the normal penalty for the possession of liquor in the barracks at West Point—more because of the architecture of the honor system than by something of his own making. At the end of this presentation I'll address an incident that occurred in 1924, when he got into deep trouble at Selfridge Field, and it appears that he was saved from disaster only because of the great trust the service had in him.

Devoting several years of your time to studying the life of another would be pointless if you didn't admire or detest your subject. Because the former usually holds true, the tendency is to improve on the truth, to emphasize the heroic and discount the reprehensible. I hope I haven't done that with Spaatz, but even editors can play that role after the author has finished his work. In any case, precious few biographies are written about ordinary folks.

The Library of Congress holds 315,000 items in Spaatz's papers. Although many might seem unimportant, it's inevitably the value system of the reader that determines significance. No biographer can live long enough to go through everything available on most leading figures, and not everything makes it into the record. When writing a biography, as opposed to a historical novel, one must be able to document all of the information presented. Because some important facts just never get into documentary form, the interviews of survivors become relevant. The Air Force has a huge collection of oral histories at Maxwell Air Force Base and at the Air Force Academy.

Yet these are skewed in many ways. As we age, we tend to recall the pleasant events rather than the miseries. Some people tend to avoid speaking ill of the dead; others, like the biographers of Hitler, long to speak ill of the dead, when it's safe to do so. Because a book makes no profit for the publisher (or the author) if it's not on the market, writers are under some pressure to produce quickly before they've had a chance to completely examine all available sources. Furthermore, accounts about ordinary people don't sell well, so writers are urged to overdramatize events and achievements. Too, long after an event has occurred, a kind of silent conspiracy may "gather upwind to get the story straight." The old school tie also can skew things, and any model obsolesces quickly.

What can the study of biographies gain for you as a student of leadership? If nothing else, for all its faults, it can add to your database of ideas and facts. It might reduce the number of unknown factors that limit your thinking when your moment of truth comes. It might improve the odds that your final judgment will be correct; if you wait for all the unknowns to become knowns, you'll never take action and will therefore be likely to join George McClellan in the ranks of the might-have-beens. I might add, too, another advantage: the study of biographies will be more engaging than most other approaches for the average military stu-

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dent. If you undertake a study with skepticism, not cynicism, it may also hone your ability to grasp the nuggets of truth residing in a sea of fables. Something that I found comforting in my brief adventure as a squadron commander was that on many days I felt up to my waist in alligators, wanting to cry out, "Why me, O Lord?" But one thing I'd gathered from my reading was that alligators are widely known, and many other commanders had been in the same pickle. My reading therefore enabled me to think, "This, too, will pass." Indeed it did. It helped promote composure under stress.

If such studying cannot be proved to do any of the above, one thing of which I'm certain is that it tends to improve writing and speaking abilities, and both are important for all manner of leaders.

No one can guarantee, notwithstanding the knowledge that might be gleaned from it, that the study of leadership through biographies and other writings, will yield us wisdom, although it might enhance our perspective a bit. Nor will it give a dull leader charisma. We've long known that war is so full of uncertainties that no formula will ever ensure certain victory, and too many times people have won on the battlefield and lost the peace anyhow. Nor will the most intensive investigation guarantee us fame, wealth, status, love, or self-fulfillment any more than it will improve our looks. Eternal uncertainties prevent us from ever eliminating that final guess or intuitive judgment, but a lifetime program of study may improve the odds that our final judgment will be approximately correct.[34]

West Point originally manned its faculty almost totally with military officers to provide role models for its cadets—hoping to influence their development as much by example as by formal instruction. That, too, was the idea at the founding of the Air Force Academy. My own experience suggests that influencing by example (bad as well as good) tends to be more powerful than persuasion or threat, and it applies in all three dimensions: moral, intellectual, and physical. I believe, too, that it's well understood in the service that diversity of experience usually produces leaders who can offer the most impressive and flexible examples. In the past, lack of movement among commands and weapon systems was frowned on and often limited a potential leader's advancement, and the effect is still noticeable.

Leaders who project a good example may find mentoring easier, but a deliberate effort to mentor hasn't been common in my part of the Air Force, and mentoring is something we might do better. You'll be better equipped to mentor if you pursue a lifelong planned professional self-education program. This may yield more meaningful results than short periods spent in professional military education schools, as valuable as they can be. In my mind, to maximize the effect of either method, you must ponder your reading deeply and try to develop a mental synthesis on leadership and war. Perhaps the most effective way of doing that is to write, to organize your thoughts, and express them clearly and logically. Col. Roger Nye in *Challenge of Command* and Maj. Gen. Perry McCoy Smith in *Taking Charge* include chapters on the officer as teacher.[35] The

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point is that you cannot be an effective leader unless you can communicate your ideas, facts, and desires in a digestible form, orally and in writing. One way of proving to yourself that you've achieved that end is to get a publisher to pay for your writing.

The preceding discussion addresses the intellectual dimension of leadership, but it's probably fair to say that the moral dimension is the most important one. The first requirement is to seek opportunities to command, to lead. Eisenhower was, at one time, in North Africa, concerned that Spaatz was too prone to surrounding himself with cronies—congenial individuals, but not contributors of new ideas.[36] My point is that usually a leader would do well to include at least some Doubting Thomases on his staff, congenial or not. Spaatz, I believe, was one of those rare leaders who really seemed capable of not caring who got the credit.[37] His style was low-profile, and he often sent his subordinates to conferences with the highest political leaders rather than seek the limelight himself.[38] I do believe that he had to be pressured to take the commanding general's job from Arnold in 1946, and clearly he was perfectly content to operate in Eisenhower's shadow. Eisenhower had an important role in Spaatz's succeeding Arnold and in subsequently becoming the first chief of staff of the Air Force, and he held the conviction that Spaatz was more capable of rising above parochialism than were all other potential air leaders. He believed that Spaatz would be able to give tactical air power its due, as he'd done in North Africa and in France.[39] And the president was never disappointed in his airman.

Nelson once said, "No captain can do very wrong if he places his ship alongside that of the enemy."[40] Nowadays, technology has so expanded the reach of military power that it can be manipulated from the heartland. Spaatz was conspicuous for marching to the sound of the cannon, and that was important. Certainly, his fellow warrior, George Patton, had it right when he asserted that one's object was not to die for one's country, but to make the enemy die for his. Yet sticking too close to the flagpole can be pernicious to a leader's capability to command respect. Gen. Maxwell Taylor boasted that Patton never caught him in his command post during many visits to the battle area.[41]

The academies' ideals are built on the notion of trust and truth. It seems obvious to me that without this precept, no professional officer should be able to succeed in the long run. It's easier for a historian to identify violations of this notion than to judge its positive dimension. Spaatz's defense against the charges relating to his corrupt finance officer, Lt. Howard Farmer, at Selfridge Field, doesn't seem to duck the truth. His response to accusations of negligence as the commander was short and fairly straightforward. There seemed to be a contradiction between his testimony and that of others as to the time he became aware of the habitual drunkenness of Lieutenant Farmer, but there's room to believe that the apparent contradiction was one of interpretation. Farmer did suffer a court-martial and a five-year prison sentence for having embezzled funds in his care. For a time a court-martial was considered in Spaatz's case as well, but in the end it

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was dropped in favor of a very negative reprimand that remains in his record.[42] There's no mention of the affair in either the efficiency report for the period at Selfridge or the one for the period immediately thereafter when the Farmer court-martial occurred. In fact, both reports are highly commendatory. The latter contained a remark by Westover that he would "especially desire" that Spaatz be in his command "in peace or war."[43] In any case, that and Spaatz's immediate assignment to Gen. Mason Patrick's own operations staff suggest the substantial trust that leaders at the highest levels of the Air Service had in him. Trust is what honor systems are all about; without it, effective leadership cannot exist.

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Notes

1. There are two books on Spaatz, my own, *Master of Airpower* (Novato, Calif.: Presidio Press, 1988), and Richard G. Davis, *Carl A. Spaatz and the Air War in Europe* (Washington, D.C.: Center for Air Force History, 1993). Davis's concentrates on World War II.
2. Books on General LeMay include Thomas M. Coffey, *Iron Eagle: The Turbulent Life of General Curtis LeMay* (New York: Random House Inc., 1986), written for the popular market; Albert Atkins, *Air Marshal Sir Arthur Harris and General Curtis E. LeMay: A Comparative Analytic Biography* (Bloomington: First Books, 2002), also for the popular market; and Curtis E. LeMay and MacKinlay Kantor, *Mission With LeMay: My Story* (Garden City, N.Y.: Doubleday and Co., 1965), being memoirs. A definitive biography remains to be written. General McConnell seems not to have attracted a biographer, nor has Gen. Michael Ryan. An enormous amount of literature on the Wright brothers includes James Tobin, *To Conquer the Air* (New York: Free Press, 2003); Peter Jakab and Tom Crouch, *The Wright Brothers and the Invention of the Aerial Age* (Washington, D.C.: National Geographic Society, 2003); Peter L. Jakab and Tom D. Crouch, *Visions of a Flying Machine: The Wright Brothers and the Process of Invention* (Washington, D.C.: Smithsonian Institution Press, 1990); and the Wright brothers themselves in Marvin McFarland, ed., *The Papers of Wilbur and Orville Wright,* 2 vols. (New York: McGraw-Hill and Co., 1953, 2001).
3. Steven T. Ross, "Napoleon and Maneuver Warfare," in Harry R. Borowski, ed., *The Harmon Memorial Lectures, 1959–1987* (Washington, D.C.: Office of Air Force History, 1988), p. 309.
4. This analogy is inspired by John Lewis Gaddis in *The Landscape of History* (New York: Oxford University Press, 2002).
5. Intvw, Carl A. Spaatz with USAF Academy Department of History, Sep 27, 1968, Oral History 583 (at the Air Force Historical Research Agency).
6. Ltr, Ms. Walter Bell (Katherine Spaatz) to David R. Mets, Feb 6, 1984.
7. Intvw, Ira Eaker with David R. Mets, Washington, D.C., Mar 26, 1982, in which Eaker declared that Spaatz was not a very good poker player, but he beat Eaker in squash practically every time they played.
8. U.S. National Personnel Records Center, St. Louis, Mo., "201 File, Carl A. Spaatz"; telephone intvw, Mrs. Carl A. Spaatz and David R. Mets, Jul 16, 1983.
9. On Ira Eaker, see James Parton, *"Air Force Spoken Here," General Ira Eaker and the Command of the Air* (Bethesda, Md.: Adler & Adler Publishers, Inc., 1986); on Haywood Hansell, see Haywood S. Hansell, *The Air Plan that Defeated Germany* (Atlanta, Ga.: Higgins-McArthur/Longino & Porter, 1972), and Charles Griffith, *Haywood Hansell and American Strategic Bombing in World War II* (Maxwell AFB, Ala.: Air University Press, 1999).
10. Spaatz was repeatedly downgraded in his effectiveness reports for tactless-

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ness, 201 File, "Special Efficiency Report For Regular Officers," Aug 28, 1919, signed by Billy Mitchell who wrote, "An excellent officer of the highest quality but lacking to some extent in tact." Also in "Efficiency Report," Dec 31, 1919, signed by Hap Arnold, the lowest grade Spaatz got was in "tact"—"average." In the same file, "Efficiency Report," Jun 24, 1922, Maj Gen J. L. Hines graded Spaatz "above average" in thirteen of fifteen categories but only "average" in "tact" and "military bearing and neatness."

11. Ltr, Mrs. Carl A. Spaatz to David R. Mets, Jan 14, 1984.
12. Mrs. Walter Bell denies that Spaatz stuttered but agrees that he was taciturn. Ltr, Mrs. Walter Bell to David R. Mets, Feb 6, 1984.
13. Those who qualified as pilots before 1917.
14. Benjamin Foulois, one of the earliest of the Early Birds, rose to become the chief of the Air Corps in the early 1930s, and two works deal with his career: John F. Shiner, *Foulois and the U.S. Army Air Corps, 1931–1935* (Washington, D.C.: Office of Air Force History, 1984), and Benjamin Foulois with Carroll V. Glines, *From the Wright Brothers to the Astronauts: The Memoirs of Benjamin D. Foulois* (New York: McGraw-Hill and Co., 1968).
15. Charles Biddle, *Way of the Eagle* (New York: Charles Scribner's, Sons, 1919), pp. 193–95. Mrs. Spaatz related that Carl Spaatz always was grateful that Charles Biddle had saved his life by shooting a Fokker off his tail while the former was preoccupied with shooting one down in front; ltr, Mrs. Carl A. Spaatz to David R. Mets, Feb 13, 1983. "Check six" is jargon for the importance to a combat pilot of not becoming so preoccupied with the enemy in front that he forgets about checking to see if another adversary is behind. It arises from the military abbreviated voice procedure for identifying the azimuth of objects from the observer with 12 o'clock being straight ahead, 3 on the right wing, 6 directly behind, and so on.
16. Ltr, Maj Gen Harry G. Hale, Commander, 6th Corps Area, to Adjutant General of the Army, Nov 22, 1924, with endorsements, 201 File; ltr, A. E. Saxton to Maj Carl Spatz (spelling changed in 1930s), "Reprimand," Aug 6, 1925, Spaatz Papers, Library of Congress (LC), Manuscript Division (MD), Box 3.
17. On Spaatz and Mitchell, James J. Cooke, *Billy Mitchell* (Boulder, Colo.: Lynne Rienner Publishers, 2002), pp. 136–37, 153, 197–283; ltr, William Mitchell to Maj Carl A. Spaatz, Feb 5, 1926, thanking Spaatz for assistance during the trial, Spaatz Papers, LC, MD, Box 4; "Mitchell Adds to Air Service Charges; Sees Perjury Plot in Shenandoah Case; Three Officers Back Him Before the Court," *New York Times* (Nov 10, 1925), p. 1, where Spaatz was one of the three officers who managed to get their names on the front page of the *Times* in testimony critical of the General Staff; the principal source on the Air Corps Tactical School remains Robert T. Finney, *History of the Air Corps Tactical School, 1920–1940* (new imprint, Washington, D.C.: Center for Air Force History, 1992).
18. Spaatz was awarded the Distinguished Flying Cross for the mission. U.S. War Department, General Order 7, Apr 6, 1929, 201 File. The flight is covered in Walter J. Boyne, "Question Mark," *Air Force Magazine* (March 2003): pp. 66–69; Robert B. Renfro, "Question Mark's Flight," *American Aviation His-*

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torical Society 34 (Summer, 1989): pp. 136–43; and in Carl A. Spaatz, "Report of the Flight of the *Question Mark*, January 1–7, 1929," in Spaatz Papers, LC, MD, Box 110.

19. U.S. War Department, Form 66S, "Officers Qualification Record," War Department General Order, 123S1, DSC, Dec 11, 1918, 201 File.
20. Intvw, Mrs. Carl A. Spaatz with David R. Mets, Washington, D.C., Mar 25, 1982; Thomas M. Coffey, *Hap: The Story of the U.S. Air Force and the Man Who Built It, General Henry H. "Hap" Arnold* (New York: Viking Press, 1982), p. 105. Arnold's most recent biographer, Dik Daso, *Hap Arnold and the Evolution of American Airpower* (Washington, D.C.: Smithsonian Institution Press, 2000), wherein he describes the story as legend, p. 103.
21. The record does prove that Spaatz was transferred to Mather Field on July 19, 1920, and remained there for only one month, Special Order 163, 1920, 201 File.
22. Intvw, Ira Eaker with David R. Mets, Washington, D.C., Mar 26. 1982.
23. Foulois with Glines, *From the Wright Brothers to the Astronauts*, p. 280; Shiner, *Foulois and the U.S. Army Air Corps*, p. 254.
24. DeWitt S. Copp, *A Few Great Captains* (Garden City, N.Y.: Doubleday Publishing, 1980), pp. 42, 43, 108; intvw, Mrs. Carl A. Spaatz with David R. Mets, Washington, D.C., Jun 27, 1982.
25. The U.S. Strategic Air Forces in Europe was established during the winter of 1943–1944 to exercise operational control over the Eighth Air Force in England and the new Fifteenth Air Force in Italy, which was to attack Germany from the south.
26. Lt Col Dudley H. Fay, Carrier Sheet, "Loss Rate by Combat Crew Experience," Jan 10, 1944, with attachments, Spaatz Papers, LC, MD, Box 14. Only 22 percent were completing the 25 missions; the others not killed or imprisoned were grounded for illness or combat fatigue and the like.
27. Ltr, Maj Gen Barney M. Giles to Carl A. Spaatz, Apr 11, 1944, Spaatz Papers, LC, MD, Box 14.
28. Intvw, Mrs. Walter Bell with David R. Mets, London, UK, Mar 7, 1983; ltr, Mrs. Walter Bell to David R. Mets, Feb 28, 1984; ltr. Mrs Walter Bell to David R. Mets, Jul 26, 1984; ltr, Mrs. Walter Bell to David R. Mets, Feb 6, 1984; ltr, Arnold to Spaatz, Mar 29, 1944, and ltr, Spaatz to Arnold, Apr 12, 1944, with one inclosure, Spaatz Papers, LC, MD, Box 14.
29. Intvw, General Spaatz with Dr. Bruce C. Hopper, May 20, 1945, Spaatz Papers, LC, MD, Box 136, p. 15.
30. Intvw, Secretary of the Air Force W. Stuart Symington with David R. Mets, Camden, Maine, Aug 4, 1982.
31. Intvw, Adm Arleigh Burke, Fort Myer, Va., Mar 25, 1983; Symington intvw, Aug 4, 1942; ltr, Mrs. Walter Bell to David R. Mets, Feb 28, 1984.
32. Ltrs, Arnold to Spaatz, Jan 17, 1947, and Spaatz to Arnold Feb 5, 1947, Spaatz Papers, LC, MD, Box 256.
33. Ltr, Ira Eaker to Carl Spaatz, Feb 9, 1944, Spaatz Papers, LC, MD, Box 14. Spaatz's old friend asserts most strongly that notions that Tooey had a role in sending him away from the Eighth Air Force to the Mediterranean were total-

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ly false. My conversations with Eaker's biographer, who was his aide at the time, did not really clarify who was the principal driver, but I suspect it was Arnold's initiative during a conversation with Eisenhower.

34. The inspiration for this paragraph is Michael Howard's "Military Science in an Age of Peace," Chesney Memorial Gold Medal Lecture, Oct 3, 1973, reprinted in *Journal of the Royal United Services Institute* 119 (Mar 1974): pp. 3–11.
35. Roger H. Nye, *The Challenge of Command: Reading for Military Excellence* (Wayne, N.J.: Avery Publishing Group, Inc., 1986), and Perry M. Smith, *Taking Charge: Making the Right Choices* (Garden City Park, N.Y.: Avery Publishing Group, Inc., 1993).
36. Dwight D. Eisenhower, *The Eisenhower Diaries*, Robert H. Ferrell, ed. (New York: W. W. Norton and Co., 1981), pp. 94–95. Although, at the end of the day, Eisenhower clearly had changed his mind. Stephen Ambrose, in a letter to Spaatz's daughter, Katharine, quotes Eisenhower as saying "Frankly, I favor Spaatz as a replacement for Arnold because of Spaatz's clear perception of the necessity for the integration of tactical power and because of his instant readiness and ability to cooperate and his wealth of fine common sense. He has developed immeasurably in this war and in my opinion is the best rounded Air force officer in the world. His only weakness is in conference and he should be able to find a glib talker to carry the ball for him in this regard," Stephen Ambrose to Ms. Walter Bell, Feb 2, 1982, attached to ltr, Mrs. Walter Bell to David R. Mets, Feb 6, 1984.
37. Adm Arleigh Burke conceded that Mrs. Spaatz was probably correct when she asserted that Spaatz never cared whether or not he made general. According to his wife, Spaatz had never seen a happy general. Burke intvw, Mar 25, 1983.
38. For example, he sent his deputy for operations, Maj Gen Fred Anderson, to the Yalta Conference in his own place. Ltr, Mrs. Walter Bell to David R. Mets, Feb 6, 1984.
39. Ltr, Stephen Ambrose to Ms. Walter Bell, Feb 2, 1982, attached to ltr, Mrs. Walter Bell to David R. Mets, Feb 6, 1984.
40. "Nelson's Letters for Sale," BBC News (Nov 9, 2001), accessed Aug 29, 2003, available at http://news.bbc.co.uk/1/hi/uk/england/1646747.
41. Lecture, Gen Maxwell D. Taylor, *Military Leadership: What Is It? Can It Be Taught?* (Washington, D.C.: National Defense University, Spring, 1997), p. 6.
42. Ltr, U.S. Army, Adjutant General, to Carl A. Spatz, "Reprimand," Aug 6, 1925, 201 File.
43. Efficiency reports, Sep 24, 1924, and Jun 18, 1925, 201 File.

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Professional Reading on Air Leadership
A Twelve-Book Sampler

Two for Overview:

John Frisbee, *Makers of the United States Air Force* (1987)
Roger Nye, *Challenge of Command* (1986)

Ten for Depth:

Eric Ash, *Sir Frederick Sykes and the Air Revolution, 1912–1918* (1999)
Thomas B. Buell, *The Quiet Warrior: Adm. Raymond A. Spruance* (1987)
———, *Master of Sea Power: A Biography of Fleet Admiral Ernest J. King* (1995)
James J. Cooke, *Billy Mitchell* (2002)
Curtis E. LeMay and MacKinlay Kantor, *Mission with LeMay* (1965)
Phillip S. Meilinger, *Hoyt S. Vandenberg: The Life of a General* (1989)
David Mets, *Master of Airpower: General Carl A. Spaatz* (1988)
James Parton, *"Air Force Spoken Here" General Ira Eaker and the Command of the Air* (1986)
William Trimble, *Admiral William A. Moffett: Architect of Naval Aviation* (1994)
Robert P. White, *General Mason M. Patrick* (2001)

One for Good Measure:

Phillip S. Meilinger, *American Airpower Biography: A Survey of the Field* (1997)

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Robert A. Lovett: The AAF's World War II Civilian Advocate

Dr. George M. Watson, Jr.

Historian, Air Force History

In this commemoration of the 100th anniversary of flight as well as the 60th anniversary of World War II, we've celebrated many events and personalities. However, one most deserving individual has been overlooked. It's my aim today to restore his name and achievements to their rightful place in Air Force history.

During World War II, Assistant Secretary of War for Air Robert A. Lovett was the civilian focal point for the most powerful air force in the world. He possessed a masterful grasp of aviation and the political and business savvy that proved invaluable for U.S. Army Air Forces [USAAF] aircraft acquisition. These attributes, along with an astute sense of humor, enabled him to maneuver adroitly within the bureaucratic nooks and crannies of the War Department while successfully handling political machinations in Washington, D.C. When President Franklin D. Roosevelt reestablished the Office of the Assistant Secretary of War for Air in April 1941, he appointed Lovett to the job.

Robert A. Lovett, the only child of Lavinia Chilton Abercrombie and Robert Scott Lovett, was born in Huntsville, Texas, on September 14, 1895. The family moved to Houston, but his father's association with E. H. Harriman's railroad and other Texas business interests, gradually took the Lovetts to New York.

There, Lovett was educated at private schools. He entered Yale University in 1914. Mechanically inclined, he became interested in aviation and joined a group of Yale undergraduates who learned to fly during their college summers. This group was organized by F. Trubee Davison, who would himself become the first assistant secretary of war for air after passage of the Air Corps Act of 1926. In late 1917 this First Yale Unit entered active service on assignment to the Royal Navy Air Service. Then commissioned as an ensign, Lovett moved to London, where he conceived of a plan for the night bombing of German submarine bases on the North Sea. He soon transferred to a British unit based at St. Inglevert, France, and from there, using British-made Handley-Page bombers, he flew raids against German facilities at Bruges and the docks at Zeebrugge. His skill as a pilot and strategist earned him a promotion to commander of the

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Navy's Northern Bombing Group, and he won the Navy Cross. The experience alerted him to the offensive potential of aircraft.

After the war, from 1919 to 1921, he studied law and business administration at Harvard University. In 1921 he joined the National Bank of Commerce in New York; five years later he assumed a partnership in the investment firm of Brown Brothers Harriman and Company.

During the 1920s and 1930s, Lovett traveled frequently on business at home and abroad. While traveling, he studied advances in aeronautical science and military aviation. He was especially concerned with overseas developments, and what he saw made him wonder about America's military preparedness. As he toured the nation's factories and renewed friendships with important industrialists, Lovett discovered an alarming lack of direction and coordination from Washington regarding aircraft production. This discovery induced him to conclude that the United States was not up to the task that full-scale warfare might entail.[1]

At the suggestion of newly appointed Under Secretary of the Navy James V. Forrestal, Lovett presented his ideas to Assistant Secretary of War Robert P. Patterson, who was responsible for the Army's total procurement requirements. Both Patterson and Secretary of War Henry L. Stimson were impressed with Lovett's report, and Stimson hired Lovett as a special assistant for air matters. In April 1941 Stimson elevated Lovett to fill the long-vacant position of assistant secretary of war for air.

Lovett discerned that many problems, including too much overlap, plagued the War Department; some functions had responsibility without authority, and vice versa. He convinced Stimson that the nation's aircraft production capacity was simply too low and that commercial airline and Lend-Lease claims thwarted the creation of an adequate U.S. air force. Lovett argued that even including British manufacturing, America's production capacity was about two-thirds that of Germany.[2]

Although Lovett lacked statutory power to direct procurement, he did whatever was possible to promote aircraft production. The air secretary questioned how the research and development process functioned. He supported standardizing combat aircraft and the development of new technologies, especially for engines, but he favored centralizing experimentation in a few plants to avoid interfering with mass production of existing models.[3]

From April 1940 until the end of World War II, Lovett insisted that nothing should distract industry's adherence to realistic aircraft production schedules. He attempted to settle labor disputes, and he intervened when the Office of Production Management and the War Production Board interfered with USAAF contractors, subcontractors, and suppliers. He openly called President Roosevelt's production goals for 1942 and 1943 "excessively optimistic," but he tried mightily to strengthen the management of inefficient aircraft manufacturing companies. Throughout the war, Lovett served as a sounding board for industry's com-

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plaints and requests. Stimson supported Lovett unreservedly, telling him, "Whatever authority the secretary of war has, you have."[4]

Thus, while Lovett couldn't issue orders, he did use his personal relationship with Stimson to influence procurement decisions. He created a direct and personal line of communication between the secretary of war and the air arm. Gen. Henry H. "Hap" Arnold, commanding general of the air arm, credited Lovett with reducing the number of decisionmakers involved in air production from nine to two—Patterson and Lovett himself.[5]

Lovett's ability to work harmoniously with key members of the air arm and the War Department was one of his most important attributes. Stimson's biographer, Elting Morison, described Lovett as "full of brief sophisticated witticisms, rueful humor, and a perception of incongruity that expanded in bureaucratic circumstances where such perceptions ordinarily wither away."[6] During the war, Lovett corresponded warmly with such prominent USAAF commanders as Carl A. Spaatz, George C. Kenney, and Ira C. Eaker. His intimate friendship with General Arnold enabled him to communicate very smoothly with Army Chief of Staff Gen. George C. Marshall, who prized the judgment, calm appraisal, and intellectual balance that Lovett brought to policy meetings.[7]

Early on, seeking reliable data on the size and capacity of the air force, Lovett recruited Charles B. Thornton from the Army to establish a statistical control unit. Thornton quickly established a reporting system whereby Lovett received a report, much like a bank statement, every morning as to the number of planes, pilots, ground crews, and bombs in inventory. As Thornton became immersed in the job, he soon exhausted the ranks of officers who were qualified statisticians. Lovett initially worked out an arrangement with the Harvard Business School, which sent several qualified instructors to Washington. In return, Lovett sent select officers to Cambridge, Massachusetts, where both the Harvard and Massachusetts Institute of Technology faculties could provide continuous instruction. Among the early Harvard instructors of the USAAF's statistical courses were Robert S. McNamara who became president of Ford Motor Company and, later, secretary of defense during the Vietnam War, and Eugene M. Zuckert who became secretary of the Air Force during the Kennedy administration.[8]

Years after the war, Lovett reflected that at the heart of his role in wartime procurement and production was the exercise of judgment—determining which requests were reasonable and politically acceptable, which requests could be filled despite shortages of equipment and machinery, and which requests were desirable in his view, despite conflicting military recommendations.[9] When the Lend-Lease Act under which the United States provided arms to nations fighting Germany was passed in the spring of 1941, competition intensified among American aircraft producers. Lovett's task was to improve the delivery of aircraft overseas. The United States retained control over the distribution of arms, but the plight of Britain was desperate enough that the requirements of the Royal Air Force [RAF] appeared to outweigh those of the USAAF. When the USAAF

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resisted surrendering aircraft, President Roosevelt sided with the embattled ally, as he had early in 1940. The president cautioned General Arnold, "There were places to which officers who did not play ball might be sent, such as Guam."[10]

Lovett tried to determine the effects of growing British demands on U.S. aircraft production. Lend-Lease, he thought, lacked a "definition of goal" to guide domestic manufacturers as they attempted to adjust to requirements that were never satisfactorily projected. Lovett predicted that the United States would require 5,000 airplanes per month, and he urged the construction of new facilities for their production. He maintained that the war wouldn't be won solely with defensive weapons; rather, bombers were essential to victory. Plants being devoted to heavy bombers, he believed, should be used "solely for quantity production" of standard types. Moreover, he believed that the engineering and research staffs of established companies should be separated from production facilities to concentrate on experimental models.[11]

Before the United States fired a shot during World War II, Lovett was concerned with American aircraft production. In early 1941 he believed that American air power would be vital to winning the war. In a letter to Harry Hopkins, Roosevelt's chief advisor, he noted, "While I don't go so far as to claim that air power alone will win the war, I do claim that the war will not be won without it."[12] He wanted aircraft production stepped up, and to emphasize his desire he wrote to Hopkins, "since the period of gestation of our airplane is unfortunately about twice that of a human, we have to make up our minds very soon if we are to have any benefits from added capacity by the end of 1942."[13]

In March 1941 Lovett warned General Marshall that one of the most serious obstacles to the Air Corp's production goal of 5,000 advanced aircraft per month was industry's reluctance to gear up despite its anticipation of government contracts. Industry insisted that only on the basis of fully executed, not merely pending, contracts could its labor force be assured of steady employment and protection from layoffs and dispersal to other plants eager for the workers' special training and skills. Lovett therefore recommended that where the necessary labor force was in place, maximum production capacity should be maintained; to expedite the manufacture of tactical aircraft, he recommended that all new orders should be attached to existing contracts.[14] By the autumn of 1941, Lovett no longer tolerated business as usual with its forty-hour week. He wanted plants to operate around the clock, if necessary, and he received permission from Under Secretary Patterson to sanction overtime payments. He also succeeded in establishing a twenty-four-hour workday and a seven-day workweek for all principal machine tool producers.

Although these producers were indispensable to America's rearmament, Lovett urged that the Office of Production Management, under William S. Knudsen, be strengthened with new executives who were "hard boiled enough to deal with the rugged individuals in industry."[15] The machine-tool industry was reluctant to start production without signed orders. Lovett argued that the shortages

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of both machine tools and new plants were proof enough of a market for their products. He even asserted in a letter to Clayton Burt, president of the National Machine Tool Builders' Association, that the industry's insistence on signed orders was "unpatriotic," and he added that he assumed its members would, in time of emergency, make every effort to produce those elements essential to the national defense.[16]

Lovett was able to find funding for the machine tools before any contracts were let. He convinced Jesse Jones, head of the Reconstruction Finance Corporation, to lend the Air Corps $200 million for the purchase of standard machine tools. Lovett told Jones that the appropriations were nearly 100 percent certain but the contractors were reluctant to start without monies. After securing the loan, the Air Corps could issue letters of intent that won over reluctant manufacturers to begin production.[17]

A corollary to increased aircraft production was a requirement to increase pilot training. In March 1941 Lovett and General Arnold increased the number of annually trained pilots from 7,000 to 30,000. Lovett argued for speeding the training lead-time: "It takes many months to adequately prepare pilots and crews for modern aircraft."[18] Accomplishing this task both intertwined and conflicted with many other issues. For instance, Lovett had to make sure that the pool of experienced pilots wasn't diverted to such functions as delivering planes to the British or to the new Transportation Command.

After several months of frustration regarding time lost because of demands for coordination and consultation, Lovett concluded that something had to be done about the air arm's organization. The crux of the problem, it seemed, was the division of labor between the Air Corps and the General Headquarters Air Force [GHQAF]. The Air Corps, headquartered in Washington, had responsibility for recruitment and training, procurement, experimental and research work, and personnel, while the GHQAF, headquartered at Langley Field, Virginia, had some training responsibility. Its principal subdivision was the tactical unit. This organization, Lovett contended, "resembled nothing in the world so much as a bowl of spaghetti"[19] that led to competition, overlapping programs, no singleness of purpose, and general disunity. Lovett faced the problem gently, with an "iron-hand" well concealed in a "velvet glove."

Lovett understood that the question of internal organization was tied closely to the old Air Corps issue of independence for the air arm. The issue had been debated periodically since before the First World War. Lovett favored independence, but not in June 1941. Believing, with others, that America's entry into the war in Europe was inevitable, he viewed any attempt at major realignment as confusing and possibly dangerous during a time of unprecedented Air Corps expansion. He argued that an independent air force couldn't operate without a "Unified General Staff and a Supreme War Plans Council" to coordinate Army, Navy, and air efforts. Also, other branches—ordnance, for example—handled many Air Corps functions. After advising against the immediate creation of an

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independent air force, he suggested that the reorganization of the Army Air Corps into the Army Air Forces, then being studied in the War Department, would be a more workable method of "developing air power in this stage of the existing emergency."[20]

The War Department endorsed Lovett's views. In September 1941 Under Secretary of War Patterson declared that such reorganization would permit unrestricted development of the air arm under full control of qualified air officers while permitting unity of command within the Army. General Marshall agreed with Patterson. Although the War Department favored delaying action on the subject of an independent air force until after the war ended, Marshall, in early 1943, initiated sustained postwar planning for an independent air arm.[21]

Lovett, like Marshall, viewed such planning as vital, and he suggested that the ideas of America's key businessmen and economists be incorporated. He suspected that the independence of the air arm wouldn't be actively discussed again for some time. Nonetheless, he began to prepare for any questions from Congress that could arise on the subject.[22] He didn't favor entrusting national defense to two independent departments—War and Navy—which weren't "designed to translate the tremendous effort of the nation into maximum effectiveness and efficiency in waging modern war." He believed that a single department of armed forces embracing the Army, Navy, and Air Force would provide the best means of ensuring progress in aviation and unity in planning and operations, and would ensure the greatest economic use of human, material, and monetary resources.[23]

Meanwhile, Lovett, without fanfare, had arranged to transfer certain functions and powers from the ground forces to the Air Corps. In June 1941 the Air Corps (which would become the Army Air Forces) was given autonomy and was unified, meaning that for the first time it had a chief of staff for air and an Air Staff with a War Plans Division, just like the General Staff. In addition, the new organization had a member on the Joint Army and Navy Board, and it had a single head in General Arnold, who became commanding general of the USAAF. It also had a deputy chief of staff. Nine months later, in March 1942, General Marshall completed a second reorganization when the AAF attained equal status with the Ground and Service Divisional Forces. With this reorganization, Lovett felt that he'd succeeded in "streamlining the whole [air] function."[24]

Lovett knew instinctively just how far industry could be pushed. Thus, when President Roosevelt called for an increase in aircraft production from 36,000 to 50,000 units in 1942, Lovett warned Harry Hopkins that the effort was far too ambitious. When Roosevelt subsequently called for 60,000 planes, Lovett wrote to Hopkins: "When you advised me not to fall out of my chair when I saw the target figures for plane production it was a friendly act, for I might have broken my neck instead of something minor like my heart." He warned that the president's unrealistic goal resembled "the trap of the old numbers racket," which tempted them to "build the easy types and forget about spares."[25]

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Despite his anxiety about the draining of U.S. aircraft inventories, Lovett's dealings with the British were essentially congenial. The air secretary communicated with them on a number of subjects and highly valued the combat information they provided through American observers in London. In the autumn of 1941, he wrote to Air Marshal Arthur T. Harris, a member of the RAF delegation in Washington, D.C. (and soon to take over RAF Bomber Command in February 1942), inviting British aircrews to the United States so that they could acquaint their American counterparts with the realities of the war in Europe. Lovett also requested that samples of training equipment, such as flight simulators, be duplicated for the Air Corps. The air secretary had always tried to establish a cordial quid pro quo relationship with the British, maintaining that the supplies, equipment, and technical know-how they provided were "worth more than the ninety-nine year leases on western hemisphere bases that America had received for fifty old destroyers."[26]

The Japanese attack on Pearl Harbor on December 7, 1941, plunged the United States into a war in which Germany and Italy promptly sided with Japan. The entry of the United States into the conflict gave Secretary Lovett the opportunity to influence air procurement as well as strategy and plans at the highest level of the War Department. With war in both the Atlantic and Pacific theaters, Lovett's greatest fear materialized—that Lend-Lease might leave the United States short of aircraft and equipment.

Secretary Lovett particularly relished the kind of planning that went on in the early days of the war. In December 1941 he worked closely with the War Plans Division of the Army General Staff and the Air Staff on strategies to reinforce the Philippines and Malaya and to attack Tokyo from airfields in China not under Japanese control.[27] He also studied the possibility of protecting commercial airfields located along the western bulge of Africa. He considered them as important as the airfields around the northeastern shoulder of South America for ferrying aircraft to Russia, the Middle East, and the Far East. Anticipating German designs on Spanish Morocco and French Algeria, he suggested to Secretary Stimson that the Cape Verde Islands and points south of the French colony of Dakar be immediately secured, believing that the presence of allied air forces might prevent German penetration into these areas.[28]

Lovett contributed significantly to the development of Air War Plans Division Plan 1 (AWPD/1), which became the foundation for the Combined Bomber Offensive. General Arnold had ordered Lt. Col. Harold George, a former instructor at the Air Corps Tactical School, to Washington in July 1941 to head the Air War Plans Division. When President Roosevelt asked the War Department to prepare a report on what would be required to win the war, both Arnold and Lovett decided that air priorities should be detailed in a separate section of the report. All recommendations were to be incorporated into the national war plan then in force, Rainbow 5. Working tirelessly, George and his staff completed AWPD/1 in two weeks. Lovett gave them valuable counsel on the political

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implications of their task and made sure that their recommendations emphasized the importance of concentrating U.S. war power on the European theater first.[29]

Lovett had written a memo stressing the urgency of concentrating air power. He based his "strategy of scarcity" on the premise of determining where U.S. air power could inflict the most pain on the enemy. He didn't want to spread air strength to peripheral areas. He believed that an invasion of Germany would be necessary, but he concluded that it would be suicidal unless a saturated bombing campaign preceded it. So Germany and Italy would be the main targets. Lovett believed that pressure on both of those countries and on North Africa would prevent enemy threats to West Africa and South America, deny the Germans a channel to India, and keep direct supply lines open to Russia. Under Lovett's strategy of scarcity, Japan would be contained from further aggression with minimal aircraft and equipment.[30]

Despite General Arnold's direct access to President Roosevelt through the Joint Chiefs of Staff, he often deferred to Lovett on procurement and nonstrategic questions, although lines of authority often blurred. Lovett was unusually attentive to the factual analysis of production capability; he adhered to realistic production goals coordinated with strategic considerations; he pursued widespread consultation through both formal and informal channels; and, when faced with what he believed were unwise decisions, he resisted pressure from above to accept them.[31]

When Lovett's opinions clashed with General Arnold's, he wasn't afraid to take a stand. In October 1942, for example, he challenged Arnold's acceptance of a projected 1943 production schedule of 131,000 aircraft (100,000 tactical and 31,000 training). To Lovett, this fantastic figure, advocated by the president on September 9, 1942, was one which no authority within the Army Materiel Command, the Bureau of Aeronautics, or the War Production Board would attempt to justify. In endorsing what he viewed as an unattainable goal, the air secretary warned that the AAF was deluding itself, the public, and the president. "It's a little bit like asking a hen to lay an ostrich egg," Lovett emphasized, "It's unlikely that you'll get the egg, and the hen will never look the same."[32] He estimated the likely production of 88,000 aircraft, but no more than 90,000 to 100,000. He insisted that any great expansion of 1943 output, especially to the level desired by General Arnold, was out of the question, and he cited the failure of the government to assign the aircraft program the overriding priority it had deserved in January 1942.[33] Finally, he pointed out that, in any case, a shortage of materials would delay by at least twelve months the opening of any new production facilities. Under Secretary of War Robert P. Patterson advised General Arnold that he agreed with Lovett.[34]

On October 20, 1942, Arnold responded in a blistering memorandum to the air secretary. He acknowledged that the goal was ambitious, much "like requiring a peacetime hen to lay a wartime egg of ostrich proportions, but if we can induce her to lay it, I, for one, feel that we must accept the wear and tear on the

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hen."[35] Certain that the president's plan would encourage manufacturers to redouble their efforts, Arnold declared that self-imposed obstacles and rigid planning had hampered the growth of air power. He warned that "the negative assumption that requirements cannot be met, supported by facts as they are and not as we are capable of making them, too often has characterized thinking on this subject."[36] He vowed not to compromise on the figure of 131,000 except where the "clearest showing of fact" demanded it.[37]

In March 1943 Lovett advised Harry Hopkins that competition for raw materials, machine tools, alloy steels, and manpower would restrict production to no more that 90,000 aircraft. He further noted that factories would need time to retool before replacing combat aircraft types which, having proved unsatisfactory, were to be discontinued. In the end, Lovett's estimate was correct, as factory acceptances of all military airplanes in 1943 totaled 84,433.

Whether aircraft industry representatives had problems involving the Wright Field installation in Ohio, the War Production Board, the War Manpower Commission, the Department of Justice, or any other federal agency, Lovett's office served as an informal court of appeals. He was candid but fair and he even dispensed advice on such subjects as scheduling and contract negotiating. Nonetheless, he believed that "it was a pity . . . to spend so much time on things not directly productive of aircraft and engines."[38]

In mid-1943 Lovett grew restive about the growing tension between Maj. Gen. Ira C. Eaker, commander of the Eighth Air Force, and General Arnold. Arnold was displeased that Eaker hadn't launched more heavy strategic bombing raids against Germany, even though the force's mission had been impeded by bad weather, the diversion of planes to North Africa, and the lack of long-range fighter escort. Lovett pointed to operational time lost because of the modification of aircraft, the training of combat crews, and the repair of bombers grounded by battle damage. However, he attributed the fundamental reason for any misunderstandings between Arnold and Eaker to the Eighth's inadequate methods of reporting and accounting for the aircraft it received. He also detected an attitude at AAF headquarters in Washington toward the Eighth that was similar to the attitude of a father irritated with his grown son, "frequently to the intense irritation of the son but equally frequently to his ultimate benefit."[39]

Acknowledging the lack of adequate fighter escort, Lovett promised Eaker that the problem would be rectified with the introduction of longer range P–51Bs and P–38s. Lovett realized, however, that the Eighth's crews would prefer the reality of fighter protection to the consolation of statistics. Their attitude was "a little bit like that of the heroine in *Gentlemen Prefer Blondes* who knows that a kiss on the hand is all very well, but a diamond bracelet lasts forever."[40]

It was a difficult time for Eaker, who was under daily pressure from Washington to keep launching strikes. He insisted to Arnold that he wanted the Eighth Air Force to fulfill its mission as a growing, not a diminishing, force. The dispute boiled over in January 1944 when Arnold assigned Lt. Gen. Carl A. Spaatz

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to command the Eighth and transferred Eaker to the Mediterranean Allied Air Forces. Lovett couldn't persuade Arnold to reconsider his decision. Eaker appreciated the concern Lovett had shown and in a letter to him wrote: "Your friendship and your kindly interest never meant more to me than during this changeover period."[41] Command assignments rested solely with military leaders, and Lovett was sensitive to that fact.

By the winter of 1943, Lovett worried that continued exaggerations by the press of Eighth Air Force activities might create the impression that the allies had already launched an air offensive capable of destroying the German war machine. They hadn't, but Lovett feared that if Germany continued to stand firm at year's end, a demoralized American public might conclude that the all-out offensive had failed.[42] Both Lovett and Arnold wanted the AAF's accomplishments highlighted, but not with glorified phrases, generalities, and graphic embellishments. In June 1943 they directed the AAF to limit releases to concise statements of fact.

To prevent misapprehensions about the Eighth Air Force and the allied offensive, Lovett embarked on a campaign to educate the press, stressing that current bombing runs were only a preview of things to come and that the true air offensive hadn't yet begun. As he'd called upon his friends on Wall Street and industry when he needed help with aircraft production problems, he called on his friends in journalism to help publicize this critical fact. They included Cass Canfield of *Harpers;* Charles Merz, editor of the *New York Times;* Merrill Henry Luce of *Time;* Edward Harriman of *Newsweek*; and Eugene Meyer, publisher of the *Washington Post*.[43] Throughout the war, Lovett acted as a troubleshooter, squelching public relations difficulties whenever they threatened to erupt.

In November 1944 Lovett complained that too much time was being devoted to postwar planning. He maintained that almost half of all decisions on operations were complicated by the problem of industrial reconversion and redeployment in peacetime. Speculation regarding the end of the war was premature and seemed to him inappropriate, even harmful, to the allied effort. He criticized those who appeared to believe that it was possible "to fight a cashier's campaign in which the last American bullet kills the last German soldier on the day before pay day."[44] Yet he realized that if the United States was to maintain the finest air force in the world after the war and retain "its world leadership in air fighting," the large-scale, realistic scrapping of surplus and obsolete aircraft would be necessary. He argued that the country ought to be primed to make future expenditures for a modern air force on the basis of past events. Lovett further added, "We must know by now what it means to mankind to allow gangsters to build up and command a modern air force."[45]

He wasn't, however, averse to some postwar planning, and he foresaw the need to have competent staff involved in the contract termination process. Lovett realized that officers involved in these decisions would be making critical evaluations about the postwar aircraft industry. In April 1944 Lovett turned to Dean

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Donald K. David of the Harvard Business School to create a course for training officers in contract termination, surplus determination and disposal, and industrial demobilization and reconversion. These areas, he believed, called "for substantial use of judgment, and it is the aim of the course to develop qualities which will contribute to the effective exercise of judgment in complicated business situations."[46]

Lovett's hand could be found almost everywhere in matters that dealt with the future of air power and national security. He involved himself in numerous issues and, by the latter half of 1944, had given his views on unification to the Woodrum Committee, had found a chairman for the Strategic Bombing Survey, had fought against Pan American's efforts at limiting postwar competition for air routes, had pressed for treaties securing favorable access to foreign bases, had arranged for the release of more planes to the airlines, and had advocated a contract termination and surplus property policy that would stimulate growth among aircraft manufacturers.[47] All of this he did while the war in Europe and Japan was still raging.

Robert A. Lovett made lasting contributions to the AAF and to the office that in September 1947 became the Office of the Secretary of the Air Force. Lovett established his authority over many air matters and, like Trubee Davison, made procurement a top responsibility. He also influenced strategy and the organization of the air arm. He played a role in the AAF reorganization of March 1942, and his ideas influenced the character of the postwar Air Force. The manner in which Lovett and General Arnold divided authority and responsibility set the pattern for the civilian-military relationship at the highest echelon of the service.

When he left office, his most important contribution had been helping to equip the world's largest air force that in turn helped to defeat Italy, Germany, and Japan. At the end of the war, the United States possessed the strongest air force in the world to a great extent because of the efforts of Robert Lovett in his major role as secretary of war for air. The *New York Times* anointed him "the Fliers' Secretary" at the time of his departure in December 1945. The newspaper considered him the man "who persuasively pleaded the case of the air force in high councils, translating into substance the ideas the fliers themselves had but which they were helpless to realize without his help."[48] The *Times* added that Lovett made possible "the strategic bombing concept of aerial warfare that played so important a part in the victory in Europe and an even more important part in the defeat of Japan."[49]

Leaving office, Lovett found that his public career wasn't yet finished. A little more than a year after returning to Brown Brothers Harriman in New York, he went back to Washington at the request of General Marshall to be his under secretary of state. Lovett returned to his investment business in 1949, but in 1950 Marshall became secretary of defense and insisted that Lovett join him again. As deputy secretary of defense, Lovett played a critical role in managing the department, and his eventual appointment as secretary of defense in September 1951

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received wide support. When he became secretary of defense, the end of the Korean War wasn't yet in sight. Thus, the long-range rearmament program continued to be one of his main concerns. Like Marshall, Lovett believed that the United States had erred seriously at the end of World War II: "We didn't just demobilize . . . we just disintegrated." He added, "Heretofore, this country has only had two throttle settings: one, wide-open for war, and the other, tight-shut for peace. What we're really trying to do is to find a cruising speed."[50]

At the time of his death in May 1986, the *Washington Post* praised Lovett as an individual with a huge sense of public service who moved with ease and self-confidence between his two careers: government in Washington and investment banking in New York. The paper added that one of the greatest memorials for him and his peers who sought to move their country from the tranquility of "splendid isolation" was the durable peace among the countries that fought in the two world wars of their century.[51]

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Notes

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Introduction of

Lt. Gen. Daniel James III, USAF

Director, Air National Guard

by

Cadet Michael Tillis

Texas A&M University

Thank you. Howdy! General James earned his commission from the University of Arizona ROTC program in 1968. Along with that, he earned his Bachelor of Arts degree in psychology. He's a command pilot with approximately 4,000 hours flying in fighter and training aircraft. General James is a combat veteran. He did two tours in Southeast Asia where he flew 500 combat hours. He wears two Distinguished Flying Crosses. Before becoming the director of the Air National Guard, General James was adjutant general for the Texas National Guard Headquarters. He comes from a long line of leadership traditions. His father, Gen. Daniel "Chappie" James, Jr., was the first African-American four-star general.

Ladies and Gentlemen, please join me in welcoming General James.

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Tuskegee Airmen: How the Red Tails Did It

Lt. Gen. Daniel James III, USAF

Director, Air National Guard

Thank you. Please be seated. Fellow flag officers, ladies and gentlemen, distinguished guests, great Americans all, thanks for coming. It's my pleasure and my privilege to be with you. It's a pleasure to be able talk a little about a great American story. It doesn't matter what your race, background, or origin is because this is a story of people who overcame some tremendous odds to make it possible for people like me to stand here before you. This is the story of the Tuskegee Airmen.

Before I begin my presentation, I'd like to preface it with this statement from Spann Watson, one of the original members of the 99th Pursuit Squadron:

> Nothing was farther from their minds then than a black man flying a pursuit airplane in the uniform of the United States of America. Nobody ain't going to let me fly because I was black. But, at least I could be a mechanic. And so, when I started to build model airplanes, and they worked, the idea started to creep aboard that maybe I could fly, too. And so, that's the way it grew. And it grew, and it grew, and it grew. I had a lot of dreams. I've realized most of them. That would've never happened if there hadn't been a war and there hadn't been a 99th Fighter Squadron at Tuskegee. It would've never happened. But, it did, and I'm deeply grateful.

As fate would have it, Spann Watson was in my office the day before yesterday. Spann was a friend of my father, and he came to talk to me about the Tuskegee Airmen, Incorporated, the organization that represents the members of that great Tuskegee experiment. He was there because he's still mentoring people. Spann carried a resume of a full colonel in the Washington, D.C., National Guard that he wanted me to look at. Now, I couldn't tell Spann that I don't "own" the D.C. Guard. He thinks that because I'm the three-star director of the Air National Guard I own everything that has anything to do with it. But I said, "Okay, Spann, I'll take things from here." And I'll continue to mentor him.

Spann and men like him are among the people I grew up with. I got a chance to know some of them and to hear their stories. I was in San Antonio when they were dedicating a P–51 on which they'd painted a red tail. I drove down from

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Austin to attend their luncheon. (I know Austin isn't a very popular word here in College Station.) I looked at the program, and much to my surprise I was the guest speaker. Somebody had failed to inform me of that. So, being pretty quick on my feet, I decided I'd better come up with something, because they were getting ready to introduce me. I was sitting across from another general officer who was the vice commander of the Air Education and Training Command. He was talking to me, making polite table talk at this function, and I've got this program and I'm scribbling on it as fast as I can, so I can be ready when it's my turn to come up.

I thought, "Oh Boy. The members of the Tuskegee Airmen are here. There are about twelve of them. They scheduled this event to coincide with their annual convention." I thought, "I've got to somehow pull this off. Now, what's so special about these folks? What is it that makes them tick? How do you describe these people, these folks?" I scribbled out three words: competence, courage, and commitment. And that was what I talked to them about that day, and that's what I'd like to talk to you about tonight.

When I look back on it, the Tuskegee Airmen, as Spann Watson said, had a unique opportunity. They were part of an experiment, folks. You see, a debate was raging, as it would in the halls of Congress and other places, that said that African-Americans really didn't have the aptitude to do certain jobs and didn't have the skills to perform in the military. So we need to get this out in the open and get this over with, once and forever. Through some political pressure, they started a program that they called the Tuskegee experiment, which we now call the Tuskegee Airmen or the Tuskegee experience. These men were supposed to fail. They were just not supposed to be able to get through a military flying training program.

Now, some of those folks who applied to the program had already flown. Some of them had their civilian flying hours. My father was one of them. He joined a part of that training, the civilian phase, the introduction part where they hired civilians to initiate the trainees, and then the military instructors took over. Well, as you know, they didn't fail, and they were very competent.

I was told when I was a young boy that if you wanted to be selected for something, you had to be noticeably so much better than anyone else that it would be shameful if they didn't pick you. That was the standard under which I was raised. My dad said, "There's no level playing field for you, my son, even if you *are* an officer's kid. You're going to have to out-compete and out-perform everyone."

That was one of the axioms, the idea of being more competent than anyone else who did the job. Well, that's what happened with the Tuskegee Airmen. You see, when they graduated from the flight training program—which they weren't supposed to complete—the problem was, what to do with them next.

So they were sent to other places to train. They were sent to pursuit training in one type of aircraft, and then sent on to another base. It's almost legendary what happened to them, and I'll talk a little bit about the challenges they had just

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as officers. So they went to these other bases. It was almost as if the idea of disparate treatment and the idea of a double standard had totally backfired because the Tuskegee Airmen actually ended up getting more training than most of the replacement pilots who were going to the theater. They went through three different training experiences before they finally shipped out. There were those who predicted that they'd never be shipped to a combat theater because nobody wanted them. "What were you going to do with them, for God's sake? You're going to have black pilots in here? Of course not."

But finally they shipped. One young man, Chappie James, said, "Hey, they're serious about this." He quit the instructor program and joined the aviation cadet program, reasoning, "If they're going to let us fight, then that's what I want to do."

When they shipped to the theater, they began in ground attack. Slowly they graduated to what you all know is their legacy as escort pilots. As I mentioned earlier, the Tuskegee Airmen underwent the walk-before-run approach to training, which lasted longer than the approach taken by most of the other men. As a result, when they escorted bombers, they were probably the best equipped compared to any other organization in the theater to do that job.

Were they competent? You bet. Competency was drilled into them from the time they were young boys who had the dream. It all starts with a dream. It's a vision. In order to achieve something great, you have to visualize yourself doing it. I visualized, I practiced, and I pretended that I was a pilot when I was a little boy. I had a little stick in the ground, and I had my football helmet on, and I pretended I was talking on the radio. I was fortunate enough to know what I wanted to do and what I wanted to be when I grew up.

The Tuskegee Airmen built their legacy first on competency, being better than anybody else who did the job. You see, when they went through their training, the men at Tuskegee knew that being "good enough" was not going to be good enough for them, and they had that fact of life drummed into them, time and time again.

One of the most nervous moments they had was when they learned how many students had graduated from Gunter Field, a pilot training base in Montgomery, just down the road from Tuskegee. The unwritten rule was that Tuskegee couldn't graduate more people than Gunter did from its program for white cadets. As a result, Tuskegee had to have wash-outs. If Tuskegee had six too many people in the program, six had to wash out. No matter how hard the men prepared, they sometimes had no control over their destiny, except for one pilot, whose story I remember reading.

This is really very interesting. This particular pilot was up on an elimination flight, and it had been decided that he should wash out. So his instructor pulled back on the power and said, "Land at the nearest airfield." Well, one of the things you're taught when you learn to fly is always to look for an emergency airfield, right? "Soldier, put the airplane down." Well, the pilot looked around and said,

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"I can make that field right there." The instructor said, "No, you can't. Bad judgment. You'll never make it. I'm going to eliminate you and save the government a lot of money." As the instructor went to pull the power up, the student pulled the power back and said, "I'm going to land at that airfield. I'll show you." He did a single engine on approach, and when he got over the field to start his turn to base and final, he said, "All right. Do you agree?" "Yes," said the instructor and he gave him back the throttle. That pilot was pretty courageous, competent, and confident. He wasn't going to let somebody wash him out before he at least showed that he could do the job.

The other day I was talking to a class at the Command and Staff College and one student asked me, "What's the most important characteristic of a leader?" I said, "Well, there are a lot of them." I talked a little bit about competence, a little bit about preparation, and a little bit about perseverance. Then I said, "But I think the most important is courage, because with all of those other skills, if you don't have the courage to exercise them, to stand by them, you won't be successful."

So after the first "C" for competence, the second "C" of the Tuskegee Airmen was courage. Just like their fellow citizens, all they wanted was a chance to fight for their country and to show that they were just as brave, just as dedicated, and just as American as anybody else. They wanted that chance, and they demonstrated that courage.

When General Davis was Lt. Col. Benjamin O. Davis, Jr., a squadron commander, he also had a vision. He understood that courage had to be matched with discipline. You see, he was determined that this whole experiment was going to fall in favor of the Tuskegee Airmen. He said, "You will not leave the bomber you are escorting to go chase enemy airplanes. Your job, gentlemen, is to protect the bombers. No heroics. No hot-dogging." Davis knew that if they did their job, things would begin to change. At least he and they hoped that things would change. They stuck with those bombers. They didn't lose a single bomber to an enemy aircraft because they had the courage and the discipline.

One of the Tuskegee Airmen told me a story. He said, "I remember one day there was a bomber that was losing power. It was falling out of formation. It kept falling back, and in fact, it was going to be picked off sooner or later." He and his wingman went over and started to do turns to slow down enough so that they could escort the bomber out, knowing that they wouldn't have the optimum engagement speed they'd need if they were jumped by enemy flyers. Well fortunately, that day the enemy fighters were so impressed, or maybe by that time they knew who the Red Tails were, that they didn't attack the bomber. Its pilot came to one of their reunions and told the story. It was a wonderful story.

I wonder if you've seen the movie where everyone's talking about one of the bomber aircraft commanders who asked at the intel briefing, "And your escort will be?" "Wait a minute! What about the 332d?" "Well, that's not who we've been assigned." "Well, we want the 332d. We've always had them. We haven't

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had any trouble with any fighters when they escort us. We want those Red-Tail guys." The one who wanted them wasn't aware at the time that they were African-Americans. It didn't matter. You see, he just knew they gave the best escort.

I asked the gentleman, "Did it really happen, or was it one of those legacy things that come up from time to time?" He said it did happen. He said, "As a matter of fact, when we heard, there was a lot of grumbling, and we could hear the murmuring in the crowd. And we asked why they weren't there, and we didn't get what we thought was a significant or reasonable answer." He said, "Well, I'll tell you what. They're not our escorts; so we're not going."

Now folks, in war, to say, "I'm going to mutiny. I'm not going to fly my mission" is an offense punishable by death. The others said, "Do you realize what you've just done?" He said, "Hey, we can go without them and get shot down and maybe killed. Or we can not go and be charged. You choose. We want to go with the Red Tails."

Courage—discipline, understanding what the mission was, and sticking to it—that was the second "C" in the three "Cs" of the Tuskegee Airmen. The third "C" we call commitment, or perseverance, if you will. You see, in my youth I was taught an eleventh commandment very early. It was "Thou shalt not quit." Just think about it. Think what would've happened if the Tuskegee Airmen had quit and proved the doubters correct. How long would it have taken African-Americans or women to get into aviation?

You know, it's funny. As an airline pilot, I'd go on the flight decks, and I'd hear some of the comments that were made about women, and all I could say to the flight crew was, "You know guys, you've got to realize that as a member of a minority, I know that thirty years ago you were making those same comments about people who looked like me. So I'd really appreciate it if you didn't say things like that."

Commitment was sticking to what they had to do and what they wanted to do. "Thou shalt not quit." And quit they didn't. I remember a story I was told by one of my uncles about my dad. (If anyone from the Navy is here, I want to thank the Navy. You see my father grew up in Pensacola, Florida, which was the home of naval aviation.) My father's mother was a schoolteacher, and she told him, "You know, son, you can do anything you want to do. You can be anything you want to be in this nation if you're willing to prepare yourself and if you're willing to persevere and not give up." What did my dad think about when he got home from school, when he looked up in the sky and he saw those airplanes flying around? He wanted to be a pilot.

At the end of high school, he went down to get in the Navy flight program. They laughed at him. They said, "We're not hiring any night fighters here, son. Do you want to be a cook or a steward?" Those were all he could be at the time. They told him, "You can go get in that other line over there. Otherwise, don't waste your time." Well, he was upset. He ran home; he thought his mother had

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lied to him. She said, "No, I didn't lie to you, Dan baby. (She called him Dan baby because he was the baby of the family.) And, I never will. You can still be whatever you want to be in this nation if you're willing to prepare."

Well, a little upset, but much loved, he didn't give up on his dream. He realized he wasn't going to get where he wanted to go through the Navy. So what did he do? He accepted a football scholarship at Tuskegee Institute, not knowing at the time that Tuskegee was where the flying program was going to be. He went to Tuskegee because his mother had instilled in him the value of education. While he was in Alabama, he learned how to fly, so when the Tuskegee program came along, he became one of its first civilian instructors.

The guy who taught him how to fly was Charles Alfred Anderson. He was the chief of the instructors, so everybody called him Chief. Chief Anderson was an interesting guy. If you ever see that picture of Eleanor Roosevelt sitting in the back of the J–3 Cub, look for the guy with a smile on his face. That's Chief Anderson. You see, Mrs. Roosevelt had gone down to look at Tuskegee, a land grant school established primarily for minorities, and she wanted to take a tour of the campus. Chief Anderson, knowing how pivotal her visit was, said, "You know, Mrs. Roosevelt, you really can't appreciate the size of the acreage of this fine college. But I'll take you up in an airplane and we can see the whole thing and you'll be able to get a feel for it. And you'll save a lot of time." And that's what he did.

When she went back to Washington, do you know what was going on? The debate was going on, starting to rage about whether blacks could or couldn't fly. She overheard a discussion in which President Roosevelt was saying, "Well, you know blacks can't fly airplanes." But Mrs. Roosevelt chimed in, "Oh yes they can, Franklin. A black man flew me all over Tuskegee just last week." "He did?" "Yes, and he did a good job, too." That was the end of the debate for them.

The Tuskegee Airmen didn't give up. What would've happened if they had? What would've happened if Chappie James had quit when he didn't get a job in the Navy? That's why I thank the Navy. How long would we have had to wait to get on the flight decks of commercial airlines had they quit, had they given up? What would've happened to me if they'd quit, if they'd given up? We certainly would look a lot different than we do today.

Now, I'll tell you, they did not earn my stars for me. They did not earn these wings. I had to do that myself. What they did do was give me the right to explore the creed on which this nation is formed, the basic, fundamental principle of opportunity. They bought me a ticket called opportunity.

My grandmother used to say: "When the train of opportunity pulls into your station, son, you can't tell the conductor, 'I've got to run home and pack my bags.' Your bags have already got to be packed—with character, knowledge, discipline, and judgment. So when that train pulls in, you grab your bags, and you jump on board." She added, "Oh, by the way, don't think you're through then, because you have to always keep putting things into those bags." We hear

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about this all the time: professional development, master's degree, professional military education—the things that continue to make you successful so that when they start looking around for somebody, you'll always be the best qualified. The train of opportunity pulled from the station, and the Tuskegee Airmen were, in fact, qualified.

I had only two weeks between the time I graduated from college and when I went to pilot training. During that period I went home to visit my folks. My father was the vice commander at Eglin Air Force Base then, in Florida. He said something very interesting, "I'm going to send you up to Tuskegee, and you're going to fly with Chief." I replied, "Me?" (I'd just finished the flight indoctrination program.) "Obviously, you don't recognize that I'm a natural. I'm going to water their eyes when I get to pilot training. But if you want to waste your money, Dad, go ahead. I'll go up and fly with the Chief. There's not much he can teach me."

Well, guess what? My father knew what he was doing. Chief made lots of comments. He was a very down-home kind of guy. He was a natural teacher, and he had a great sense of humor. And when he said, "Okay, you were pretty good on that, now I want you to do this, and I want you to do that." I think I had four or five rides with him. He sold me out after a couple of rides. Then we did some other stuff. When we were finished, he said, "Well, you'll be all right, you'll be pretty good out there. I just want to make sure you know, now that you've done this, that they can't put you through the washer." That's what he called the washing out of pilots. So what he was telling me was, "I'm Chief Anderson. I taught your dad to fly. I've watched you. I've instructed you. You can fly."

So my false bravado disappeared, and the knowledge and the confidence that I had, and all those other Tuskegee Airmen that Chief Anderson signed off on had, meant that I could fly. I knew when I got to pilot training that I could fly, and that I would, in fact, be successful. Now I have the legacy of Chief Anderson to live up to because, once he's instructed me, I can't fail. It's not an option for me.

How many of you remember your first solo flight, those of you who are pilots? Remember the solo flight in a T–37? They'd go out and they'd buckle up the seat and everything, and they'd let you go, and you'd pull out there and hear all kinds of things in that airplane that you didn't hear when the instructor was with you. Remember that?

The hydraulic pump started cycling. The creaks, the vibrations, the feeling of being by yourself were almost overwhelming. But you had something to do, so you just fell back on your training and routines that you'd built up, and the procedures, procedures, procedures. And you pushed that thing out and up, and it went, forward on the runway, and away you'd go, and the next thing you knew you were airborne! Hah! You were too busy remembering what you had to do next, and what you had to call, and where you had to turn, and all kinds of stuff. Next thing you knew you were getting ready to turn. Finally, you had the gear

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coming down; you were checking the handle. Lights. One. Two. Three. Green. Okay. You rolled out. Whoops! You made an adjustment. You landed and made your first touch and go. And then you got airborne again and you said, "Hey! This isn't so bad. Let me do a couple more of those." Before you knew it, the experience was over.

Well, that feeling of being alone for those few moments is certainly something that sets you back. But I'll tell you that because of the legacy of leadership, excellence, courage, and commitment that the Tuskegee Airmen have bestowed on me, I'll never be alone when I get into an airplane. I'll forever be in an airplane with the Tuskegee Airmen. I'm the living heritage of the Tuskegee Airmen, the heritage of opportunity that this nation, more than any other nation, provides. And I'm damned proud of it.

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Q&A

Audience Member: When I was flying up here, I came through Saint Louis, and I saw a mural at the airport there showing the Tuskegee Airmen. I saw all of these black faces and a white face. I looked closely at it and recognized Lt. Col. Noel Parrish, whom I'd known since he was a brigadier general when I was with the Air Force History Office. I wondered if you'd say a little bit about him.

Lt. Gen. James: I'm glad you brought him up. One of the things I learned was that no matter how many people may be waiting for you to fall on your face, probably an equal number of people are hoping you succeed. Noel Parrish was the commander at Tuskegee, and he oversaw the Tuskegee experiment. He was part of the program; he was responsible for it, but he wasn't guaranteeing that it would work. He did guarantee, because he was the commander, that it was going to be fair. Remember folks, especially those of you who are in the minority, there's always somebody in the majority who understands what fairness is about. There's always somebody who's willing to give you a shot. So, as my dad used to say, "Don't be angry, because it's hard when somebody who reaches down to give you a hand up finds a fist that's always clenched in anger." Noel Parrish was a giant of a man. His widow still comes to our Tuskegee Airmen meetings and is well received. He was a fair man. He was the right person at the right time. I think that with so many prejudices that were in place, it took a person like Noel Parrish to help the Tuskegee experiment succeed.

Audience Member: Do you know what role Benjamin Davis filled as the first black general officer?

Lt. Gen. James: Benjamin O. Davis, Sr., was the first black American general officer. He was a brigadier general in the United States Army, the commander of all colored troops. His son was Benjamin O. Davis, Jr. When Senior was the professor of military science at Tuskegee I remember hearing my grandfather (on my mother's side) say, "I feel so sorry for the boy. He has him out there marching in the hot sun with that pack on his back."

Benjamin Davis Senior was already training his son because he saw what the West Point experience did for officers in the United States Army, and his son went to the United States Military Academy. He was "silenced," as many of you know, the entire time he was there, not because he committed an honor violation, but because he was black. And he was harassed in many ways. Students beat on the walls so he couldn't study and couldn't sleep. But because of the toughness and training that his father put him through as a young man, he summoned up the courage and persistence to succeed.

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My dad was a very gregarious, outgoing person. I mean, he would sing at the drop of a hat. Davis was very structured, very disciplined, very focused. He didn't kid around. He didn't mess around. He had a job to do, and he did it. He made sure folks knew. He said, "I don't care what your goals are. I've got a goal. If we're going to do this, we're going to do it right."

One day I approached him and asked him something about being silenced; somehow the subject came up. He said, "That's not what hurt me the most. What hurt me the most was that after I'd gone through all of that, got my commission, went to Fort Benning, and walked into the officers club, a brand new second lieutenant still shunned me. That was what hurt the most."

So that's a little background on Benjamin Davis Senior and Benjamin Davis Junior. James F. Hamlet was the third African-American general. He was an Army two-star in the Vietnam era, and my father was the fourth.

Audience Member: General, I believe, based on the years of some of the folks here, that you need to explain silencing.

Lt. Gen. James: There's a tradition in the military academies of an honor system. I know we're presently experiencing some real difficulties culturally in our academy. And I know that with cadet leadership and so forth we'll get through them, as we have other challenges. But there's an honor system that says, "I will not lie to you nor steal nor tolerate amongst me those who do." So when a cadet was presented with what was judged to be an infraction and was asked to leave the corps, and he elected not to do so, the rest of the academy wouldn't speak to him unless it was in the discharge of duty. He went through what was called silencing.

One of the strongest things you have going for you in a high-pressure environment that forces you always to perform at an optimum level, beyond what you sometimes think you're capable of, is the support and teaming of your classmates. There are no ifs, ands, or buts about it; you get close to your classmates and you rely on them, and they rely on you. They're teaching you teamwork, interoperability, and so on. So if you can imagine not being spoken to during the four years that you're at an institution, that's pretty tough treatment.

Back during the Vietnam era there was a West Pointer. I believe his name was Pelosi. Well, he was silenced because of an honor violation. When his situation was commented on in the news he said, "This is the first time this has happened since Benjamin O. Davis was silenced, not because of an honor violation, but because he was an Afro-American." That was silencing, the ultimate in peer pressure.

I've told cadets, "If you want this fixed, you're the ones who can fix it. Your leadership is on the right track, and will help you, will stand by you. But if you've gotten so far away in your culture that you'd rather not rat on your buddy, who's not only broken the rules but has created a criminal act, and you think it's

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not appropriate to report what you know, something's wrong. When you come to grips with that, and exert peer pressure, positive peer pressure, this will get fixed." It will get fixed. General Jumper is committed to its getting fixed. The Air Force secretary is committed to its getting fixed. But that's what the honor system is, and that's what silencing was all about.

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Kenney and Arnold: Leadership and Tension in the Southwest Pacific

Herman S. Wolk

Senior Historian, Air Force History

> It was December 7th in Pearl Harbor and December 8th in Manila, Hong Kong, and Singapore in the closing days of 1941. Without warning and following the consistent pattern of her military tradition of dispensing with a formal declaration of war, Japan struck.[1]

This is the first sentence of the World War II diaries of Lt. Gen. George Churchill Kenney, Commanding General, Far East Air Forces. The Japanese attack launched a brutal war in the Pacific between the United States and the Empire of Japan. Actually, American military planners had considered the possibility of war between the United States and Japan even before World War I. The official U.S. Army history noted that prior to World War II, "between Japan and the United States, there were a number of unresolved differences and a reservoir of misunderstanding and ill will that made the possibility of conflict likely in the Pacific."[2] It's also worth noting that Brig. Gen. Billy Mitchell, in his 1924 report on a far-flung trip he took to Asia and the Pacific, observed that war between the United States and Japan seemed certain.

The war in the Pacific, complicated by enormous distances and appalling logistics—and where unity of command was never established—dictated a premium on air and naval operations. Nowhere in this vast ocean area were command problems more fractious, complex, and fascinating than in the Southwest Pacific theater. This was true even before Maj. Gen. George Kenney arrived there in July 1942 and described the situation as "a mess."

A veteran of service in World War I, Kenney had flown seventy-five missions and downed two German planes. He'd enjoyed an exceptionally varied career in the Army Air Corps between the wars. While an instructor at the Air Corps Tactical School, he met then-Maj. Frank M. Andrews, who was impressed with his ability to solve technical problems. Later, Andrews (as a temporary major general) selected Kenney, who had completed a term in the Air Corps chief's Plans Division, to serve as his operations and training chief at General Headquarters Air Force [GHQAF].

Air Power Leadership

In 1938 when Maj. Gen. Henry H. "Hap" Arnold became chief of the Army Air Corps, he named Kenney the Materiel Division's production engineering chief at Wright Field. Kenney concluded that Arnold considered him a troubleshooter: "Every time he got something going wrong he'd say 'send George Kenney out there; he's a lucky son of a bitch. He'll straighten it out.' I never was supposed to have any brains; I was just lucky."[3]

After the Japanese attack on Pearl Harbor, Arnold ordered Kenney to the Pacific coast to take command of the Fourth Air Force. Kenney didn't remain long in the position. In July 1942 Gen. George C. Marshall, Army chief of staff, and Arnold informed him that he'd be going to the Southwest Pacific to replace Gen. George Brett as Gen. Douglas MacArthur's air commander. Actually, Kenney was Arnold's third choice. Arnold had recommended Brig. Gen. James H. Doolittle, but MacArthur turned him down flat. Arnold's second choice was Andrews (by then a lieutenant general), but the former GHQAF commander, serving as a theater commander in the Caribbean, was appalled at Arnold's suggestion and refused to serve under MacArthur. The big problem was MacArthur. General Brett described him this way: "I have seen General MacArthur just seven times. Every endeavor I have made to explain what I was trying to do has been lost among lengthy dissertations which I would not take the time to deliver to a second lieutenant."[4] In Brett's view, MacArthur "is absolutely bound up in himself . . . I do not believe he has a single thought for anybody who is not useful to him and I believe he detests the Air Corps through his own inability to thoroughly understand it and operate it as he does ground troops." Brett had heard of rumors that MacArthur "refuses to fly."[5]

In truth, Brig. Gen. Laurence Kuter, Air Staff deputy chief, recommended Kenney to Arnold as Brett's successor. Arnold reacted by suggesting that Kenney wouldn't "last long" working for MacArthur. Kenney, an aggressive commander, irritated Arnold by announcing that he'd "get rid of a lot of the Air Corps' deadwood, as no one could get anything done with the collection of generals" that Brett had in the theater.[6] Kenney reported that Marshall and Arnold were "a bit peeved," but he agreed to the arrangement, provided MacArthur did.

Lt. Gen. John DeWitt, commanding the Fourth Army, strongly endorsed Kenney, cabling MacArthur that Kenney was "a practical, experienced flyer with initiative, highly qualified professionally. Good judgment, common sense. High leadership qualities, clear conception of organization, and ability to apply it. Cooperative, loyal, dependable, with fine personality. Best general officer in the air force I know qualified for high command."[7] MacArthur replied that Kenney "would have every opportunity here for the complete application of the highest qualities of generalship."[8]

The situation in the Southwest Pacific was critical. In 1942 Japanese forces had marched through the Southern Philippines, most of New Guinea, and the islands northeast of Australia. Japan controlled the Pacific west of Midway. A Japanese invasion of Australia seemed possible. In May and June 1942, before

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Kenney arrived, the Japanese had taken heavy losses in the Battles of the Coral Sea and Midway, but their troops had won positions on Guadalcanal and other points in the Solomon Islands, and they continued to advance from the northern coast of New Guinea across the Owen Stanley Mountains toward Port Moresby.

Kenney confronted numerous problems. Perhaps the most important related to overall strategy. As Marshall and Arnold had made clear in Washington, the war in Europe had top priority. Allied strategy in the Pacific, as Arnold expressed it, would feature defensive operations with an occasional offensive move. Kenney put it this way: "I'm supposed to help MacArthur hold the south part of Australia until the European show is cleared up."[9] Kenney's opinion was, "No one is really interested in the Southwest Pacific."[10]

Kenney determined that logistics and organization were convoluted and not functioning properly. Then, there was the problem of Maj. Gen. Richard K. Sutherland, MacArthur's chief of staff. Although conscientious and brilliant, he'd interfered in the planning of air operations and was overly protective of MacArthur. General Brett described him this way: "He is officious and rubs the majority of people the wrong way, thereby creating a great deal of unnecessary friction. I consider him a bully who, should he lose his ability to say 'by order of General MacArthur' would be practically a nobody."[11] Kenney met with MacArthur at the end of July 1942. "I listened to a lecture for approximately an hour on the shortcomings of the air force in general and the Allied Air Forces in the Southwest Pacific in particular." Kenney knew how to run combat air forces and told MacArthur so. "If for any reason," he wrote in his diary, "I found that I could not work with him or be loyal to him I would tell him so and do everything in my power to get relieved. [MacArthur] grinned and put his hand on my shoulder and said, 'I think we are going to get along all right'"[12] Sutherland's role in air operations ended; Kenney would deal directly with MacArthur and "run the air show."

Kenney needed desperately to deal with issues of command and organization. He first got rid of what he'd termed deadwood, a bevy of generals and forty colonels and lieutenant colonels. He replaced an inflexible directorate with an organization that he believed could better react to theater demands. The Fifth Air Force was established, with Brig. Gen. Paul B. Wurtsmith, "a thief" and "a reformed bad boy," according to Kenney, heading the V Fighter Command.

Leading the new air force, Kenney faced an obvious problem with the Allied Air Forces headquartered in Brisbane, a thousand miles south of the New Guinea front, and he attempted to resolve it by appointing Brig. Gen. Ennis C. Whitehead to lead the Fifth Air Force advanced echelon at Port Moresby.

With a basic organization in place, Kenney had to negotiate with Arnold for resources. During most of the war, Kenney kept up a constant drumbeat to Arnold on his need for more planes and better trained crews. He stressed in late 1942, "We are playing in the big league now and we are just in the first inning." Although he was dropping more tonnage on the enemy, Kenney noted, "This fly-

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ing is costing us airplanes."[13] In November he complained that he'd lost sixty planes to combat and operational causes, but he'd received only about twenty replacements. "At this rate, I will be out of the picture by next July. If I cannot keep on owning the air over New Guinea, the whole show here will collapse."[14]

He also referred to an issue that had bothered him from the war's start: the idea that the Southwest Pacific was just a defensive theater, as compared to Europe. "There is not any way," he informed Arnold, "that this thing can be left alone and simply referred to as a defensive sector. The Jap does not understand that argument. He attacks all the time," Kenney asserted. "To defend against him, you have to attack him . . . beat him to the punch. With twenty percent replacements per month I can take this fool Tojo apart."[15]

Arnold sympathized. "My only regret," he wrote Kenney, "is that we are not able to send you everything I know you need. God knows I would like to send you enough airplanes so that you could push right through the Jap lines, and some day I hope to . . ." Arnold stressed to Kenney: "We must get along as well as we can with priorities and allocations."[16] He expressed to MacArthur appreciation for the "effective use" he was making of the air arm.

Kenney didn't always carp. In probably his most effusive, sympathetic reply to Arnold, he wrote: "Am sorry to seem to be continually crabbing about being short of something I need in a hurry but . . . it is about the only way I can present the picture as it confronts me. I know that you are harassed to the point of exhaustion and that you are doing your damnedest to keep me quiet." Kenney assured Arnold: . . . I will trust to your continued good nature and keep on telling you my troubles . . . I get mighty few of them taken care of except when you step in on my behalf, and believe me, I am thoroughly appreciative and grateful."[17]

Arnold wasn't averse to questioning Kenney about operations, or the lack of them. In late November 1942 he queried Kenney, by then a lieutenant general, as to why four days had passed without an attack on Japanese reinforcement shipping headed for Buna. Kenney answered with some "facts of life": crews arriving in the theater poorly trained, terrible weather, and lack of proper equipment and maintenance personnel. Despite the impediments, Kenney retorted that his airmen had sunk or damaged over 200,000 tons of shipping over six weeks, a pace that "could not be sustained without an increased replacement rate for both personnel and equipment." He reminded Arnold that "the seriousness of the threat of hostile shipborne forces is thoroughly appreciated by this command, which is solving its problems on the spot with means available . . ."[18] Here was the classic tension between the operational commander in the theater and the chief back in Washington. Kenney's diary entry noted, "Arnold (probably some ass on his staff) radioed asking why we had not made all-out bombing attacks; some day I'll lose patience over some of these damn radios his staff cooks up at their desks in Washington."[19]

Arnold maintained a well-developed sense of the importance of providing the American public with accurate information about the war. He chastised Kenney

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on what "various sources" charged were "duplicate claims" of enemy plane losses being made by Kenney's airmen. Arnold emphasized that if errors were being made in estimating enemy losses, the "entire plan of air operations may be materially affected."[20] Kenney was livid, feeling that the Air Forces commander was charging him with deliberately falsifying battle reports. "There was no intention whatsoever," Arnold replied, "of implying deliberate, intentional exaggeration of reports." Noting that Kenney's reports were very favorable, Arnold concluded that he was "very pleased," and "if all reports are accurate, it would appear that enemy air strength is quickly doomed."[21]

Arnold wanted to make sure that the American people had "faith in our way of making war." From all theaters, he wanted clear data and photos indicating what the Army Air Forces had accomplished. "The people here at home," Arnold emphasized, "are partners with the fighting forces; above and beyond the fact that they supply the money, men, and materials, they have the right to know what we are doing . . . so far as this does not affect military operations."[22]

In the Southwest Pacific, Kenney performed a balancing act between MacArthur and Arnold. He worked directly for MacArthur, but it was Arnold as commanding general of the Army Air Forces who provided him with planes, crews, and equipment. Kenney's position as man-in-the-middle can be illustrated by several trips he made to Washington, where, during March 1943, Assistant Secretary of War Robert P. Patterson, offered to take his request for more planes directly to President Franklin D. Roosevelt. Kenney responded. "I don't want to go over Arnold's head unless I can't get anything any other way."[23]

Kenney did meet separately with the Joint Chiefs of Staff [JCS] and the president. "I am willing," he noted to the JCS, "to take anything that will fly. I am not particular like the British and Russians."[24] To the president he pleaded for more planes. "Be reasonable about it," Roosevelt replied, "and I shall see what I can do even if I have to argue with the whole British Empire about it."[25] Two weeks later, Kenney learned from Arnold that the JCS would send him several bomb groups, several fighter groups, and several additional support groups. Kenney, Arnold suggested, was "no longer the forgotten man."[26]

A measure of the respect that Arnold had for Kenney can be seen in Arnold's request of Kenney to prepare a list of older brigadier generals and colonels "whose retirement would be to the benefit of the Air Forces." Arnold told Kenney, "Forget you have any friends . . . It is vitally necessary that we ease out such men and make room at the top for those more junior officers who have not been left on the roadside by the parade."[27] Also, in October 1943 Arnold requested Kenney's views on how best to employ air forces in the cross-channel operation scheduled for sometime in 1944: "Just how should this large number of airplanes which we have in England be employed in order to get their full effectiveness in the trans-Channel operations?"[28] Kenney replied that General Eaker and Air Marshal Harris had "a stupendous job on their hands and it is impossible for me on the other side of the world to appreciate all their problems. It is equally pre-

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sumptuous on my part to criticize or even suggest." Kenney emphasized: "I stick to one basic principle—get control of the air situation before you try anything else. Talk about a second front or any other surface operation is futile unless the plan envisions depriving the enemy of freedom of air action prior to initiating the ground or naval show."[29]

A major antagonism between Kenney and Arnold concerned the B–29 very long-range bomber. Kenney had heard that "it is the plane with which we are to win the war." His idea was to employ B–29s to attack the great oil refineries at Palembang in Sumatra, and Balikpapan in Borneo. Kenney assured Arnold that without oil, Japan could not continue the war: "If you want the B–29 used efficiently and effectively where it will do the most good in the shortest time, the Southwest Pacific Area is the place and the Fifth Air Force can do the job. Japan may easily collapse back to her original empire by that time (1944), due to her oil shortage alone."[30] But General Arnold and President Roosevelt were adamant that the B–29 be employed directly against Japan's home islands. By the end of 1943, at the Cairo Conference, Roosevelt approved a plan to base B–29s in China and India by May 1944 and then to begin operating them from the Marianas before year's end. This decision became part of the JCS strategy of twin Pacific drives (which included the Central Pacific Area) of bypassing Truk to take the Marianas, then striking the Carolines and Palaus to connect with MacArthur's drive northwest to the Philippines. Arnold agreed with the strategy and supported Adm. Ernest King, chief of naval operations, in it. This angered Kenney who maintained that B–29 strikes from the Marianas against Japan would be no more than "nuisance raids." He was upset that Arnold had aligned himself with the Navy in this matter of great strategic moment and wrote in his diary that Arnold "threw his vote on the side of the Navy to swing the whole strategy of the war in the East" against MacArthur.[31] Kenney, certain that Arnold had been "sold" by Maj. Gen. Laurence Kuter and Brig. Gen. Haywood Hansell (the Young Turks) on bombing Japan from the Marianas ("a bunch of tiny atolls and coral reefs") continued in 1944 to hector Arnold on what he considered a bad decision, going so far as to label bombing from the Marianas "a stunt."[32]

To Arnold, the use of the revolutionary B–29 against Japan would show that a modern, industrialized nation could be knocked out of the war and thus save the allies from having to resort to an invasion. Arnold had driven the big bomber through its engineering and production stages, overcoming major difficulties. He wasn't about to allow a theater commander to get his hands on it. Consequently, in April 1944 Arnold convinced the JCS to approve the establishment of the Twentieth Air Force directly under him as their executive agent in Washington.

In retrospect, Kenney never had a chance to get B–29s. He totally misjudged the impact that B–29 operations against Japan would have from the Marianas, and he told Arnold in June 1945 that bombing alone wouldn't knock Japan out. Kenney emphasized that Kyushu should be invaded, "and that probably further land operations afterwards would be necessary."[33] Here, Kenney negotiated a

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tightrope between MacArthur and Arnold. MacArthur thought an invasion of the home islands would be required, and he accused Arnold of interfering and attempting "to show that the air forces could win the war by themselves."[34]

Arnold and Kenney saw the war differently. Arnold required a global vision, setting strategy and establishing plans for theaters that competed for men and materiel; Kenney's view came from his position as a theater component commander. Despite the contentiousness between the two men over a host of issues affecting the air war in the Southwest Pacific, a measure of respect remained between them. Kenney may not have been an air record-setter like Doolittle or a confidante of Arnold's, but there was little he didn't know about airplanes and organizing combat air forces. Expert in materiel production and engineering, he'd served as director of operations at GHQAF under General Andrews, and the experience served him well in the Pacific, where innovation became his hallmark. Arnold appreciated Kenney's ability early in the war not only to get along with MacArthur, but also to win the theater commander's support for the air war.

With the end of the Pacific conflict, MacArthur saluted Kenney as perhaps the greatest operational air commander of the war: "Of all the commanders of our major air forces engaged in World War II, none surpassed General Kenney in those three great essentials of successful combat leadership: aggressive vision, mastery over air strategy and tactics, and the ability to exact the maximum fighting qualities from both men and equipment."[35] On August 19, 1945, Arnold cabled Kenney:

> The brilliant offensive of the Far East Air Forces under your inspiring leadership was an outstanding factor in Japan's defeat. Looking back to the operations of the early war in which, gravely outnumbered and undersupplied, you rose from the dust of the Port Moresby strips to stop the Australia-bound Japs in their tracks; it may truthfully be said that no air commander ever did so much with so little. The Army Air Forces honor your fighting spirit, to which we so largely owe today's splendid triumph.[36]

Arnold's praise was a fitting salute and also a commentary on the complex relationship between two headstrong leaders. For all of their differences in temperament and personality, both succeeded. Despite Arnold's micromanaging, he was a hard-driving leader of wartime air forces who never spared himself. Criticized as a promoter with a lack of strategic sense, he possessed great foresight and an enormous ability to marshal disparate resources to get the job done.[37] In a real sense, Kenney as operational commander meshed with the global leader in Washington. Never a stickler for ceremony, Kenney dug into the details, maintained a strategic vision, possessed an infinite command of airmanship, and, moreover, radiated leadership that brought out the best in his troops.

Today's airmen can learn a great deal from Hap Arnold and George Kenney, two great air leaders who were, above all, true to themselves.

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Notes

1. General George Churchill Kenney diaries, vol. 1.
2. See Louis Morton, *Strategy and Command: The First Two Years* (Washington, D.C.: Office of the Chief of Military History, 1962), p. 25.
3. USAF oral history intvw, James Hasdorff with Gen Kenney, Bay Harbor Islands, Fla., Aug 10–21, 1974, Air Force Historical Research Collection, no. 806.
4. Comments of General Brett in Kenney diaries, vol. 1.
5. Kenney diaries, vol. 1. The most authoritative work on MacArthur is D. Clayton James, *The Years of MacArthur*, vol. 1, 1880–1941; vol. 2, 1941–1945; and vol. 3, 1945–1964 (Boston: Houghton Mifflin Co., 1970–1985). Also see Geoffrey Perret, *Old Soldiers Never Die: The Life of Douglas MacArthur* (Random House Inc., 1996).
6. Kenney diaries, vol. 1, entry for Jul 12, 1942.
7. Msg., Lt Gen John DeWitt, Commanding Gen, Fourth Army, to MacArthur, Jul 17, 1942, in Kenney diaries, vol. 1.
8. Msg., MacArthur to Gen DeWitt, Jul 19, 1942, in Kenney, diaries, vol. 1.
9. Kenney diaries, vol. 1, entry for Jul 13, 1942.
10. Ibid.
11. Kenney diaries, vol. 1.
12. Ibid.
13. Ltr, Kenney to Arnold, Dec 10, 1942, in Kenney diaries, vol. 3.
14. Ibid. For a consideration of Kenney's operations in detail, see Herman S. Wolk, "George C. Kenney: MacArthur's Premier Airman," in William Leary, ed. *We Shall Return: Mac Arthur's Commanders and the Defeat of Japan, 1942–1945* (University Press of Kentucky, 1988), p.114.
15. Ltr, Kenney to Arnold, Dec 10, 1942, vol. 3
16. Ltr, Arnold to Kenney, Jul 5, 1943, vol. 6.
17. Ltr, Kenney to Arnold, Jul 28, 1943, vol. 6.
18. Msg, Kenney to Arnold, Nov 27, 1942, vol. 3.
19. Kenney diaries, vol. 3, entry for Nov 27, 1942.
20. Msg, Arnold to MacArthur [for Kenney], NR 4784, Dec 24, 1943, vol. 3.
21. Msg, 4864, Arnold to Kenney, Dec 27, 1943, vol. 3.
22. Ltr, Arnold to Kenney, Jul 7, 1943, vol. 6.
23. Kenney diaries, vol. 4, entry for Mar 12, 1943.
24. Ibid.
25. Kenney diaries, vol. 4, entry for Mar 17 1943.
26. Arnold to Kenney, Mar 30,1943, vol. 4.
27. Ltr, Arnold to Kenney, Apr 5, 1943 vol. 5.
28. Ltr, Arnold to Kenney, Oct 11, 1943, vol. 7.
29. Ltr, Kenney to Arnold, Oct 21, 1943, vol. 7.
30. Kenney to Arnold, Oct 29, 1943, vol. 7.
31. Kenney diaries, vol. 8, entry for Mar 12 1944.

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32. On Kenney's view that Kuter and Hansell had "sold the idea to Arnold," see Kenney diaries, vol. 8, entry for Mar 28, 1944.
33. Kenney diaries, vol. 10, entry for Jun 17, 1945.
34. Ibid.
35. Kenney diaries, vol. 11. For a full-blown treatment of Kenney and MacArthur, see Thomas E. Griffith, Jr., *MacArthur's Airman: General George C. Kenney and the War in the Southwest Pacific* (University Press of Kansas, 1998).
36. Msg., NR 1592, AFACG, Arnold to Kenney, Aug 19, 1945, vol. 10.
37. For a close look at General Arnold in World War II, see H. H. Arnold, *Global Mission* (Harper & Row Publishers, Inc., 1949). For an insightful biographical picture of Arnold, consult Maj Gen John W. Huston, *American Airpower Comes of Age: General Henry H. "Hap" Arnold's World War II Diaries* (Maxwell AFB, Ala.: Air University Press, Jan 2002), vol. 1, pp. 1–124.

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Q&A

Audience Member: Would Kenney's having been allowed to operate B–29s in the Southwest Pacific have made a difference?

Mr. Wolk: In retrospect, I don't think it would have made a critical difference. Arnold was absolutely right on the B–29 question.

Audience Member: Why do you think Kenney wasn't able to see that Arnold was right concerning B–29s?

Mr. Wolk: Kenney was hearing all along that there was this revolutionary aircraft with which he might have won the war. He wanted to base it in Australia. He was preparing airstrips. He thought he could do the job, and oil was the thing he had on his mind that could really cripple Japan.

Audience Member: If I understood you correctly, you said that MacArthur refused to accept Doolittle. Why?

Mr. Wolk: MacArthur didn't want to accept Doolittle, and Doolittle didn't want to work with MacArthur. MacArthur didn't like the hero of the earlier raid on Tokyo, a flamboyant airman of the theater. This, coming from MacArthur.

Audience Member: Was MacArthur justified in saying to Marshall that the Australians weren't willing to accept somebody who didn't have a lot of military background?

Mr. Wolk: Absolutely right. That's correct. He termed it that way.

Audience Member: One of the people you mentioned said that MacArthur didn't like the Air Corps because he didn't understand it. I don't agree with that.

Mr. Wolk: I think there's some truth to that thought. When Kenney got out there, he was enormously confident in his ability to organize and run a combat air force. Early on and very rapidly, he demonstrated good results in the Fifth Air Force, which quickly convinced MacArthur. MacArthur was a smart guy and said, "Boy, if George Kenney can do this, I mean, he could really help us." They had a wonderful relationship after that. Kenney definitely demonstrated results early on.

Audience Member: Why did Kenney leave Strategic Air Command [SAC]?

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Mr. Wolk: Kenney went out of SAC because Assistant Secretary of War Stuart Symington, who later became the first secretary of the Air Force, recognized him as a very good speaker who loved to get out among people. Symington made Kenney a spokesperson who promoted the struggle for an independent air force. The running of SAC then fell to Maj. Gen. Clements McMullen, but it wasn't operationally ready, which was partially due to the fact that Kenney had been ordered to do some other things.

Audience Member: You've mentioned Arnold's appreciation for the need to communicate accurately with the American public.

Mr. Wolk: Yes, as long as combat operations weren't affected.

Audience Member: Was it something he thought up, or was it something that was based on his experience?

Mr. Wolk: I think it was a bit of both. I think World War II was the key. There will never be another war like it. The United States was partly in the war because of the home front, because of what the American people were producing here in just enormous quantities. Arnold, even before the war, had a really good feel for production and the number of aircraft that had to be manufactured. Of course, prior to World War II, the Army Air Forces had built itself up; yet the allies were clamoring for more of our planes. The British were getting B–17s before our Army Air Forces got them. Arnold was keenly sensitive to the democratic process, extremely knowing of its workings here. The fact is that the American people were, bottom line, the ones who were going to support all of these resources going to the Army Air Forces. He was very attuned to that fact.

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The Power of Personality: Interpersonal Conflict Among Air Power Leaders

Dr. Roger A. Beaumont

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One of the side effects of postmodernism, which is very popular today in some academic circles, is a tendency for scholars to begin articles or presentations with a reference to themselves. They do it easily. The personal note shows where the frame of reference is so that deconstructors can see some of the baseline for deconstruction. I could regale you with anecdotes of my experience with generals as superiors in the military. For example, I was briefly a general's driver in my not wholly misspent youth, and a junior military police officer, which gave me priceless behind-the-scenes views into command and control. Over the years, I had a lot of contact with generals, admirals, and commandants as a consultant, what they used to call a defense intellectual. I learned to move carefully and I got a couple of whiffs of being inside the bubble when I was treated occasionally as a substantive rank of three-star in the visiting officer quarters. As Jackie Gleason said, "How sweet it is." I have friends who were Air Force generals, and I learned that when I was asked to say what I thought, there was truth, what we call historical truth, then there was truth that those with power were willing to listen to. Probably my highest amperage encounters were lively telephone conversations with Adm. Hyman Rickover in the 1970s when he tried to get me to carry the banner to disband the Corps of Cadets at Texas A&M. It's a true story, but we haven't got time for it here so I won't bore you with it. I'll just point out that it doesn't take personal contact with the "Generalatate," as the Germans say, the General Officer Corps, to get a feel for the essence of it.

Tolstoy, Steven Crane, and Arnold Sweig's *Education Before Verdun* convey a little of the essence of the "general thing," which is basically about power. Socrates has a little thing about generalship; a lot of people have views on it. It's discussed in bars and by experts who abound at American Legion posts and other places. It's a tremendous loading to generals, semiotic loading, to use a little postmodernism, the symbolism of generals as political figures. Lord Wavell said that Socrates got it right, except that his checklist failed to include the need for stamina. But he really didn't get to the issue of secrecy, the extent to which

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generals must keep their own counsel by deceiving and by guarding plans, which is the essence of war planning. It creates the dynamic that Lord Acton talked about when he said that power tends to corrupt. Citizens of free societies must keep a close eye on the general thing, the power thing. Many great generals have stayed in harness and served their republics, like Cincinnatus and Washington and our dozen or so presidents who were generals, and Wellington. But some like Caesar, Cromwell, Ataturk, Santa Ana, and Franco, and many warlords, went hot, so to speak, and usurped the reigns of state. They're not really the focus of my analysis here, which I'm limiting to events occurring no more recently than thirty years back. Interestingly, we've tended to forget the ungrounded fears that many in the industrial world in the first half of the twentieth century had at various times about airmen's Bonapartist ambitions and how tense things got on that score for a while in the United States.

No well-defined theory of generalship is available. The closest might come, in essence, in the principles of war. All kinds of books about generals can be found. Clausewitz had quite a bit to say about the characteristics of generals. Wavell's *Generals and Generalship* is a slim but pithy volume. How many of you have read it? Is it out of the culture now? It was popular years ago. We have Keegan's *Mask of Command* and van Creveld's *Command and War.* The literature is out there, but it's necessarily fragmentary. John Erickson, premier sovietologist, said that when you study a military institution, you should use a triad of tuning forks: technology, doctrine, and style. The problem with generalship is that it's about style, which links up to many other things. I'm reminded of pulling fishhooks out of a box; you pull one out, and all the others come with it, including fuzzy sets like leadership, mystique, atmospherics, command presence, dominance, compliance, charm (because some generals are very charming), creativity, inspiration, vision, and concept. It's true that air generals have often seemed rash, difficult, overbearing, intimidating, and hard driving.

But that's true of admirals and generals in general. If you'll permit me to use the word "iconoclast," we see a glimpse of it in Mitchell, Douhet, and Trenchard. As you know, they were fairly sharp-elbowed and had big stacks of chips on their shoulders. Then we have prima donnas like Harris, LeMay, Power, Galland, Guy Gibson in the Royal Air Force, and Don Bennett. Anybody here have any dealings with Don Bennett? You know what I'm talking about. How about Slessor? Are we going to count him in this? Of course there are Arnold, Eaker, Andrews, and Spaatz who, relatively speaking, were more affable, congenial, and diplomatic in public situations.

Being in the public eye provided opportunities for the modernists, new men, smooth, almost Hollywood-like in their demeanor. Vandenberg, Quesada, Kenney, and Norstad exemplified them. If you include the airborne generals, you're into a whole other category. These are the movie-star handsome generals of the 1940s, '50s, and '60s. We could get bogged down in personalities, which is a problem, but is most interesting. The personal texture is what leaves a lot of the

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broader patterns unfocused. How do fragments like these people's lives fit into the flow of history? During the 1920s, for example, pressures on airmen might have produced, let's say, for argument's sake, airmen who were grumpier than other generals. I don't necessarily subscribe to that hypothesis, but think about it. One of the things that would have made them grumpy, besides personal problems perhaps, is the fear of Bonapartism. Many had lost friends in flying accidents. Then there's the fear of flying, which grounded "Hap" Arnold for a while. But the fear of Bonapartism, the fear that the air arm was going to allow the dominance of society in a unique way, was a major determinant.

A lot of science fiction stuff on this goes back to the early twentieth century. H. G. Wells referred to it in *Things to Come*, which was made into a movie in the 1930s. It's kind of a scary movie. Then there's Rex Warner's *The Aerodrome*, and there's Stalin. Many of his purges wiped out the heavy bomber force and airborne troops of his own air force because he feared it would be used for coups. That's a powerful fear. Pacifist air war movies like *Idiot's Delight*, starring Clark Gable, were made during the late 1920s and early 1930s. Paradoxically, they had great flying scenes, and were seen by lots of teenage American boys who didn't pay much attention to the subliminal text.

Pacifists targeted air power fiercely throughout this period. They got Mobilization Day cancelled, using as their rationale the historical problems that had marred preparations for the Spanish American War. During World War I, an annual day was established so that people could focus on preparing for an emergency or a crisis or war, but it was cancelled as a result of lobbying by pacifists, as were overflights of American cities by large formations of aircraft. In the late 1930s Horrors of War bubblegum cards showed air power and bombing in a lurid, comic-strip format. When war came, bubblegum cards carried images of Heroes of Democracy, and airmen, aces, and generals were suddenly celebrities.

Some air power historians have recently looked at the Geneva Conference of the early 1930s very carefully to see if it was a stronger force in airmen's lives than people realize today, given that the Air Corps had shrunk to roughly 20,000 men. MacArthur, as Army chief of staff, told an American diplomat going to the conference that, at the beginning, he was perfectly willing to table military air power, to get rid of it. It perturbed the normal dynamic of fighting anyway. But the coast defense aircraft, the B–17, which had a lot of inadvertent loiter time, was not an idle thing. Terminology in the defense budget specified that tanks became combat cars and aircraft provided coast defense. If the Geneva Conferees banned bombers, those planes would be scrapped, as would tanks, so a little semantic game was going on. Herbert Hoover's great hope was to ban bombers, but he didn't because the conference began just as the Japanese attacked Shanghai, and then Hitler came to power in January 1933, and then people said, "Ooh, I think we'll wait a little bit on some of these agendas." Then, of course, we saw World War II, that incredibly multitextured experience which some of us older people remember with different perspectives.

Air Power Leadership

This was the golden age of the popular culture's adulation of air power, whose heroes appeared on magazine covers and in movies, a whole bunch of movies. Some of you might remember the "Keep 'Em Flying" logo with the P-39 staff in the middle. It was everywhere, like the National Recovery Administration's Blue Eagle. There was Colin Kelly. His thing would lead to a lot of revisionism later, but at the time it was spectacular. There were Flip Corkin (patterned on Phil Cochran), and Hot Shot Charlie (the ultimate caricature of the fighter pilot of the period) in *Terry and the Pirates*, the 50-mission crush, the short snorters, punch-out cereal airplane cards, and jokes about the youthfulness of the airmen: "I've got a cousin in the Air Corps. I don't know whether to salute him or burp him." Of course, the Glenn Miller Army Air Forces Band lives on, a popular cultural touchstone. A long list of movies appeared—*Air Force*, *Winged Victory*, *Victory through Air Power*, *God is My Co-Pilot*, *A Yank in the RAF*, and others. More major feature films were made about the air arm than the other two services during the war. Airmen were more photogenic. The Air Corps, the Air Forces, and people like "Hap" Arnold built close ties to Hollywood, which before the war made such films as *Dive Bomber* and *Test Pilot*.

In spite of the hoopla, air generals were grappling with harsher realities, such as increasing personnel numbers from 38,000 in 1938 to 2.3 million in 1945. Then came the military equivalent of the 1929 stock market crash, the demobilization of 1945 to 1947 when the Army Air Forces went from 240 wings to 2 that were actually deployable. It was incredible, likened to a tornado. Among the historical sidebars of the period were General Spaatz's having to go talk with the Swiss about the accidental bombing of their territory and about aircraft that were diverted to and interned in their country and Sweden.

Morale problems play out in several indicators, but the abort rate was high. It's right there in the Air Forces battle diary. If you go through and tease it out, you'll see numerous references to aborts. In some instances groups aborted, a serious indicator of problems. Then there was air discipline. Flying is a different business, and those in it must devote a great deal of time and attention to military punctilio and ordinary stuff. Rude words pepper military slang that refer to fixation on detail. Airmen were different. They wore what they wanted, and they didn't salute. They were Hell's Angels predecessors to some senior military people, who, reacting to their kind of individualism after the war, tried to bring stronger discipline to the Air Force.

After the war, the generals were burdened with other tasks, many of which, being secret, they carried out behind the scenes. They built a nuclear delivery force on lean budgets, without much support from many quarters. In a major battle, they wrested control of nuclear weapons from the Atomic Energy Commission so that they could be kept on Strategic Air Command [SAC] bases.

Discipline and organization tightened against the backdrop of the unification battles of the late 1940s. Ferocious interservice rivalry was not resolved by the creation of the Department of Defense and the Air Force in 1947. An outbreak

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of fighting and crankiness known as the Battle of the Potomac occurred over the B–36 bomber's utility. Mike Warden's absolutist tough guys, kind of like the Lollipop Guild in the *Wizard of Oz* but with live ammunition—Patton, Stilwell, McNair, Vandegrift, Holland M. Smith (whose nickname among his friends was Howlin' Mad), Chesty Puller, Lew Walt, Bull Halsey, Radford, and of course the "king of the hill," King—were they really all that feisty in their interpersonal relations? When Admiral King was named as chief of Naval Operations, he reportedly said something like, "When they get in trouble, they call for the sons of bitches." He didn't mind reading about claims that he shaved with a blowtorch. Any of you who know about King know what I mean. Great movie there, by the way, with Robert Duvall, if we can just get it put together.

Associated with being an airman were a lot of traumas and strains. Unique among them was the pilot mystique itself and the tremendous competition to achieve pilot status, unknown in the other services. Attrition in aviation occurred throughout the 1920s and 1930s. Many resignations as a result of accidents and the constant animus from the air arm's parent and sister services were some of the reasons. Then came the burden of deterrence. You have to ask how much of Curtis LeMay's grim, in-your-face style was due to the fact that he was physically impaired. He couldn't smile. Many would argue that it didn't matter much. And of course he was an Ohio State ROTC graduate. Holland Smith was an Auburn ROTC graduate. LeMay and Smith had to compensate for not being products of the regular system. They kept that kind of quiet. And how many suffered from posttraumatic stress? Now we know what the disorder is, but no one did then; it hadn't been defined. Plus, all the careerist competition, all the talk about teamwork, which was countered by the real world, created a lot of stress. This is a truism, an open reality.

In the early 1960s we had the Cuban Missile Crisis, one of the most underconsidered events in recent American history. The whole country seemed to develop posttraumatic stress syndrome. Some 12 million Americans quit their jobs, went on vacation, left their homes and the major cities of the United States when their televisions came on with the message, "If an ICBM comes in, you'll hear the sonic boom first, before it goes off." People ransacked supermarkets; 450,000 airmen, soldiers, sailors, and marines gathered in the southeastern United States; special forces went ashore in Cuba; golf courses became the sites of potential drop zones. Everything was ready to go for the "big one." The Soviet peoples knew nothing, were kept completely ignorant. The American people suffered from the emergency psychically at a very deep level, and they internalized it. They denied it, just as they do today. No study of that aspect of the Cuban Missile Crisis has ever been made; all have been about policymaking in the White House. But everyone on alert, at the headquarters, in the aircraft, in the Looking Glass command post knew.

From 1955 onward, another powerful uncertainty ran through the Air Force about the reliability of nuclear weapons. They present a paradox because you've

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got to find people sane enough to use them, but only under certain conditions. It was a very tricky call. That wasn't the only problem. SAC commanders had to imbue their troops with sufficient fighting spirit to accept a mission many knew was statistically less promising than that of an Eighth Air Force aircrew member with a thirty-five-mission limit. SAC guys knew that; they were smart and could do the slide-rule work just as their predecessors could. Senior commanders in the Air Force and in the National Command Authorities, created in 1955, knew that if a bolt from the blue hit Washington and wiped out the whole government, in five minutes a SAC brigadier or major general would be the functioning dictator of the United States under federal emergency management provisions. That was heavy stuff for someone to bear—the responsibility for sending trusted and beloved friends into essentially a furnace of nuclear war. We can talk about it and think about it, but we really can't imagine what it was like for those guys. So if they were grumpy, if they were a bit difficult, if they kicked the cat, what the hell? It's easy to make light of what they went through now, but it wasn't then.

In the early 1960s, before Vietnam, a "Kulturkampf" developed in Hollywood over the images of Air Force generals. On the one hand, you had smooth, confident professionals like Frank Lovejoy as Curtis LeMay in *Strategic Air Command*. How many of you have seen it? Then you had Sterling Hayden as Gen. Jack D. Ripper in *Dr. Strangelove*. "Have you ever seen your hard-core Commie drink a glass of water, Mandrake?" *Catch-22*, which was sort of like *M*A*S*H* but was about World War II, was sort of about Vietnam, too. *Twilight's Last Gleaming*, the last of the genre actually, starred Burt Lancaster as an Air Force general who's going to run amuck and start a nuclear war. Then there were *Bombers B–52* and *Gathering of Eagles*; I mean, there were these totally different views of air war and the Air Force. They were coming out before Vietnam; but Vietnam turned everything around. Antinuke movements in the United States got stronger. We were criticized in Western Europe, in Soviet cartoons, and in the world press, especially for bombing North Korea.

Then Vietnam, with all of its competing pressures, hit the Air Force. We were fighting another war with gloves on, with the decisionmaking loop so tight that the president and the "Tuesday morning breakfast club" were picking targets and talking to crews in the air. Vietnam and Laos issued postage stamps showing American air pirates being shot down in large numbers. We saw the Le Duc Tho air power study at Cornell and the purge of Air Force records documenting uncertainty about who might become president in 1972.

Technical shortfalls and surprises occurred all the way along. Force inversion occurred in Vietnam when strategic bombers were used to do tactical stuff while tactical fighters did strategic stuff. What was going on? Well, the Navy had gotten used to this in World War II. Only one of its ships, the classic minesweeper, was actually put to the purpose for which it was built. Then came the prisoner of war ordeal, and the smart bomb/iron bomb clash between John Lavelle as project officer of the Air Staff and three Seventh Air Force commanders in a row

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because of conflicting logics about what bombing was, what airplanes were, and what the Air Force was. Lavelle got to be Seventh Air Force commander, and he actually got to use some of those smart bombs, but he kind of got into trouble doing it.

I stopped at thirty years back, looking at historical context. In studying these generals and the history of air power leadership, we have to decide what models to hold up as examples to airmen cadets, younger senior officers. The problem is tuning the essentially feudal playthroughs of forms, military disciplines, and customs, with rapidly evolving technology, and then imbuing values by the use of biography. What good is served by the mishmash of portraits of powerful personalities? It gives a flesh-and-blood context to the bureaucratic setting. But there are a lot of special considerations. One is that few people get to be generals anyway. So the Air Force manual is about leadership, not generalship, and why should it be? How much do we understand about all of this? We understand a lot more than is visible to the public eye, but some problems beset military biography, which is often used as an instructive tool. One is that biography is built on a teleological fallacy—the idea that something happened because it had to happen and that the right person got into exactly the right spot.

The implication of military biography to a great extent is that a unique person is available to meet any given situation, regardless of the fact that a much larger cohort is present. You know the cliché about the smart guys ending up as colonels. What's that all about? It's about the system, which works properly because you can randomly select any one person to plug into from a cohort of, say, 150. Any of them will be a good general or a good colonel. That's the whole idea behind the system. Yet military biography tends to say, "Ah, this person is absolutely special and is the only key to fit the lock." It's an interesting problem from an intellectual standpoint; from an organizational standpoint, it's something else. The Soviets, by the way, were very interested in this— in cases of turbulent situations when those who'd been formally designated as leaders failed and others stepped forward. You've heard the story from combat veterans: "Well, Corporal So-and-So took over and everyone else messed up, and he ran the company for half a day, then everyone went back to doing what he'd been doing, and nobody talked about it afterward." What's that all about? I mean, it's in the war literature from World War I, World War II, and the Civil War.

Underneath that are the superior and subordinate efficiency rating systems that the services have been fighting battles over since the American Revolution. They definitely have efficiency report forms of one kind or another going back that far. People have argued for a multilateral rating system, you know, peer-group evaluations of subordinates and superiors, and a multifactor system that accounts for technical skills. There should be a numerical score instead of the impressions of people sitting on promotion boards. Fat chance. Why? Because it takes away the authority of the commander in a significant way. That's the argument against it, and it's not a trivial one.

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Q&A

Audience Member: We're in the final stages of developing an Air Force leadership doctrine. One point that we argued early on, and that you talked about, was the real challenge in trying to capture leadership practices. From our perspective it's hard to address institutionally the leaders-are-born kind of argument. What we can do is nurture and develop leaders along the way. I just want to get your thoughts about the balance between the leaders-are-born versus the leaders-are-made arguments.

Dr. Beaumont: I hope you're not asking me for a detailed response at the moment. We can talk later because I'd like to give it some thought. If you're going to do something like that, it may drive the other services along. My science-fiction imagination is engaged in what it's going to be like in the other services as they'd be facing somebody who's actually doing something significantly different in this area. That would be fascinating in and of itself. Let's talk later.

Audience Member: Is there more to be said about "the right man, at the right place, at the right time?" Would you comment on that?

Dr. Beaumont: This is one of the trickiest subjects in leadership literature and also in management literature. When we interview women and ask them about how they became leaders, they say, "Well, you know, I was very lucky, things worked out." But men answer, "Well, I have these traits and skills that align with such and such." So their responses demonstrate a kind of cultural difference. I have daughters and sons. We all deal with this, but we all have different versions. I think the answer lies in the old law of locations, that no matter where you go, there you are, and from where you're observing things, they appear to have a truth that's different from what it would be if you'd been viewing them from somewhere else. You could sit down and write a biography, two biographies, of the same person, one of which is based on Norman Mailer's Sampson-Schley thing. Mailer tore apart the Navy of the early twentieth century, where you have a really able, powerful, major commander going ashore to meet with an Army general, and the guy he views as a dork is left in charge, and the Spanish make a run for it, and he blows them away, and he gets credit for the victory. And so Norman Mailer took that into the plot of *The Naked and the Dead*, and the big, senior, cerebral general who was thinking out the tactics goes off for a meeting somewhere, and his chief of staff, who's kind of an amiable but not wildly competent guy, gets some information, and he starts moving forces around, and he defeats the Japanese. Well, that's overstating the issue, but it's the issue. The issue is being the survivor, and that's something all sorts of professional service people live with, but airmen have lived with it more than others have.

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In *The Right Stuff,* Tom Wolfe asks, "Why me?" Like the veterans of World War I, my dad said to me once that 75 percent of his high school graduating class was dead eighteen months after graduation. I mean, how do you make sense out of a world that leaves you alive in circumstances like that? I think that's a part of this thing, how to make sense of it, how to explain it. Historians are burdened trying to make sense of it, and they quite often fall in love with their subjects. I fell in love with George Marshall, though not literally. I mean, I didn't give Marshall a really tough, good going-over.

Audience Member: Tell us about Tom Power. Was he some kind of a standard of something?

Dr. Beaumont: Tough guys among a group of SAC generals were LeMay, who wrote *Mission with LeMay,* and Tom Power, who wrote *What Is the Strategy for Survival?* Nate Twining's biography, "General Nathan Farragut Twining: The Making of a Disciple of American Strategic Air Power, 1897–1953" (J. Britt McCarley's Ph.D. dissertation), also puts him in this group. All became major visible figures and political rightists. Most notable in this group of political rightists was George Stratemeyer. Though LeMay ran with George Wallace for president in 1968, I think Stratemeyer actually steered further to the right. So the Air Force generals who were being stereotyped in *Dr. Strangelove* were based on these guys. They were living deterrents. I mean, there was no doubt in anyone's mind that LeMay and Power were going to wield deterrence, right? I mean, did anybody ever doubt that? Because they'd already done it. They were the living embodiment of deterrence. They'd carried out firebomb raids deliberately and repeatedly against large populated areas, as the Royal Air Force had. Power had gone up and circled around and watched the operations. So that's what I'm talking about. Stylistically they stood tough with their subordinates, with the world at large, to project this image. I don't think there's an easy answer, maybe there's no answer at all; these guys just did this because they knew this is what you have to do, this is part of command presence, this is why we won the Battle of Winchester, because Sheridan came riding down the valley when the enemy was routed and said, "Come on, they're on the run, come on, don't you want a piece of the action?" And they turned around, and went, and won the battle. That happened more than once.

Sometimes generals have to tell lies, yes, and if necessary, kill people and destroy things. And they maintain this huge, essentially passive bureaucracy. The paradox about going to war is that you have all of these people who evolved, in terms of career, as serious, solid, sober people, who had good ratings in the peacetime bureaucratic system but who are now suddenly going to war. War is kind of crazy, kind of chaotic. And what happens? You get the George Pattons, who probably wouldn't have passed a nuclear weapons reliability screening or any number of other screenings. But boy, you have a system that's vibrating

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crazily and you've got someone who fits your needs very nicely. I think the dilemma when you go into peacetime mode, when you have business and political standards of efficiency and economy imposed, is that you end up with the kid who goes to war and the low-bid system. I'm a little prejudiced on that, I'm sorry.

Audience Member: Do you have examples on the Air Force list of managers versus leaders?

Dr. Beaumont: No, because that's another level, but it implies that generalship is what? And it encompasses a huge spectrum of types, specialists all the way through the combat arms types. You know, the holding-their-pants-up-with-thumbtacks kind of leaders, the fireballs. The institution includes all of these types and has to have them work as a complex system. But how do you achieve balance? The Army produced the paradox. After World War I, it got a whole bunch of guys who were very smart, who read the system, so when they entered the service they chose to go into the technical branches. They got out as lieutenant colonels instead of four-star generals in the combat arms. When the combat arms guys got out, they sometimes had a hard time getting jobs. But the guy who was in the Ordnance Corps or the engineers or whatever technical branch, and had some specialty, could get hired by a Beltway Bandit or a big corporation and become an executive. So external polarities pulled on that model, too.

Audience Member: Sir, this might be an unfair question, because you say you stopped at thirty years ago, but some of us today look at some of the general officers you described, and they really did have separate, individual personalities. You could tell one from the other, and, since this is non-attribution, some feel that most in our General Officer Corps today are more like Rock Hudson in *Gathering of Eagles* than like Curt LeMay. They're kind of slick and smooth, and they all look the same.

Dr. Beaumont: Well, if you pour the metal through an extrusion template of a certain kind, you're back to the colonel's thing. What is it that you're drawing along up through the system in the way of traits and behaviors? We used to have, in my limited experience in the service back in the old days, junior officers whom we admired who quite often got nailed for stepping outside the bounds and knocking over more pins than they'd set up themselves. A serious morale problem developed, and it kept a lot of people from staying in. In 1958 a *Newsweek* magazine carried a Bill Maulden cartoon character with a helmet and a rifle that was captioned, "Why the good ones get out." How do you build that kind of system? The Army went through that agony in the mid-1970s at Leavenworth. It went through all of those leadership conferences where the general officers confronted the junior officers in very tense situations, non-attribution sit-

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uations. That's all I can say. But, you know, it's a problem, and it has real effects, and we keep going back to the colonel's dilemma here.

Audience Member: Dr. Beaumont, as regards management and leadership, do you believe that we're in a crisis in the Officer Corps, that we're deadened with paperwork and e-mail, that we can't think about our troops individually and study the art of war, that we can't separate out many of those adjunct functions without losing our troops' respect?

Dr. Beaumont: As long as commanders—what's the smallest unit in the Air Force, a squadron?—as long as commanders are personally held responsible by external agencies—auditing agencies, safety agencies, security agencies—for everything that happens on their watch, as long as that's the case, you can ask, "How can it be done any differently?" Commanders won't be inclined to delegate and build a model that pushes too much into the hands of people they can't monitor. It would be very hard in the military culture. I've participated in discussions over the years about doing it like the British do with their NCOs [noncommissioned officers]. I was having lunch at Sandhurst one time and heard the sound of marching outside. One of the officers, having sherry in the mess, said to me, "Come to the window, there are troops going by, we don't see troops too often." Really. The sergeants were running the place, you know, as if West Point were being run by E–6s, E–7s, or E–8s. A group of those guys took over the discipline, the running, and the training of the Officer Corps at the basic level. I don't think our culture would tolerate it. I mean, other design models would probably work, you know. People have beaten this to death, have cut down forests to write staff papers on this.

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Introduction of

General John P. Jumper

Chief of Staff, United States Air Force

by

Dr. Arnold Vedlitz

Acting Dean, George Bush School, Texas A&M University

General Jumper, on behalf of Dean Chilcoat, I want to welcome you to the George Bush School of Government and Public Service and to this great conference that we're having here at Texas A&M. Texas A&M University is very, very proud of many things. We have some wonderful traditions, including the tradition of excellence in scholarship, excellence in research, and excellence in service. One of the things we value most is the way our faculty, staff, and students work together. As large as we are—the fourth largest university in the United States, with 45,000 students—we still believe in and provide a personal touch for our students. We're extremely proud of them. We believe that when we send them into the world they'll go on and be successful in their careers, become leaders, and be people who make major contributions to their communities. It's now my pleasure to introduce one of those students, Cadet John Henson, from Goldthwaite, Texas. Cadet Henson is an agricultural development major at our agriculture college here. He's also a member of our Ross Volunteers, and they're a tremendous outfit. Without further ado, John, please come up and introduce General Jumper for us.

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Cadet John Henson

Texas A&M University

Thank you, sir. Gen. John P. Jumper is the chief of staff of the United States Air Force in Washington, D.C. As chief, he serves as the senior uniformed Air Force officer responsible for the organization, training, and equipment of 710,000 active duty, guard, reserve, and civilian forces serving in the United States and overseas. As a member of the Joint Chiefs of Staff, the general and other service chiefs function as military advisors to the secretary of defense, the National Security Council, and the president. General Jumper was born "just up the road" in Paris, Texas. He earned his commission as a distinguished graduate from the Virginia Military Institute ROTC [Reserve Officer Training Corps] in 1966. He has commanded a fighter squadron, two fighter wings, a numbered air force, U.S. Air Forces in Europe, and Allied Air Forces in Central Europe. Before becoming chief of staff, General Jumper served as commander of Air Combat Command, Langley Air Force Base, Virginia. The general has also served at the Pentagon as deputy chief of staff for air and space operations, as senior military assistant to two secretaries of defense, and as special assistant to the chief of staff for roles and missions. A command pilot with 4,000 flying hours, particularly in fighter aircraft, General Jumper served two tours in Southeast Asia, accumulating more than 1,400 combat hours.

Ladies and gentlemen, please give a warm welcome to General Jumper.

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General John P. Jumper

Chief of Staff, United States Air Force

Thank you everyone. Thank you. It's a pleasure to be able to stand before this distinguished audience tonight and talk to you about a century of air power leadership. It's a marvelous story, indeed, and when I think about aviation in 2003, I think about history, about how far we've come.

The Wright brothers, guided by no more than observations they'd made watching birds fly, stood on that field at Kitty Hawk in 1903, beside a machine they'd put together. It didn't even have ailerons; you turned it by swaying your body and warping the wing. Why? Because that's way birds turn. Its engine, built in a bicycle machine shop, really wasn't powerful enough by itself to push the airplane. Without 25 knots of headwind that day, the airplane would never have flown.

I got to fly a Wright Flyer last month at Wright-Patterson Air Force Base in Ohio. As I strapped myself into the fragile crate of a thing, I wondered, "What the heck am I doing this for?" I revved up the engine (thankful that it was a modern-day engine), and with only about five knots of crosswind I could tell as I lifted off how very crude the aircraft was, how far off it was on things like center of lift and center of gravity. Of course, the Wrights didn't know the first thing about modern aerodynamics, but the thing worked.

Just think of the world unfolding before us at the time. The only thing that chronicled the events of that day—December 17, 1903—was a dispatch the Wright brothers themselves wrote. Very few newspapers in the United States picked up their story, but those in Europe did. Between 1903 and 1908, the Wrights traveled extensively in Europe, marketing and demonstrating their idea. Britain and France, especially, expressed great interest in it. Not until that interest from overseas took hold here did we begin to recognize that we were falling behind. Only then did the United States really embrace this thing called the airplane.

Ellen and I live in a house at Fort Myer, Virginia. It's right off Arlington National Cemetery and sits on a place called Arlington Ridge. People sometimes ask, "Why does the Air Force chief live on an Army post?" One reason is that Fort Myer is the site of the first flight in military aviation. The Wright brothers were commissioned to demonstrate what an airplane could do. In July 1909, with a lieutenant named Benjamin Foulois on board, Orville Wright flew around a closed circuit that went from Fort Myer over to Alexandria, and back. For this

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demonstration, the Wrights earned $25,000 and got a $5,000 bonus for exceeding the expected speed of 40 miles an hour: they managed 42 miles an hour. Just think of it, only sixty years later we put a man on the Moon. It's hard to contemplate, but that's how far we've come.

Back to Lieutenant Foulois. There he was in the winter of 1909 with $25,000 and orders from the Army to take the airplane to Fort Sam Houston in Texas. His mission was to teach himself how to fly the airplane and maintain it. Well, that's what he did. He went on to lead the Army Air Corps, between 1931 and 1935.

As I said, the Europeans were way ahead of us in aviation. When the United States entered World War I in April 1917, we started off using borrowed airplanes. Remember, we weren't too enthusiastic about the war, so we were way behind, but even European planes were primitive. To start one, you spun its propeller. The engine would go to 100 percent rpm; then you had to stand out of the way because the plane was going to take off. But technology and tactics improved steadily.

At home, Americans eagerly followed the exploits of their newest heroes. Lt. Frank Luke was our first triple ace with fifteen kills, and Capt. Eddie Rickenbacker became our top ace with twenty-six kills. Lts. Harold Goettler and Erwin Bleckley took their De Havilland DH–4 on patrol and found the 77th Division's "Lost Battalion." Braving a barrage of enemy fire that downed their plane and fatally wounded them, the airmen provided the location of the infantry troops, who were subsequently rescued, in the Argonne Forest.

In 1911 Giulio Douhet, an Italian soldier and writer, observed the introduction of the airplane as Italy fought against Turkey. He recorded some theories that he subsequently refined during World War I. In 1921 he published *Command of the Air*, which advocated bombing the enemy's cities to force him to surrender. While most military thinkers believed that the airplane's major function should be observation, Britain's Hugh Trenchard believed that the airplane should be used primarily as an offensive weapon. Billy Mitchell, one of our most outstanding combat commanders in World War I, made his own observations and became convinced that the United States needed an independent air force. He campaigned aggressively to that end. Vociferous, vocal, and very controversial, Mitchell couldn't be silenced. Challenging the bureaucracy, he insisted that airplanes could sink a battleship. He made good on his claim in July 1921 when his Martin MB–2 bombers sent a captured German battleship, the *Ostfriesland*, to the bottom of the Chesapeake Bay.

During the interwar years, the romance of the airplane captivated the public's imagination. A simple doctrine back then applied equally to civilian and military aviation: higher, faster, farther. The nation, indeed the whole world, became intrigued by the rapid advancement of flying machines. Barnstormers, including many former World War I pilots, entertained people throughout the United States. Americans saw the birth of civil aviation with passenger service and airmail delivery. Charles Lindbergh's historic flight in May 1927, nonstop from

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New York to Paris, propelled him to international stardom. Jimmy Doolittle, a successful airplane racer, also made tremendous contributions as a military test pilot when, in September 1929, he pioneered blind flying, that is, taking off, flying, and landing an airplane with the use of instruments alone.

Meanwhile, when the Navy's airship *Shenandoah* crashed in 1925, Mitchell reacted with a press release charging the Navy and the War Department with "incompetency, criminal negligence, and almost treasonable administration of national defense." Subsequent to his predictable court-martial and conviction, Mitchell resigned from the military, but he continued his campaign for an independent air force by making speeches and writing books. His efforts produced positive results when a presidential commission headed by banker Dwight Morrow (who later became Charles Lindbergh's father-in-law) recommended a broad set of improvements which led to the establishment of the U.S. Army Air Corps in 1926. Under the reforms, the Air Corps won representation on the Army General Staff and obtained an assistant secretary of war for air and the promise of more men and planes.

More progress came in 1935 when the Baker Board recommended the creation of a single command for all combat aircraft. Known as General Headquarters Air Force, the GHQAF, it was the very first command element of air power within the United States Army. Its leader was Brig. Gen. Frank Andrews, a brilliant airman. Andrews had caught the attention of Gen. George Marshall, the future Army chief of staff, when he argued in favor of acquiring the four-engine B–17 bomber rather than the two-engine B–18. In 1939 Andrews was elevated to the General Staff as G–3, assistant for training and operations. Promoted again, in December 1940, Andrews was put in charge of the Panama Canal Zone. The next year, he became the first airman to head a theater command, the Caribbean Defense Command. In 1942 Andrews was elevated once again, this time to lead U.S. forces in the Middle East. Finally, in 1943, General Marshall named Andrews to command the European theater. Holding that job for only three months, Andrews died in an aircraft accident in Iceland. Dwight D. Eisenhower replaced him in the European theater, and the rest, as they say, is history.

By the end of World War II, the Army Air Forces had 2 million men under arms and 75,000 airplanes. During the war, the nation suffered more than 120,000 casualties with more than 40,000 killed in action, and our airmen earned 53 Medals of Honor. The air force had "arrived." We proved we could produce results for the commander, and before much of anything else could be done militarily, we proved it was vital to "own the air."

Air power's performance in World War II earned the public's admiration and respect. Newsreels showed vivid war scenes of the early months of daylight bombing, when 20 percent of the bomber force was getting shot down on each mission; of the Battle of Britain, with its great dog fights in the air; of precision bombing; and of 1,000-plane raids. American carrier aviation also performed spectacularly. In the aftermath of the attack in Hawaii on Pearl Harbor, carrier

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aviation came into its own. Other heroic groups, like the Flying Tigers, led by Claire Chennault, flew from China and Burma against the Japanese in a kind of backwater effort to keep the enemy occupied.

We witnessed the birth of the jet age. Toward the end of World War II, the Germans unleashed their Me 262 jets and other innovative weapons. On our side, legendary aircraft designer Kelly Johnson developed the twin-engine P–38 Lightning that proved invaluable with its long range in the Pacific. Its engines featured counterrotating propellers, which meant that the torque they generated didn't have to be countered with a rudder. A decade later, Johnson and "the Skunk Works" went on to invent the U–2 and the SR–71, the triple supersonic (Mach 3), high-altitude airplane that first flew in 1964. Kelly Johnson also built the F–117 stealth fighter. It was a time of marvelous opportunity.

The Cold War followed World War II, and other men came to the fore. Gen. Curtis LeMay, the brilliant World War II combat leader, led the Strategic Air Command and built our nuclear-armed bombers into a fearsome nuclear deterrent. He created an ironclad discipline in the nuclear forces that had never been seen before, nor since. It could respond on a combat footing within fifteen minutes, and we had bombers on airborne alert twenty-four hours a day. A discipline characterized that mission; LeMay personified air power. Now, more than fifty years since their introduction, we use the ageless B–52s for close air support, an application that would have astounded General LeMay. With the aid of the Global Positioning System, with GPS-guided bombs, that's what we do.

Then we climbed into space. Early air visionaries saw this coming. Our commanding general, Henry H. "Hap" Arnold, recruited Theodore von Kármán to reserve for us the threshold of space. Kármán's Air Force Scientific Advisory Board recruited a constant stream of scientific and engineering genius to provide the infrastructure that would catapult the United States into space. During World War II, rocket propulsion JATO [jet-assisted take-off] units were developed to power heavily laden planes. Then came the X–1, the X–2, and the X series, continuing to the X–15. Intrepid individuals, Chuck Yeager and Scott Crossfield among them, gained fame as they broke "impossible" barriers and reached the fringes of space. Yeager and the "Right Stuff" crowd—Crossfield, Scott Carpenter, Gordon Cooper, John Glenn, Gus Grissom, Wally Schirra, Alan Shepard, and Deke Slayton—were among the first to explore space. They were a rugged group of pioneers. They were sure we'd succeed, and they weren't afraid to fail. We need to recapture the spirit of those days.

I've been very lucky because I got to grow up with this Air Force. My father was raised on a poor cotton farm in Paris, Texas. He signed up for the Army Air Corps in 1940, was an aviation cadet, became a pilot, and retired as a two-star general. By the time I was two years old, my dad was stationed in Japan during the occupation, and my mother and I joined him there. It was the first time my mother had ever been out of Texas. We'd taken a train to Seattle, Washington, and then caught a Liberty boat. My dad's job as a second lieutenant over there

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was to remove the anticorrosion preservative from World War II airplanes and test fly them, then take them inland where they'd be stationed.

I used to sit in his lap in these great old World War II fighters, and that's when I caught the flying bug. I grew up with these characters we're discussing today. Chuck Yeager used to hang around our house. He and my dad were golfing buddies. All of these heroes of the Air Force were people who used to bounce me on their knees. I'd sit in a corner with a soda in my hand listening to them tell war stories. Somehow I knew that the exaggeration factor was way up there, but it didn't really matter. I graduated from high school in 1962, and we happened to be at Langley Air Force Base in Virginia. My dad was an F–106 fighter squadron commander. We lived on the base, which was the Tactical Air Command headquarters, and the commander when we first got there was a fellow named Frank K. Everest. I remember him because he had the coolest car in the whole universe. He had a Mercedes Benz 300SL Gold Wing roadster.

Now you have to be a little older to know about the car, but it was the best thing on Earth. You only see pictures of them now, you can't buy them anymore, but he had one. When Alan Shepard first came down from space, the Chevrolet Motor Company gave him a brand-new Corvette. The rules were a little different then. Frank Everest took down the speed limit signs around Langley, and he and Alan Shepard would race their cars around the runway. I said, "Dear God, is there anything cooler in the whole world than this? Whatever those guys are doing, I've got to do."

I got to know Commander Shepard because at Langley we lived at 2A Eagan Avenue; 2B Eagan Avenue and on down the street was where the Mercury 7 astronauts lived. At that time they were training, and I got to know them. So there I was, seventeen years old. Is there any doubt about why I chose to do what I did? I was captivated at an early age.

Another of the Air Force's great visionaries was Gen. Bernard Schriever, a distinguished graduate of Texas A&M University and the father of the Air Force missile and space program. Bennie Schriever is ninety-three years old and lives in Washington, D.C. We get to see him often. This distinguished gentleman deserves all of the accolades we can possibly pile on him, and he'd have been here tonight had he been able to travel. After World War II, Colonel Schriever was made an assistant chief of the Air Staff, and in that capacity he innovated the merger of technology and operational planning. In 1954, as head of the Western Development Division, he built and made operationally ready the Air Force's ICBMs and IRBMs. General Schriever went on to head the Air Research and Development Command and then Systems Command, which oversaw all of our major weapon systems acquisitions.

Today we have stealth, we have GPS, we have unmanned aerial vehicles [UAVs], we have space, we have networks. We make stealth vehicles as large as this room, but they appear on radar the size of a BB pellet. These aircraft can show up anywhere, anytime, and nobody knows they're coming. The B–2

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bomber is a stealth weapon system. It carries sixteen independently guided GPS bombs that can be targeted against sixteen aim points. During World War II, it took 9,000 bombs dropped from an armada of bombers to ensure the destruction of a single aim point. We've come a very long way since then. In early October 2003 we demonstrated that the B–2 can release 80 individual GPS-guided bombs. Think of it, 80 bombs released simultaneously! We've pushed the technology to extremes that our forefathers could never have imagined.

Look at UAVs. We have this little critter called the Predator. It's about the size of a Piper Cub and its power comes from a snowmobile engine. The Predator can stay airborne for twenty-four hours. Day and night it can stare right down on the enemy's position without flinching, and it's hard to shoot down, too. At the opening of Operation Desert Storm, we had one that we were about to disassemble. The air component commander, Gen. Buzz Moseley, said, "No, don't do that. Send it on over here." On the night the war started, we put it up over downtown Baghdad, knowing that the bad guys would shoot everything they had at it. Well, they shot at the thing, and it circled over Baghdad. They shot every blooming thing they had, but they never did hit it. The little critter stayed airborne for thirty-three hours.

By then it was running out of gas, and we couldn't recover it. So we flew it over the lake northwest of Baghdad, did an appropriate rendering of honors, and saluted the Intel chip that died for its country. The Predator then nose-dived into the lake. Now I was a little chagrined when the thing floated, and the bad guys went out and gathered it up. I was afraid they'd show a close-up of it, and heaven only knows what our kids wrote on the fuselage before they launched it. I had a few moments to pause, but things turned out not to be too bad.

Not long ago we took the Predator UAV and mounted Hellfire missiles on it. In one instance during the war—remember "Baghdad Bob," who entertained us all—old Baghdad Bob was explaining how they were kicking our butts as we watched American tanks roll by in the background. Well, as we were trying to take Baghdad Bob off the air, we found the satellite dish transmitter that he was using. Of course, where did the Iraqis put it? They put it right outside the Grand Mosque, about 100 feet away from a Fox News antenna. Certainly, we weren't going to use a 500-pound, or a 1,000-pound, or a 2,000-pound bomb on the thing. So we called in our little Predator with a Hellfire missile that's got about a 40-pound warhead. The assignment was to locate this thing. The pilot that day, a female former F–15 pilot, assisted by some of our intelligence assets, was able to locate two antennas. We were pretty sure which one was Baghdad Bob's, but we weren't absolutely certain. So we turned to Fox News as they were taking the shot. Well, she hammered Baghdad Bob, and afterward she turned around and said, "I'm going to dash out." Well, the inside joke on that is that the Predator can go 70 miles an hour, max. If you've got a 70-knot wind, you can either go or come back, but you can't do both. And she dashed out at 72 knots. She was able to push it up two more knots to escape the ground fire.

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These innovations would, I believe, make our forefathers, certainly Hap Arnold, very proud of what they'd see, especially as we venture into space. As we continue to try to operationalize space, as we put systems up that can stare down on Earth from geosynchronous orbit to 24,000 miles out, systems that can listen, see through clouds, and integrate with other platforms, whether afloat or in the air or on the ground, we're opening new ways to study our enemies all the time. Someday, not too far off, we'll be able to study and predict what those enemies are going to do, probably knowing more about what their actions are going to be than they do. We can assign people to watch and study their units practice. The commander of a bad-guy unit on the ground is only going to be there for a year or two, but the person who's looked at that unit and others has been there for ten or fifteen years, has watched them over time, and knows how they think and how they act. We've been able to make the art of predictive analysis work.

During the Kosovo War, I commanded the U.S. Air Forces in Europe, and we were worried about surface-to-air missiles, the SA–6s that were in Kosovo. We wanted to take out all of them before we sent in the A–10s, but we were having a heck of a time following them around because the Serbs weren't playing fair. They kept moving the things and hiding them under trees; they weren't setting them up and shooting them. Our tactics depended on these guys coming up and then actually highlighting us with radar energy so we could find them and know where they were. They weren't doing that. They were cheating.

I got a bunch of my intel lieutenants and told them, "I want you to study each detail of these surface-to-air missile batteries, study the people assigned to them. I want to know what movie they saw last night. I want to know the names of their kids. I want to know exactly where they're going to be the next day. You guys go figure out how to get that information." So off they went for about five days. When they came back they said: "Sir, we haven't slept for five days. We think we've got it. This guy right here, he's been moving. He used to move between five places. He's getting cocky. He's now only going between this place, this place, and this place, and we think he lives in this village because he keeps going back there every other time. Tomorrow morning, if you're there at 5:00, that's where he'll be." And that's where he was. The guy will never know how he disappeared that day. It was because a bunch of smart lieutenants figured out where he'd be. That sort of effort is what's going to help us deal with people like Osama bin Laden and Saddam Hussein, and we're getting better at it every day.

In network integration—we have networks up there where space vehicles can talk directly at the machine-to-machine level with airborne vehicles, with vehicles afloat, and with Army forces on the ground—a new doctrine is developing: The U.S. Army puts forces deep, and we have to be able to get to them in all sorts of threat conditions with planes like the F/A–22, which can cruise at Mach 1.5 without using afterburner, and penetrate any known defense. If the enemy chooses to come up and challenge us in the air, the enemy will lose. The F/A–22 can deal with anything that we know is coming down the road "with one hand tied

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behind its back." I get a lot of questions about the F/A–22. Some people say, "You know, the Air Force is pretty potent. Saddam Hussein didn't fly one sortie in the latest Iraq conflict." He took his most modern airplanes out to the desert and buried them because he was afraid we were going to destroy them, as we did the last time. My response is, "So what are you guys worried about?" I point to the latest generation of airplanes being built today. Everybody thinks the Russians are out of the business. They're certainly not. The Russians are continuing to build modern-day fighters. They have a Sukhoi series of fighters; back in the mid-1980s, they started with the Su–27; they're now up to the Su–37.

We get our hands on these airplanes from time to time, and we take them out to the desert and put our best guys in them. We give those guys about two or three hours in them, and then we fly them against our best guys flying our airplanes. Our guys flying their airplanes beat our guys flying our airplanes every single time. Some technological developments out there make many of the airplanes and technologies that are being fielded, or are soon to be fielded, better than what we have now. We've got to do better. So when I talk about the F/A–22, I'm not just talking about beating other airplanes; I'm also talking about our ability to penetrate through any surface-to-air missile threat that we see coming down the road. The F/A–22 is the airplane that can do that, and that's why I ask people to support it.

I tell my World War II audiences that we talk about the greatest generation, and rightly so. We had a generation of people who went off to war, in the hundreds, in the thousands, in the millions. But I make them feel better when I tell them about today's young people. Whenever Dr. Roche and I get down in the dumps, the thing we like to do, when we get sick and tired of whatever's going on in Washington, is go right down to Lackland Air Force Base in Texas. Every Friday morning at Lackland we bring 1,000 new airmen into our Air Force. You go there, into the stands, and you watch as they parade by. They're so proud of themselves in their spanking new uniforms. I stand in the shadows and watch as they come back together with their parents for the first time in weeks. I watch and see it every single time. Some newly minted airman standing in front of his or her mother or father is saying, "Don't you recognize me?" Or the mom is walking right by the kid, and the kid's saying, "Mom, what am I, chopped liver?" And the dad is standing back saying, "This isn't the kid I brought here! The kid I brought here looked like he fell down the steps with his tackle box in this hand, with a pierced eye and a pierced ear and a pierced lip and a pierced nose. This kid's standing up straight and saying 'ma'am' and 'sir.'"

About the time I strut on out, you know, get out in the sunlight so everybody can see me, the mothers come up and say, "How did you do that? I've been trying to do that for seventeen years." Of course, it's nothing more than simple human nature. You go talk to the kids, and the kids will tell you, "Sir, this is the first time anybody's told me that they were proud of me. This is the first time I've ever felt good about myself." Or, worse, "Sir, I was living in a place where

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it was a downhill spiral. I was going to be dead if I didn't do something, and here I am."

I get this all the time. What it tells me is that what this generation, brought up on Beavis and Butthead and the Simpsons, needs is to be exposed to a little bit of pride, a little bit of leadership, a little bit of accomplishment. Look at the people right here at Texas A&M and you see it. I'm proud to tell "the greatest generation" that this generation, when properly led and motivated, is no less dedicated, patriotic, or anything else than any generation that ever lived. So when we talk about aviation and space, it's not just the astronauts and the pilots, it's all of us who wear the uniform.

I'm going to close by telling one more story, a story about one of those young airmen and the kind of people we're surrounded by every day. I tell audiences all the time, and I've been doing this now for thirty-seven years, that when the nation is in crisis, and I travel to hot spots all over the world, I never cease to be amazed at the quality of the people we have in the uniform of this nation in all of the services. As a member of the Joint Chiefs, I get to see all of them, and they're all equally magnificent.

I'm going to tell you now about Senior Airman Jason Cunningham. He was in Afghanistan, in a place called Roberts Ridge. Roberts Ridge was named after a seaman, a Navy Seal, Neil Roberts, who'd fallen out of a helicopter. Nobody knew what had happened to him, but his rescuers had to fly out because their helicopter was taking fire. So they returned to base and asked for volunteers to make another attempt to rescue Seaman Roberts. A bunch of Army Rangers and three airmen went back in to try to find him. As their helicopter approached the landing zone, it came under heavy fire that brought it down. As it hit the ground, its occupants were surrounded by the enemy and were taking fire. Senior Airman Cunningham, who was a pararescue man stationed at Moody Air Force Base in Georgia, pulled the wounded from the helicopter and got them as far away and as safe as he could, but they were still taking fire from all quarters. During the course of the rescue, they tried to call in close air support. Cunningham was wounded and died. Secretary Roche and I went to Kirtland Air Force Base to present Theresa Cunningham, Jason Cunningham's widow, his Air Force Cross. All of the Army guys who were on that helicopter and had made it back were also there at the ceremony. These big old strapping Rangers, who could crush you with one hand, were standing there with tears rolling down their cheeks, telling me about how Cunningham knew he was going to die, yet he was telling the Army guys how to to minister to the rest of the wounded so they wouldn't die. Theresa Cunningham was twenty-four years old. She had two children, two and four years old. She was enrolled in ROTC at Valdosta State College, near Moody. I went back in June and commissioned her as a second lieutenant, and she's now out in California wearing the Air Force uniform.

I told the audience the day of her commissioning that I've got over 1,400 hours of combat time, and hundreds of missions, and Senior Airman Cunning-

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ham was on his very first mission. But he showed more bravery, dedication, and valor on that day than I did in all the missions I flew. These are the people with whom we work every day. I tell my Air Force four-stars, when we get together, I remind them that we'd better make sure that we're worthy of leading these kinds of people, because we're surrounded by them. They're people like the youngsters I see in this audience here today. You wonder if you can measure up under those circumstances. Let me tell you right now, the answer is yes, you can, and you will. I'm so very proud to be here tonight. God bless each and every one of you, God bless everybody in uniform, and God bless this great United States of America.

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Q&A

Audience Member: Sir, we seem to be going into a new phase of the war in Iraq today. How is our Air Force going to be involved in this new phase?

General Jumper: We're involved every day. In Iraq today we flew 153 sorties. In Afghanistan we flew 60. So we're engaged every day. The new phase in Iraq, of course, has to do largely with operations on the ground and trying to figure out how to deal with terrorist ambushes and an enemy who's not easily distinguishable from the good guys.

Audience Member: Please comment on the ability of our scientists and engineers to build capable aircraft for a superpower.

General Jumper: I don't believe it's a problem**.** I think we'll see more being done in the unmanned air vehicle business. I think we'll see some improvements in stealth and a sort of blending of air and space because the next-generation bomber probably won't be something that flies exclusively through air. I think it'll be something that flies through air and space. I expect we'll see a drift away from thinking about platforms, that is, away from an emphasis on the airplane, ship, or tank. We'll start thinking more about how these things are integrated and how they're brought together to take full advantage of everything they bring to the battlefield. Just look at the F/A–22 and the stuff its sensors absorb, and the wide formations we'll be able to use because of datalink. If you put that information into a network, you can have a very comprehensive idea of exactly where the threats are in the air and on the ground, just by taking advantage of the many sensors we have over the battlefield today.

I think we're going to see a new generation of airborne radar that looks at the ground and at moving targets on the ground. The radar will be integrated with space-based assets, and from that airplane we'll be able to do command and control. We'll be able to control unmanned air vehicles, and we're going to move toward a more integrated force and a joint force as well. People often ask me, "Aren't you afraid that the unmanned air vehicle will take over your job?" The answer is, "No." Airplane pilots always welcome anyone who offers to help them not get shot down. Let me also assure you that manned aircraft will not be completely abolished in the foreseeable future. That's not something we have to worry about. The current generation of UAVs, when they're deep behind enemy lines, have to be protected by something like the F/A–22, which can defend itself. So I think we've got some exciting times ahead, and I don't think anybody's afraid of the future. We're looking forward to it.

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Audience Member: On a more personal level, I was wondering, since you're from Paris, Texas, why is it that you decided, and what influenced you to decide, to join Virginia Military Institute as opposed to staying a little closer to home?

General Jumper: Well, growing up with my dad in the Air Force, I went to twenty schools during twelve years of education When you do that, it means you never have a chance to be class president or captain of the football team, or even, by the way, to have enough consistent study to get good grades. I wasn't one of those who was at the top of his class. We happened to be at Langley Air Force Base, as I said, when I graduated from high school. We went back to Paris, Texas, from time to time for visits. I think my dad was a lieutenant colonel when I was about fifteen, and we made a trip back there. We always went to the barbershop in the town square. The guys running that barbershop, I remember, looked like they were ninety years old when I was six years old, and they looked like they were ninety when I was eighteen. They looked like they never changed.

So we'd go into that barbershop, and they never could understand why my dad hadn't come back to Paris to get a job. They'd ask, "Jimmy, when is your hitch up?" He was a lieutenant colonel; he'd been in eighteen years. And they'd say, "You know, you can get a job. There are jobs here. You can get a job." They were always fascinated by what he did. "Now, Jimmy, what are them jets you fly again?" He'd say, "Oh, F–106s." "Now, how fast do they go again?" "Mach 2." "Well, I mean, how long would it take to get from here to Bono?" He'd say, "Ten seconds." They'd say, "Oh."

Two weeks ago, Paris, Texas, did me the great honor of having John Jumper Day, and I went back. The folks there said it was for me, but it was really for my mom. We went back, and I gave a speech, and I told that story in my speech. And later on, these two old fellows came up, and as they walked toward me I thought, "Please don't let it be true." They were those two guys, and they were ninety. That means that when I first knew them, they were really young fellows but they just looked like they were ninety. They said, "Yeah, we remember Jimmy coming back in." They had that shop open for fifty-six years in the town square in Paris, Texas, and they were there that night. It was unbelievable.

Audience Member: Sir, with the proliferation of increasingly more sophisticated UAVs, what does the future hold for the U–2/TR–1 force?

General Jumper: I think the U–2 will be around for a while because it carries a bigger payload and does things that the replacement aircraft—we call it the Global Hawk—cannot do. The Global Hawk, however, is a marvelous piece of equipment. In order to deal with the cultural dynamics of the change from manned to unmanned, we've stationed the Global Hawk with the U–2 mission up in California at Beale Air Force Base. We're going to let the operators figure out how to make this transition, which will occur over the next ten years or so.

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Now we're "surveilling" Iraq; we can see through dust storms. You all remember the dust storm at the end of March, when the news reporters got exercised and said, "Well, there's a pause, and the plan is falling apart."

What nobody knew was that we were up with a Global Hawk and with the Joint Surveillance Target Attack Radar System, the JSTARS, which sees ground-moving targets. We were up very precisely marking the places where the Iraqis thought they were hiding their tanks because they thought we couldn't see them in the dust storm. The Predator, the Global Hawk, the Rivet Joint, and the JSTARS were teaming up in locating these things, and we were just thwacking them at a great rate. I was interviewed and asked about this pause. I said, "Right now, I'd like to interview the commander of the Medina Division, the Iraqi division just south of Baghdad, and ask him exactly when he thought the pause was, because I don't think he thought there was a pause." When we interrogated some enemy troops after the fight, they said, "We finally just got up and walked away from our weapons, because it was too dangerous to be around them." So this is the benefit of things like the U–2 and the Global Hawk. I think the U–2 will be around for quite a while, and we'll slowly phase in an unmanned portion of that with the Global Hawk.

Audience Member: You've spent a lot of time talking about the UAVs, the unmanned aerial vehicles. Is the rise of these vehicles part of the asymmetrical warfare that we're involved in now? If so, can you give us a real-world example of how the Air Force is changing due to the Global War on Terrorism?

General Jumper: The UAV is useful to us right now because it can assume a stationary position over a certain location on Earth for a long period. The Global Hawk stays airborne for thirty hours; it works day and night. We can stand and stare at what we think is happening in a bad-guy position; we can also watch something develop and emerge. We have what we call digital acuity, which means that the vehicle never gets tired. The vehicle is just as sharp in its thirtieth hour as it was in its first hour. That's not true of a manned aircraft. So we try to take full advantage of the UAV's benefits: its endurance and its persistence. Some things the UAV can't do. It can't defend itself very well and it can't carry a big load for a long distance. So we have to be mindful of that.

In the Global War on Terrorism, UAVs are flying and staring at places in Iraq and in Afghanistan and trying to get precise targeting information. In some cases, for example, with Hellfire missiles, Predators that can carry Hellfire missiles actually do the shooting. What we predict for the future of UAVs and the Global War on Terrorism is that we'll have a way to rapidly transport a UAV system into an area of the world where we see some rapidly emerging terrorist scenario, and we'll be able to put that UAV in the air. What not many people know is that we had UAVs in the air in western Iraq that were actually part of what prevented the Iraqis from firing any Scud missiles. Two of those UAVs were

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launched right there from the local area but they were controlled from Nellis Air Force Base in Nevada. That's the kind of agility we can take advantage of now. So I think you'll see a lot more of this type of innovation.

Audience Member: General, how do you see the exercise of command and control evolving with the Global War on Terrorism? What new systems, technologies, or processes do you see for command and control in the future?

General Jumper: This is going to be the decade of integration. Command and control is becoming increasingly more a part of tactical operations. We see the fuzzing of lines especially between the operational and the tactical levels of war as we get into very politically sensitive conflicts. The Kosovo War was probably the perfect example, where you'd have a target rapidly developing but you had to receive a very high-level political decision before you were allowed to hit it. So now you have the pilot in the air with a bomb ready to go, awaiting a decision about whether he'll be permitted to release or not. We can fight this and insist that decisionmakers modify the process, but they're not going to do anything different, so we have to figure out a way to accommodate the reality within our targeting cycle. This is the future of command and control; it's being able to rapidly integrate, horizontally integrate, between systems that see something emerging based on predictive analysis.

Operators are just waiting for this to be resolved. I don't know exactly when, I don't know exactly where, but the next logical next step demands a resolution. "Oh, there it is. Here's the tip-off. It's a cell phone call. It's a signals emission. It's a convoy that's moving. It's something that we predicted is going to happen." When you have that cue, you begin to go to work by focusing your assets through the network, making sure that you can define exactly what this thing is and exactly where it is, and you're calling weapons on it, and you're destroying it before an enemy has a chance to let an event unfold. They're pulling the thing out of the garage, meaning that they're going to form up, make a convoy, take the Scud down the road, and shoot it. When they're backing out of the garage, that's step one. You're gone. And they're saying, "How did they know?"

It's that sort of advantage that command and control can give you. When you can get a rapid response, you can get a rapid decision. You have the assets networked properly. And we have that air operations center integrated into tactical-level training at Nellis. We have that going on, just as we saw in Afghanistan and Iraq. We've got our forces practicing that stuff every day, and eventually the training will include other services, coalition partners.

Audience Member: General, ever since you announced last year the change of the name from the F–22 to the F/A–22, I've been wondering, what's the timeframe? How are things going getting the FB–22 off Secretary Roche's desk and into the air?

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General Jumper: The move to the F/A–22 recognizes formally that this is not just an air superiority fighter that shoots down other airplanes. It's got a very big role dropping precision-guided weapons deep in enemy territory, usually against surface-to-air missiles that no one else can get to. The bomb we're inventing for this use is called the small-diameter bomb, a 250-pound bomb. The F/A–22 carries eight of them. The bomb has wings and can fly out about 50 or 60 miles when you release it from supercruise at high altitude.

The FB–22 would be a variant of the F–22 we'd make if we thought we had a need for another long-range aircraft. It would be bigger. It would be a two-seater and it would carry thirty-two of these small-diameter weapons. It would still supercruise, but it wouldn't be capable of pulling nine G's; it would pull five G's. It would be able to deal with longer-range scenarios. We're holding off until we determine the true next generation of long-range strike technology and what sorts of breakthroughs we need to achieve it, whether it's going to be in space or through space, how it's going to evolve. Once the timeframe on technology breakthroughs is known, we'll know whether we need an interim step or not.

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Life, Flight, and Art

Keith Ferris

Aviation Artist

As an Army Air Corps, Army Air Forces, and U.S. Air Force "brat," born in Honolulu in the then Territory of Hawaii in May 1929, I was to grow up through the 1930s and 1940s as an eyewitness to the tremendous growth of air power and, you'll see, because of my subsequent career, I've been able to closely observe Air Force history for seventy-five years.

My dad, C. I. Ferris, flew from September 1925 to September 1955. Think about this! Imagine a flying career spanning aircraft from the World War I Curtiss Jenny and De Havilland DH–4, right up to the second generation of Air Force jets! My dad's was the generation that built and led the force that won World War II and fought to create today's separate United States Air Force. It's been a remarkable privilege to live at the center of all of this. Let's look at some of the changes we've seen in my own lifetime.

My dad was a young lieutenant assigned to Luke Field which, prior to 1934, was located on the western side of Ford Island, opposite Battleship Row in the middle of Pearl Harbor. Luke was my dad's first assignment following his September 1926 graduation from the Air Corps Advanced Flying School at Kelly Field, Texas. Our quarters bordered the landing ground to the north of the hangars, so that aircraft were flown from grass only yards from our front steps!

Luke Field, Ford Island, Hawaii, 1926.

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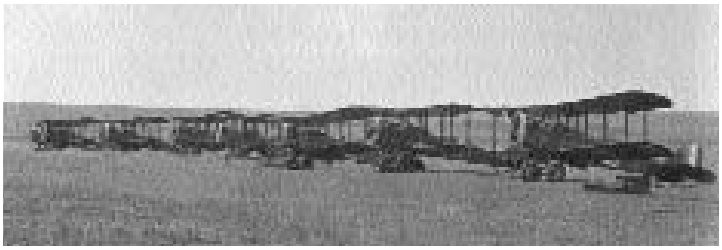
Because of budget considerations, graduating flying cadets were given the option of being commissioned as second lieutenants in the Army Reserve and leaving the service, or of staying in as rated flying cadets while continuing to fly operations on private's pay, plus flying pay at 50 percent of base pay. My dad chose the rated flying cadet route and became the lowest ranking pilot at Luke until he earned his Regular Army commission as a second lieutenant, effective January 23, 1927.

At Luke we had large American-built, single-Liberty-engine 400-horsepower De Havilland DH–4M observation and close support aircraft. Dad flew both the DH and the single-engine Loening OA–1 amphibian. The Loening was flown in the air-sea rescue role throughout the Hawaiian Islands. Dad had many interesting adventures in the one pictured.

We also had the twin-engine NBS–1 bomber. It was the Curtiss-built version of the Martin MB–2 made famous only a few years earlier by Billy Mitchell, when he demonstrated the vulnerability of naval ships to air power off Hampton Roads, Virginia.

Not only were most of our airplanes of World War I vintage, so were our vehicles, pictured at the motor pool, complete with their hard rubber tires. With the low budgets in those days we were to see some of these vehicles until well into the 1930s.

When I was six months old, we moved from Honolulu to Kelly Field, Texas, to a wonderful life for six years on a grassy flying field typical of those of the 1920s and early 1930s. My dad was an instructor in the 43d School Squadron, which made up the pursuit section of the school. All Air Corps flight



De Havilland DH–4Ms.

World War I–era trucks.

Loening OA–1 amphibian.

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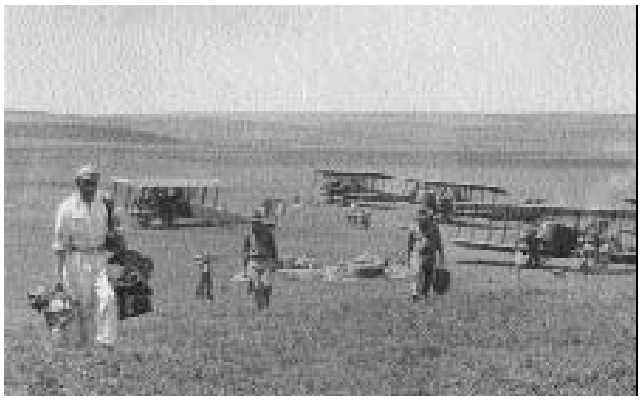

In the field. You could land airplanes just about anywhere at that time. They could haul all sorts of things.

Headquarters set up in the field. Is the orderly already asleep on the cot to the right?

Mess tent set up in the field. There were always strange combinations of boot pants, socks, and clothing in the chow line.

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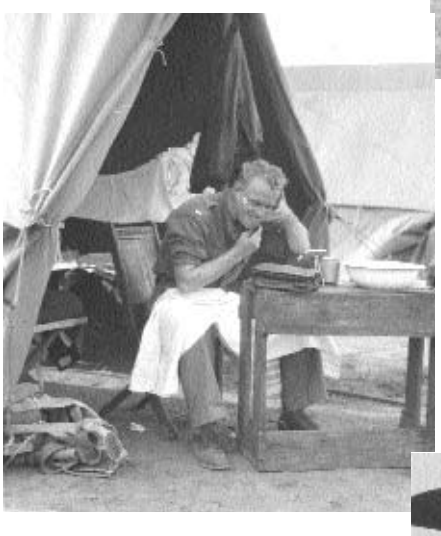
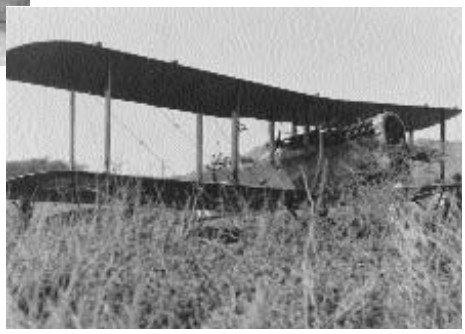
The Officers' Club.

A game of horseshoes for some recreation. You could camp right out among the airplanes.



My dad, Lt. C. I. Ferris, by his tent, shaving with his parachute by his side.



World War I–era DH, which served alongside crews in the field. DHs were remanufactured by Boeing with metal fuselage structures while still using the 400-horsepower Liberty engine. The last of the DHs weren't retired until 1932.

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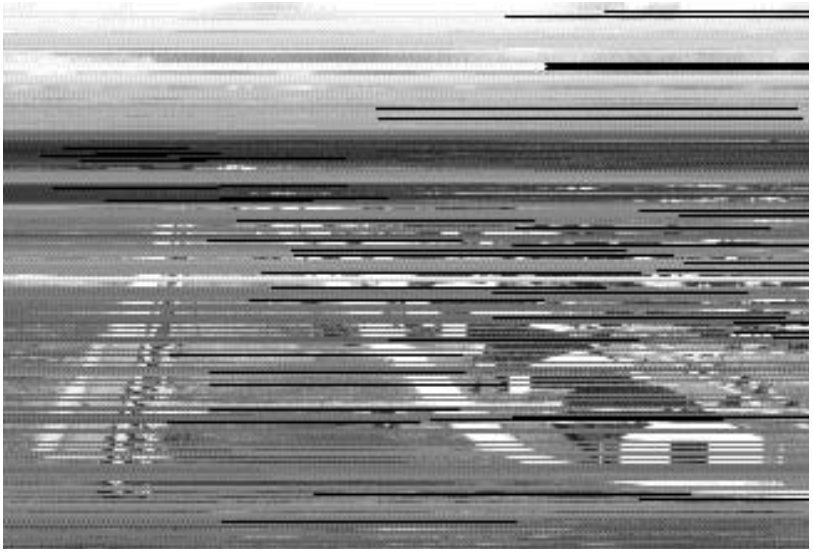
training culminated in cadet introduction to combat type aircraft of one model or another at Kelly.

Our quarters were just opposite the pursuit section hangars. We lived in a bright, dusty, noisy world of aircraft engines, airplane dope, and gasoline.

In April 1932 we began receiving the Boeing P–12, which would gradually replace the P–1 in pursuit training. The P–12B was a wonderful aircraft,



Aircraft of the pursuit section of the Air Corps Advanced Flying School, Kelly Field, Texas. Curtiss P–1s are in the foreground. In the distance are Douglas O–2Hs of the observation section, Curtiss A–3s of the attack section and, at the far end, Keystone B–3s and B–5As of the bombardment section. Today, Lackland Air Force Base sits atop the ridge in the background.

My dad, C. I. Ferris, as a pursuit section flight instructor.

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Curtiss P–1 Hawks. When we arrived at Kelly in 1929, the pursuit section flew these wonderful airplanes until they were replaced by Boeing P–12Bs beginning in 1932. The flight line was a very enticing and tightly supervised playground for us dependent kids.

loved by all who flew her. It became one of my all time favorite aircraft and remains so today. I was able to meet visiting P–12s and many other models as they parked in front of the "Visiting Ship" hangar, just west of the last pursuit section hangar right across the street from our quarters. I'd quiz the crews, learning the type of aircraft they were flying and where they were based.

Farmer's Nightmare is my 1990 painting of Dad in his P–12, No. 2, with a couple of students in a farmer's field in 1932. It depicts a day remembered from my childhood at Kelly. On this day my dad came home for lunch from the flight line across the street. He was bleeding from his left hand and face. An understanding of the pursuit section curriculum will be helpful here.

Our quarters in the line seen to the right across from the pursuit section hangars behind the Curtiss P–1B.

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P–12B flown by Curley Lawson, one of Dad's fellow instructors. Its 43d Squadron insignia hadn't yet been completed. The bold stripe behind the cockpit appeared on P–12s flown by instructor pilots.

Boeing P–12B. Behind the flight line, the base was only one block deep. Beyond the airplane, between the hangars are the cadet barracks.

The young Ferris at age four, with a visiting Douglas YB–7 of the 31st Bombardment Squadron, 7th Bombardment Group, en route to its base at March Field, Riverside, California, from the 1933 exercises held at Fort Knox, Kentucky.

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New students had arrived at Kelly from primary flight training at Brooks Field, having flown two-seat P–1 trainers, powered by the 180-horsepower Dayton-Wright-built Hispano-Suiza engine. If assigned to the pursuit section, students were faced with transitioning to the single-seat Boeing P–12 fighter, powered by a 450-horsepower Pratt & Whitney Wasp engine.

The first week of the training syllabus required them to spend time learning to take off and land the much more powerful aircraft solo on the wing of an instructor in a second P–12. The next week included formation flying and strange field landing practice. This would involve three-ship flights of one instructor and two students in P–12s, fanning out in all directions from Kelly.

On this particular day my dad, the instructor, had spotted a likely area for safe emergency landing, wagged his wings and gave his students the cut signal. The students chopped the power, selected a suitable farmer's field, and landed into the wind, followed closely behind by the instructor.

Having taxied back to the approach end of the field and out of the students' way to a fenced-in corner, my dad began to notice daylight through the fabric at the side of the cockpit and that his hand was bleeding. Over the noise of those individually exhaust-stacked Wasp engines, he'd failed to hear the sound of the shotgun fired at him by an angry farmer!

The students, being unaware of this, took their time in take-off preparations as the farmer continued to shoot at Dad's trapped P–12. Dad followed the students as they climbed out of range of the gunfire. While above, he saw instructor George Price give the cut signal for three more P–12s to land in the farmer's field. These routine practice landings were soon halted as more and more farmers were reimbursed for damage to crops.

Air Force folks know that families are part of squadrons. Our families were part of the 43d School Squadron. We had the same vested interest in the success and safety of the squadron then as Air Force families do today.

About thirty years later I created a painting for the Air Force Art Collection. The Air Force thinks it's titled *Pursuit Section Instructors, Kelly Field, 1932*. (They're actually pursuit section kindergarten fathers!)

After six years on the flight line at Kelly, we left for Maxwell and the 1935–36 class of the Air Corps Tactical School [ACTS]. Its list of students and instructors was made up of a virtual *Who's Who* in Air Force history. In our childhood we were yet to understand the importance of Maxwell, the Air Corps Tactical School, and those around us who'd make that history.

The instructors included future Flying Tigers leader Maj. Claire Chennault, Majs. Emil Kiel and Byron "Hungry" Gates, Capts. Gordon Saville and Odas Moon, and Lts. Laurence Kuter and Haywood "Possum" Hansell. Among the seventy students were Majs. Ira Eaker, William Kepner, and Edgar Sorenson and Capts. K. B. Wolfe, Harry Halverson, Nathan Twining, Homer Ferguson, Dale Gaffney, Benjamin Chidlaw, and Ralph Snavely. Lts. Elwood "Pete" Quesada and C. I. Ferris, my father, were also ACTS students.

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Dad leading a formation of instructors and students, 1933.

Dad debriefing the formation flight with his students.

Farmer's Nightmare

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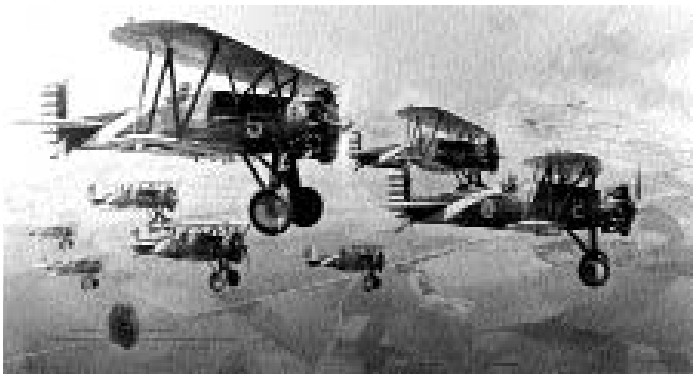

Pursuit Section Instructors, Kelly Field, 1932

My kindergarten class. Note the 43d School Squadron patch on our little airplane. I'm the student behind the tail with the boots and sweater. The little blonde girls are my two sisters, identical twins, who joined us from the nursery school.

43d School Squadron patch.

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The Ferris children grew up in the middle of the controversy over future Air Corps doctrine. Advocates of strategic bombardment were arrayed against those supporting the traditional pursuit, attack, and observation missions. We kids listened to this historic discussion almost every night as our parents and friends reviewed the day's events.

In June 1936 the ACTS class moved almost en masse from Montgomery to the United States Army Command & General Staff School [C&GSS] located at Fort Leavenworth, Kansas. The Eakers, Georges, Gaffneys, Sorensons, Kepners, Fergusons, Halversons, Kiels, and Quesadas were with us. We also had Col. Lewis Brereton and family and Maj. Joe Cannon. Our next door neighbors in the "Beehive," the student family apartment building, were future Air Force chief of staff, and chairman of the Joint Chiefs of Staff, Capt. Nathan Twining, and his wife, Maud.

My dad and Pete Quesada were now captains. The two shared back-to-back regular Army serial numbers 0-16730 and 0-16731. Announcements of their subsequent assignments appeared next to one another in the *Army-Navy Journal* until the advent of the United States Air Force.

Field exercises at C&GSS included reconnaissance on horseback. To the Air Corps contingent, accustomed to aerial observation, this seemed archaic. Airmen didn't take well to horseback riding, or to the time and discomfort this involved. The obsolescence of cavalry reconnaissance was all the more evident as the airmen maintained their flight proficiency, using aircraft flown off the grass airfield just beyond the cavalry horse barns.

The Air Corps officers in the class of 1937 revolted against wearing the required cavalry-era boots and boot pants uniform. They ordered straight-legged trousers of proper material from local tailors to replace the lower part of the uniform.

On graduation from C&GSS in June 1937, the Ferris family moved on to March Field, California, where my dad was assigned as operations officer and deputy commander of the 30th Bombardment Squadron, 19th Bombardment Group, and later as post adjutant.

The 19th Bomb Group was equipped with the Douglas B–18, which was a player in the politics of the ongoing strategic bombing controversy. The twin-engine B–18 was less expensive than its four-engine B–17 competitor and, with its shorter range, was considered less threatening to the Navy in the argument over Army-Navy roles and missions. My first flight ever was on my tenth birthday at March Field in the newer B–18A. We also had the Norden bombsight, which was evident to us kids by the conspicuous inclusion of armed guards when it was being moved to and from the aircraft.

Memory tells me that at this time the entire Army Air Corps consisted of little more than 1,600 officers and 16,000 enlisted men. The war came and Air Corps officers of the 1920s and 1930s moved on to build and lead the massive aerial force which was to overwhelm our World War II enemies. Many of these

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Douglas B–18.

experienced leaders were to be engaged in building the huge flying and technical training effort which provided the trained manpower for that force.

In 1942 my dad built and commanded the BT–13-equipped Basic Flying School at Coffeyville, Kansas, before moving on in 1943 to Fort Worth, Texas, where he commanded Tarrant Field, later known as Carswell Air Force Base. Tarrant was a B–24 transition school with seventy B–24s assigned. The commander's family, my mom, myself, two sisters, and our younger brother were the only dependents on the base, so those B–24s, personnel, and daily operations became the center of our lives for that year.

During our year at Fort Worth, I believe we lost eleven B–24s in training accidents. We were personally very much affected by these accidents, especially the three or four that occurred right on the base. I remember my dad's shoes being perpetually stained by oil and aviation fuel. Most accidents involved the loss of two student officers, an instructor, and a flight engineer, many of whom had spouses or family living in the local area. In those days it was the commander's wife and the chaplain who broke the news to local survivors. This took a terrible toll on my mother, the commander's wife, Virginia

B-24s at Tarrant Field, Forth Worth, Texas, 1943.

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Brecht Ferris, whose hair began to turn to gray when she was thirty-eight years old. I doubt that the general public realizes or appreciates the integral and very important part played by military wives in support of military units and in the defense of our country.

My mother, Virginia Brecht Ferris.

Many interesting and distinguished visitors passed through Fort Worth in those days. Navy Adm. William F. "Bull" Halsey, of World War II fame, made a refueling stop at Tarrant Field on his way from the Pacific to Washington. The admiral announced that he was very interested in the B–24 combat crew training that many of the pilots who'd conducted the recent attack on the oil refineries at Ploesti, Rumania, received at Fort Worth. He was most impressed as my dad was able to introduce Ploesti veteran instructor pilots who provided firsthand information on B–24 combat operations. The three Ploesti veteran instructors did a superb job of demonstrating B–24 low-level tactics while at Fort Worth.

Afterwards, the admiral responded to his visit with a very complimentary handwritten thank-you note. About a month later, my dad received orders to the Army-Navy Staff College, followed by assignments to the Pacific, where he served on Admiral Nimitz's staff as an air force planning officer in Honolulu, and then forward as Admiral Nimitz's headquarters moved to Guam for the remainder of the war.

Because I grew up in the middle of all of this, a lot of people ask me why I didn't pursue a career in the United States Air Force. I'd never considered anything else. I entered Texas A&M in 1946 with the goal of earning an Air Force commission on graduation, after which I hoped to go to pilot training. Assigned first to B Troop cavalry, I moved over to the first of the Air Force ROTC units as it was established at the start of the second semester in 1947.

Admiral Halsey and a Marine Corps general being greeted by my dad, right, after their short-notice arrival at Tarrant Field, Texas.

Between my freshman and sophomore years in 1947, home was Randolph Field, in San Antonio, where my dad was assigned as deputy chief of staff for per-

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sonnel for the Flying Division, Air Training Command. This was a very tough time to be in the personnel business. It proved difficult to keep required slots filled at a time when people could depart the service almost at will.

For a summer job, I became a civil service apprentice artist with the Air Force Training Publications Unit at Randolph. I'd been drawing airplanes since I was five years old at Kelly. I found it was easier to draw the visiting airplanes than to verbally report their details to my dad, who'd been in the air during their visits. That job was to prove a valuable opportunity for me. I was

Randolph Field, San Antonio, Texas, 1947. The "Taj Mahal" in all its glory, above; the flight line, below.

able to begin learning graphic arts, creating line drawings and diagrams for publication, even silk screening the basic flying manual cover by hand. My drawing board was located in the art department upstairs in one of those two-story World War II barracks right on the flight line at the south end of Randolph's East Stage.

When the United States Air Force became a separate service in 1947, Randolph went all out planning an "Air Force Day" celebration and open house for

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Friday, August 1. As A–26s, B–25s, P–51s, P–47s, and B–29s began arriving, we didn't pay much attention, since we were so used to them. But as I sat at my drawing table, suddenly the barracks shook with a "whump–whump," followed by a sound we hadn't heard before. I ran out on the little balcony nearby and arcing up into the sky were two magnificent fighters carrying fuel tanks mounted at their wingtips. After landing, they taxied in, two brand new mouse gray Lockheed P–80s, and parked right in front of our barracks. I nearly jumped out of my skin! They were absolutely beautiful. By comparison with the piston-engine fighters we were used to, these appeared to fly, climb, and maneuver without effort.

Asking myself if I really wanted to wait three more years to fly airplanes, I immediately visited the School of Aviation Medicine and a flight surgeon who'd served with the Ferris family for years. I wanted to know if I could physically qualify for flight training as an aviation cadet. The flight surgeon reminded me that I had an extreme allergy to egg protein and tetanus antitoxin and that this would prevent me from receiving many of the shots required

Lockheed P–80.

by the military. He informed me that I'd never be able to serve in the Air Force. I'd suddenly been "drafted" into life as a civilian!

I finished up that summer with the publications unit, returning to A&M for another semester of aeronautical engineering. Using brush, lampblack, and water I found I could live my dreams of flying through art. I returned to Randolph's Training Publications Unit to remain close to the Air Force, then I subsequently moved on for some art schooling.

I later served for five years with a St. Louis art studio, which competed for Air Force publications contracts. When it was found that I was the only person in the studio who understood and could speak the Air Force's "language," I was put in charge of the studio's Air Force contracts and acted as a liaison with service representatives. As the art director, I selected artists and relayed instructions and details to them. As the technical advisor, I was responsible for

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the accuracy and artistic integrity of all of the art created by the studio for the Air Force. I was "home" again, working with and for the service.

In addition, I was the studio's production manager, handling such solid accounts as Brown Shoe Company, Anheuser Busch, Monsanto Chemical, and Ralston Purina. Of course I still wanted to fly, so soon after our 1953 marriage, my wife Peggy and I were both taking flying lessons at a club flying "tail drag-

Early Ferris projects created for the Air Force Training Publications Unit at Randolph Air Force Base and a St. Louis art studio. A typical product is the instrument flying manual, right.

Ferris artwork depicting his first solo in the Piper J–3 Cub.

gers"—a Piper J–3 Cub, a Luscombe 8E Silvair, and a Cessna 140.

I'd amassed the grand total of 11.5 hours with two solo flights, when the Air Force decided to close its central publications unit in St. Louis to let the various commands create their own training publications. The studio's Air Force

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contracts were gone and without them my ties to the service had vanished. Even though I was still gainfully employed as the studio's production manager, Peggy and I decided that if I wanted to use my aviation background and knowledge to the fullest, we were going to have to leave St. Louis.

A study of the aerospace industry indicated that its manufacturing facilities were located mostly on the west coast, some were in the east, and we knew that there was one right there in St. Louis. However, I had no intention of becoming an internal corporate artist working with a single company's products. I preferred to work for them all on a freelance basis. We noted the number of aerospace industry headquarters concentrated in and around Rockefeller Center in New York, and also noted the fact that their advertising agencies were located close by on Madison Avenue.

The decision to drop everything and start over in a new city was a difficult and frightening one, especially for Peggy, whose only home had been in St. Louis. But it was obvious that the move was necessary for our success. So we sold our little house, put our furniture in storage and, with a year-old baby, no job, and only one acquaintance in the New York area to call on for advice, we started our drive east to find our future. We had to locate a place to live, retrieve our furniture, and begin to put bread on the table. I began calling on advertising agencies with aerospace accounts, and soon received freelance assignments from the Curtiss-Wright, Sperry, and Aircraft Radio Corporations.

Although almost all of my assignments were aviation oriented, every so often I found myself required to depict things far from that subject to help art directors unfamiliar with aerospace working next to my account art directors who were. At about this time, I received a phone call from someone at the Society of Illustrators in New York informing me that I'd been nominated to become a member of this famous art organization. The Society of Illustrators, now over 100 years old, is the premier, professional organization for illustrators. Members have included such great artists as Charles Dana Gibson, of "Gibson Girl" fame, James Montgomery Flagg, creator of the World War I Uncle Sam "I Want You!" poster, and Norman Rockwell, who was still living and a member when I joined this august group in May 1960.

I was unaware that at the time, the *National Geographic* magazine had just published an article, "Artists Roam the World of the U.S. Air Force," by Gen. Curtis LeMay, then Air Force vice chief of staff. The write-up featured the artistic results of a program that began over fifty years ago, under which the Air Force has teamed with the Society of Illustrators in New York. The program invites professional illustrators to travel and fly with the Air Force in order to document the service's mission world-wide, through art.

The most famous names in American illustration have traveled to all parts of the world, donating time and paintings to the Air Force Art Collection, which today has grown to over 8,500 works in inventory. This collection contains spectacular art depicting all aspects and periods of Air Force life. Over

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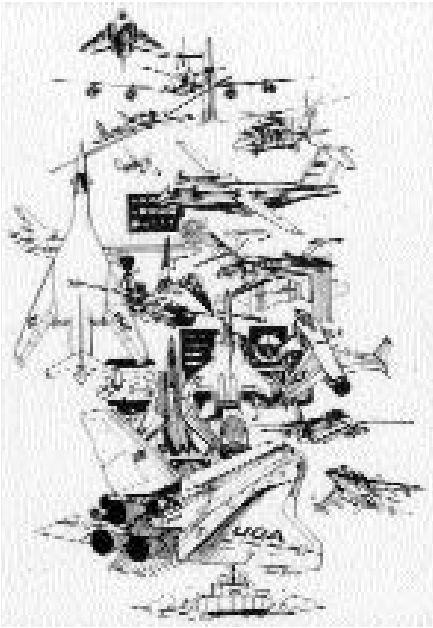
the years, the program has expanded to include members of the Societies of Illustrators of Los Angeles and San Francisco, and later Midwest, Southwest, and Northwest Air Force artists groups. Artists selected by the chairmen of the Air Force Art societies travel as guests of the secretary of the Air Force. They're paid only per diem and travel expenses. The artist's income usually



Above, *Aviation Week* montage, a typical Ferris line drawing of the period. A montage was a special issue space ad used by the magazine's salesmen. Right, above and below, Ferris two-color advertising illustrations of the period. They used both blue and black for Sperry Phoenix advertising.

stops when he or she leaves the drawing board. The artist then donates the time for travel and the creation of the art, as well as the original art itself to the Air Force, along with specific reproduction rights for government purposes only.

I had no idea that this program existed when, out of the blue, in May 1961, I received a phone call from the renowned aerospace artist Bob McCall, then Air Force Art chairman of the Society of Illustrators. He asked me if I'd participate in a 7.5-hour B–52 training mission from Westover Air Force Base, Massachusetts. You can imagine my reaction and immediate response. I flew that mission, followed by a 4-hour KC–135 ride refueling B–52s and was absolutely thrilled! Most important, of course, was that I was "home" once

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more! I'd been around orders all my life. As I studied them, I recognized that they and others like them were going to allow me to fly after all!

In May 1963 I was invited to visit Randolph Air Force Base to cover the T–38 Instructor Pilot School as an artist. The instructor pilot, Capt. John Lynch, greeted me by handing me the T–38 Dash-1 Flight Handbook. My reaction was: "Wait a minute, you're flying this airplane!" "No," he replied, "How many hours have you got?" When I admitted to 11.5 hours of tail dragger light plane time, he said, "You're fully qualified."

As we discussed the upcoming mission in earnest, he checked me out in the airplane and I found myself flying the first ride in the T–38 Instructor Pilot [IP] School syllabus! John made the formation take-off and I took pictures during the first portion of the flight. I was to pilot the airplane for the rest of the flight, being talked through such activities as shutting down one engine in flight, cycling the gear, and restarting the engine. I practiced supersonic climb and

A Paris Air Show space sales ad for *Aviation Week,* which was an early client and remains so to this day.

investigated control in slow speed and high-G flight. John was a terrific instructor and I was able perform all of the tasks he asked of me. I positioned our T–38 for the break and, on my first ride, made three touch-and-go landings and the full stop landing. After I taxied the T–38 back to our parking spot, I couldn't help remembering the old barracks at the south end of the flightline and the arrival of those beautiful mouse gray P–80s for Air Force Day in 1947.

When we unzipped our G-suits, I asked John for a copy of the IP School syllabus, for I was scheduled to have a look at undergraduate pilot training operations during the following week at Webb Air Force Base in Midland,

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Texas. To prepare for my Webb T–38 flight, I asked the T–38 instructor pilot, Capt. Jerry Welch, to keep his G-suit on because I wanted to fly the number two Randolph IP School syllabus ride, the aerobatic ride! He gave me a huge grin. We found a G-suit and I did well on the aerobatic flight. I haven't been the same since! T–38 training was impressive and Webb T–38s are featured in my Air Force Art painting *Texas Talons Turning Final*.

Prior to my first ride in a Northrop T–38 at the T–38 Instructor Pilot School, Randolph Air Force Base, Texas, 1963. I'm on the left, discussing procedures with instructor pilot Capt. John Lynch. Below, taking off. Note how early in the T–38's career this was. The aircraft on Randolph's East Stage beyond are all still T–33s.

I also had an opportunity to fly the T–37 at Webb, and I was particularly impressed with its spin characteristics. I decided to capture in a painting that most important moment in the life of the student so I featured the T–37 in *Solo Student Over the Numbers*.

In November 1963 I found myself airborne in an F–100F on another Air Force Art assignment. I was in the back seat of Thunderbird 8 with Lt. Col.

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Bill Alden, the Thunderbird commander. Having met the Thunderbirds at Craig Air Force Base in Selma, Alabama, I was returning at the end of a show tour with the team to their home base at Nellis Air Force Base. I spent a week documenting the Thunderbirds after the cross-country flight, flying a training mission in the slot after helping to replace the J57 engine and afterburner on the F–100F over our arrival weekend.

Flying with slot pilot Maj. Paul Kauttu in the F–100F was a real thrill. I found that he nearly dragged his left wingtip on the runway as we moved across underneath to place my head right between the wingtips of two wingmen in the diamond on take-off! I found that most of the show is flown looking right up the tailpipe of the lead, as seen in my Air Force painting, *View From the Slot*. Paul's vertical stabilizer was black with soot right down to the top of the fuselage.

Thunderbird Take-Off is my two-foot by eight-foot Air Force Art painting that attempts to convey that thundering four-ship takeoff at Nellis in 1963. I

Texas Talons Turning Final

Solo Student Over the Numbers

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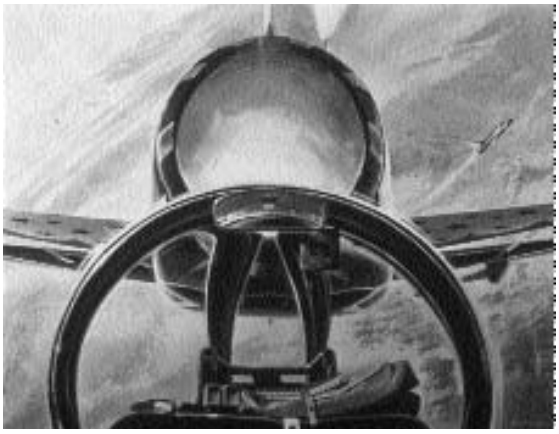
traveled to Europe with the Thunderbirds during their 1965 tour and have remained close to them ever since. It didn't take long before I found myself returning to Nellis regularly for Thunderbird reunions. I turned these reunion visits into Air Force Art assignments with the concurrence of Tactical Air Command [TAC] headquarters. I'd arrive at Nellis a week early with mission numbers to fly with each of the weapons schools.

My 1967 visit to the F–4 Weapons School found me flying with instructor



View From the Slot

pilot Maj. Duke Johnston against his opponent and fellow instructor pilot, Maj. Al Logan. Duke and I climbed out on Al's wing en route to the air-to-air ranges for a bit of two-ship ACM [air combat maneuvering] over the high desert north of Las Vegas.

Those of you who've tried descending on the backside of a vertical rolling scissors will remember that the absolute deadline in this maneuver is the ground. The first adversary to break it off gets shot!

I was to spend about eight weeks over a twenty-five-year period covering

Thunderbird Take-Off

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Photo taken during the changeover from Trail to Diamond formation, as we returned to the practice show line on "Thunderbird Dry Lake," the then-training area north of Las Vegas.

the tactical employment of Nellis-based aircraft including the F–100, the F–4, the F–105, the F–111, the Aggressor T–38, the F–5B, and the Wild Weasel F–105, and I spent time with both the F–15 and F–16 Weapons Schools. My flying experience over the years has been a key element in my career. It's driven my approach to art and has been a most valuable asset in all of my work.

In 1967 I volunteered for and graduated from Tactical Air Command's Deep Sea Survival School conducted at Homestead Air Force Base and Turkey Point, Florida. After a bit more F–4 time, I'd filled enough squares to deploy

The view as we descended on the backside of a vertical rolling scissors.

Al reluctantly playing the "loser" in this canned engagement.

"Killer" himself, would-be fighter pilot "Walter Mitty" Ferris! I had my own helmet and had painted my visor cover with each aircraft type I'd flown myself and had depicted in a painting already in the Air Force Art Collection.

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Back to happy hour! Duke was embarrassed to open the formation for me as I took this one!

across the Pacific. In November 1968 I deployed as a civilian back seater with the 40th Tactical Fighter Squadron, Eglin Air Force Base's F–4E operational test and evaluation unit. We were to replace veteran F–105s with new F–4Es in the 469th Tactical Fighter Squadron at Korat, Thailand.

For my painting, *Bad News For Uncle Ho*, I decided to record the impression of just hanging out hour after hour in the high altitude sun, drifting up and down over the vast Pacific, while other members of our cell, tankers, and F–4Es were spread out across the skyscape. There you see the artist in the back seat. The pilot is fellow Texas Aggie and dear friend, Maj. Paul Lemming, who somehow drew this civilian as his GIB, (guy-in-back), for the Hickam-to-Anderson, and Anderson-to-Korat legs of the trip. Was it a coincidence that they'd put the two Texas Aggies in the same airplane? As we were over the South China Sea, I asked Paul what his thoughts were at that point.

He answered: "Well, you know there are forty guys here over the Pacific today and not one of us has ever been shot at before." He continued: "When we land at Korat, we'll be replacing the F–105s of the 469th Tac Fighter Squadron. Those Thud drivers have flown 40,000 hours over North Vietnam.

The experience of a lifetime! The Ferris dream come true!

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Bad News For Uncle Ho

I'm just wondering what kind of reception we're going to get from them when we arrive with these F–4Es."

The Korat reception was a beauty, beginning with the parade of vehicles forming at the end of the runway (which prevented the exit onto the taxi way for all twenty F–4Es). We were subjected to a flat-bed trailer base tour lined with water buckets and fire hoses. At the Korat Officers' Open Mess, it was even wetter! First came refreshments, and then it was everyone in the pool. The 105 folks apparently had forgotten that there are two F–4 guys for every F–105 pilot. They joined us in the pool.

It took less than twenty-four hours to get combat markings onto the airplanes and weapons loaded and the arming crews were pulling the down-lock pins and arming those M117s.

Out from under my wing came this gentleman in a white vest with a black

What I call the view from the best restaurant in the world! You can't buy this kind of flying time!

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Looking a bit more lethal when armed up and going to war.

cross and words which read "Vatican Tech Rep II." He was a chaplain, Capt. Gene Gasparovic of Paterson, New Jersey. I was told that Korat never launched a strike without one of the chaplains in the arming area. Father Gasparovic was later to serve as the Air Force's chief Catholic chaplain recruiter.

I also flew with the Wild Weasels of the 44th Tactical Fighter Squadron at Korat. Getting to know these folks and fly with them was a rewarding experience all its own! I was to fly with Capt. George Connolly on the last day of my stay there.

My Wild Weasel painting, *Big Brass Ones*, depicts Maj. John Revak, pilot, and Maj. Stan Goldstein, electronic warfare officer, in their F–105F, *Crown Seven*. The painting honors John and Stan for their 100 missions over North Vietnam, the Wild Weasel mission, and the service of the F–105F and G Wild Weasel aircraft. The painting is part of the Air Force Art Collection.

Linebacker in the Buf(f) is my Air Force Art painting honoring B–52D, No. 55-094, in which I came out of Southeast Asia via U Tapao on a bombing mission on November 27, 1968. We dropped 108 Mk82 five-hundred-pound bombs on North Vietnam's Mu Gia Pass, recovering 7 hours, 40 minutes later on Guam for one North Vietnam combat "counter." I was privileged to spend

Capt. Gene Gasparovic.

The happy artist exclaiming "Sierra Hotel Korat!" after an F–105 mission.

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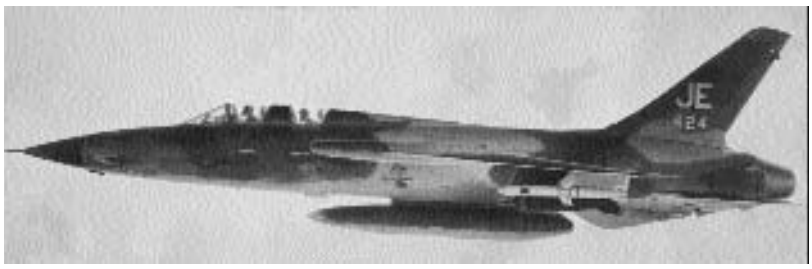
Wild Weasels Majs. John Revak and Stan Goldstein returning from their 100th mission over North Vietnam. These new friends were on their way home to the States where we've remained in touch ever since.

several hours manually flying 55-094 from the right seat en route to Andersen.

I proceeded home from Guam on KC–135 *Young Tiger* returning to the States in early December. I'd been away from my drawing board for over a month. My B–52D, No. 55-094, continued to fly combat through Linebacker II in December 1972 and retired in the 1980s. Today she sits proudly on dis-



Big Brass Ones

play at McConnell Air Force Base, exhibiting much body putty and revealing repaired wounds received from a surface-to-air missile over Hanoi.

In 1980 the Air Force Association published the 1980 Keith Ferris Military Aviation Calendar. One of the images was a Ferris painting of the brand new operational F–16 then flying at Hill Air Force Base, Utah. As soon as that calendar found its way to onto the desk of Tactical Air Command commander Gen. Bill Creech, he asked his executive officer, Lt. Col. Joe Ralston, to give me a call asking when I was going to paint an F–16 to go with the Ferris Air Force Art F–15 painting *Air Superiority, Blue* hanging at TAC headquarters at Langley. I replied: "Joe, tell your boss, 'when I've had a chance to fly the airplane!'" So on April 22, 1980, I was the first civilian, outside the General

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Linebacker in the Buf(f)

Dynamics test force, to fly in the F–16, which proved to be quite a machine!

I flew with Lt. Col. Paul Rost, who commanded the 34th Tactical Fighter Squadron at Hill. He had me try my hand at supersonic flight, wing work to area, head-on intercept of our wingman, and basic fighter maneuver engagement, confidence maneuvers, slow flight, and aerobatics. It took me three tries to get all the way around for my nine-G turn! We participated in a low-level split pop attack on a target west of the Great Salt Lake. It was a terrific mission and I learned that flying the F–16 can be exhausting.

I'm very grateful to the late TAC commander, General Creech, for the opportunity. *Sunrise Encounter*, the painting that resulted from that mission was delivered to him after having been sidelined for a year in the office of Secretary of the Air Force Verne Orr. Fighter pilots will recognize the F–16's lag roll to position it behind two aggressor F–5Es down below. Weapons School graduates and Red Flag veterans will recognize the Nellis live ordnance ranges southeast of Tonopah, Nevada, as the setting for the painting.

I was to get quite a bit of F–16 time over the years, flying with fighter wings

Left, a pop-up delivery; below, the target seen on a roll in from the pop-up.

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Above, our F–16 take-off and climb-out from Hill en route to the training area beyond the Great Salt Lake; right, Lt. Col. Tom Rost, left, with the happy artist.

at Kunsan Air Base in Korea, Torrejon Air Base in Spain, and the F–16 Weapons School at Nellis.

At age 71, long after many Air Force friends with whom I'd flown had retired, I found myself in a 4th Fighter Wing F–15E off Cape Hatteras, North Carolina. I was involved in five six-G engagements between two F–15Es representing MiG–29s and two F–15Es defending the coast. I found I could still handle the Gs! The resulting painting is entitled *Nowhere To Hide*, a tribute to the Strike Eagle's tremendous capabilities.

As you might suspect, I've spent many more hours in airlifters than in fighters over the years, and some of my most rewarding hours included a 1989 trip via Honolulu to Pago Pago, American Samoa, and Christ Church, New Zealand, en route to the U. S. National Science Foundation base on McMurdo Sound in Antarctica.

Sunrise Encounter

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Nowhere To Hide

As I was talking to my new friends, some penguins, the locally-based Navy helicopter pilot asked if I knew of the biggest threat penguins faced in Antarctica. When I told him I didn't, he said: "It's the Orca!" The Killer Whale comes crashing up through the ice, after circling beneath it and identifying his prey above. Then he snaps the penguins right out of the air! He added: "Do you know what you look like right now?" You just can't tap dance high enough to avoid a problem like that!

The Air Force Art painting documenting that mission is entitled: *Inspection Party*. The little group around the nose of our C–141 thought that we were supposed to be the inspection party but I couldn't resist portraying the penguins that populate McMurdo.

This is my forty-fourth year of heavy involvement in the Air Force Art Program. For all of those years I've been with the Society of Illustrators Air Force Art Committee. For sixteen years I served as its chairman, selecting artists for Air Force art tours and since, as honorary chairman, assisting chairmen in their

Ferris and friends, McMurdo Sound.

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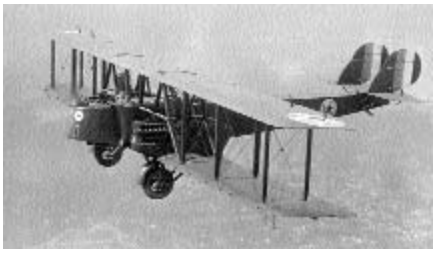
Inspection Party

duties as needed. There are now fifty-five major Keith Ferris paintings in the Air Force Art Collection. We've certainly come a long way since the retirement of the NBS–1 at my birth. It's been a real privilege to have lived and participated in the history of these years.

Our 1956 decision to relocate and my pursuit of a career as a self-employed freelance artist concentrating on the advertising, public relations, and publications needs of the aerospace industry, the military, aviation and space museums, and publishers were vindicated. My fifty-year list of commercial clients has included almost every major airframe, engine, and avionics manufacturer in the United States. I have a number of foreign clients as well. Our income has come from the sale of reproduction rights in my art to clients, the sale of original art, and from the sale of reproductions of the many Ferris works that have been published in limited and open edition print and poster form.

While I've never found the time to earn my private pilot's license, I've certainly been able to more than fulfill my dream of military flight. I'm grateful to the Air Force and the Air Force Art Program for granting me the opportunity to convey flight and Air Force history through art. I've been able to serve after all!



Above, an NBS–1 bomber; left, "Have G-Suit, Will Travel!" The artist with F–4E No. 67-268.

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Gen. Bernard A. Schriever: A Tribute

Jacob Neufeld

Senior Historian, Air Force History

On my first visit to the George Bush School of Government and Public Service, I picked up a brochure. It declared that the school's goals are to develop individuals for public service careers, to mold men and women of "character and outstanding abilities . . . who answer the call to serve . . . who believe that public service is noble . . . who believe that they can make a difference . . . who are grounded in leadership and ethics . . . who are innovative . . . and who excel in communication, mediation, and crisis management." I was immediately struck by how very well fulfilled these goals were in the career of Gen. Bernard A. Schriever, USAF (Retired).

General Schriever was a technological visionary, arguably the Air Force's preeminent visionary. He pioneered research and development [R&D] in ballistic missile and space programs, and his dynamic, innovative leadership made him a valued advisor to militarists and politicians alike. These few, simple phrases characterize the long, productive life of General Schriever and mark his career of outstanding achievements.

Gen. Bennie Schriever's biography reads like a Horatio Alger story. Bennie, his brother Gary, and their parents emigrated from Germany in 1917, just before America entered World War I. Shortly after moving to New Braunfels, Texas, near San Antonio, Bennie's father was killed in an industrial accident. The boys' mother, Elizabeth, raised her sons through hard work and with the help of relatives, instilling in them high ethical standards and a strong belief in the importance of education. Subsequently, in 1931, Bennie graduated from Texas A&M University with a bachelor of science degree in architectural engineering, including high academic honors. Moreover, he was an outstanding athlete, winning the San Antonio city junior amateur golf championship in 1932. Ironically, he defeated Kenneth Rogers, an Army Air Corps captain who just happened to be a flight instructor at Randolph Field.

After his graduation, Schriever was commissioned in the U.S. Army Field Artillery, but he "caught the flying bug" and signed up for flight training at Randolph and Kelly Fields. Shortly after winning his wings, he was assigned to the 7th Bombardment Group at March Field, California, where he worked for sev-

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eral of the Air Corps' most famous leaders: Hap Arnold, Tooey Spaatz, Ira Eaker, and Clarence Tinker, among others.

In the winter of 1934, Schriever flew air mail in the Army's ill-fated attempt to fill in for the airlines. The operation quickly turned into a fiasco as service flyers piloted antiquated, inadequately equipped airplanes. Schriever saw many of his pals fall to their deaths. The experience underscored for him the consequences of technological inferiority; it was imperative, he believed, that the United States modernize and enhance its air power to be competitive worldwide.

During the Great Depression, Schriever learned leadership while commanding a Civilian Conservation Corps unit along the Arizona and New Mexico border. It was tough to maintain discipline. Once, when a knife fight broke out between two young men at the unit's camp, Schriever, "trembling inside," strode into the middle of the ring of onlookers that had formed around the combatants. He demanded that the boys "drop those knives" and, to his relief and amazement, they did.

Unable to secure a Regular Army commission, he left the military in 1937 for a flying job in a commercial airline company, but it lasted only a year. He then returned to military service and did secure a Regular Army commission. Scientifically minded, he found himself attracted to flight testing and decided to pursue an engineering career at Wright Field, Ohio. He enrolled in and completed the Engineer School course there. Then, continuing his education, he attended Stanford University where he earned a master's degree in aeronautical engineering just as the United States entered World War II.

Schriever served in the Southwest Pacific from July 1942 until the end of the war in September 1945. He began as a B–17 pilot with the 19th Bombardment Group and flew thirty-six combat missions, participating in campaigns in the Bismarck Archipelago, in Leyte, Luzon, and Papua, and in the North Solomons, the South Philippines, and the Ryukyus. His superiors quickly recognized his technical and leadership skills, and he steadily rose in rank from captain to colonel, advancing from chief of maintenance and engineering to chief of staff, Fifth Air Force Service Command. By September 1944 he commanded the advanced headquarters, Far East Service Command, which supported theater operations from bases in New Guinea, the Philippines, and Okinawa.

After the war, Schriever drew favorable attention from several senior officers, notably General Arnold, under whom he'd served at March Field. Recognizing his protégé's rare combination of leadership attributes, technical training, and combat experience, Arnold assigned Schriever the ticklish job of maintaining the close ties forged during the war between the Army Air Forces and the nation's leading scientists. At the Air Staff's Scientific Liaison Office, Schriever worked with Theodore von Kármán, Ivan Getting, Louis Ridenour, and Lt. Gen. Donald Putt, among other well-known scientists and airmen.

There, Schriever innovated and introduced a series of planning documents called Development Planning Objectives [DPOs] that matched long-range mili-

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tary requirements with ongoing R&D. For the first time, operational matters were considered within the broad context of technological advancement. DPOs were prepared for all major elements of air power: strategic, tactical, and logistical elements; air mobility; space systems; air defense; intelligence; and reconnaissance. Schriever became a strong proponent of the efficacy of "technology push," an approach that allowed free rein to technological R&D as the means for solving complex operational needs. The converse approach, "operations pull," required technology to address and fulfill operational needs. Schriever argued that the operations pull approach provided only temporary, piecemeal solutions that failed to exploit everything that technology could offer.

In 1950, after his graduation from the National War College, the highly regarded Schriever was on a fast track for promotion. Although he yearned for a command assignment, his value to the Air Staff kept him in Washington. In 1954 he was promoted to brigadier general and offered the challenging job of developing intercontinental ballistic missiles [ICBMs] before the Soviet Union did. Since the end of World War II, the United States had neglected ICBM development, granting it only token funding. Not until the advent of the Eisenhower administration did ICBM development receive serious consideration.

Meanwhile, Trevor Gardner, the secretary of the Air Force's special assistant for R&D, had appointed a prestigious scientific panel to evaluate the status of guided-missile technology in the U.S. military. Formally called the Strategic Missiles Evaluation Committee, it was better known as the Teapot Committee. Chaired by world-renowned mathematician Dr. John von Neumann, the committee recommended the creation of an organization, vested with extraordinary authority, to embark on a crash program that would develop and field an ICBM within six years—a very tall order indeed.

Gardner selected Schriever to head that organization. It was called the Western Development Division [WDD], headquartered in Los Angeles. Schriever's foremost contribution to the nation was as commander of the WDD. From August 1954 to April 1959, he directed the development of ICBMs, declared by President Dwight D. Eisenhower to be the nation's top-priority R&D endeavor. It was a formidable challenge that Schriever accepted, and he insisted that it be accomplished on his terms. Subsequently, he created from scratch the infrastructure necessary to develop, build, test, and deploy the ICBM called the Atlas. He recruited scientific talent nationwide and handpicked military scientists and managers to run the program.

Schriever consistently countered bureaucratic roadblocks. In one case, he managed to oversee the ICBM budget through an entity carved from the Air Materiel Command. Called the Special Aircraft Projects Office, its commander reported directly to Schriever. The general also established the extraordinary administrative procedures that accelerated development by eliminating layers of wasteful reviews. These Gillette Procedures vested approval authority in two committees: one chaired by the secretary of the Air Force; the other, by the sec-

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retary of defense. As the program progressed, it expanded to include a family of missiles, such as the alternate design, multistage Titan ICBM; the Thor intermediate range ballistic missile [IRBM]; and the solid-fuel Minuteman ICBM. The rocket engines that launched the ICBMs and IRBMs were developed for the United States Air Force but were shared with the other armed services. These military missiles found subsequent use as boosters to launch satellites into orbit.

Schriever attained every major objective that the Air Force's Teapot Committee had established in its February 1954 report. The most significant called for deployment of an ICBM within six years. The first Atlas ICBM was declared operational in September 1959. Indeed, all of the long-range ballistic missiles developed by Schriever's WDD reached operational status in record time.

As Schriever grappled with building missiles, he recognized the potential of space systems and doggedly advocated assigning responsibility for space systems research to the Air Force. In a February 1957 speech in San Diego, California, he urged that the nation accelerate and prioritize its space program. His superiors in the Air Force and Defense Department chastised him and directed him not to use the term "space" in future speeches. Of course, the Soviet Union's launch of the Sputnik satellite on October 4, 1957, erased that senseless stricture.

In April 1959 Schriever was named to lead the Air Research and Development Command. For the next two years he operated under a restrictive set of "rules of engagement" under which his command undertook R&D, but Air Materiel Command controlled funding.

At last, in April 1961 the Air Force was offered responsibility for all military space R&D, contingent on its ability to get its house in order. Subsequently, the Air Force Systems Command [AFSC] was established. General Schriever was promoted to four-star rank and selected to command it. Doing so he transformed the concept of materiel development and acquisition from a functional to a systems approach, and the command became the focal point for virtually all major weapons development. His role in this change was pivotal with respect to his insistence on superior technical performance standards and adherence to preestablished production schedules. Schriever fostered research and oversaw the acquisition of systems that provided strategic deterrence; early detection; warning; air defense; advanced aircraft and spacecraft design; command, control, and communication systems; and aerospace medicine.

By 1963 AFSC employed about 27,000 military personnel and 37,000 civilians, operated an annual budget of more than $7 billion (about 40 percent of the Air Force's total), and managed 80 major weapon systems. At AFSC Schriever defined and institutionalized the acquisition process by demonstrating the interrelationship between technology, strategy, organization, and politics. Also in 1963 Schriever launched and directed Project Forecast, a comprehensive evaluation of the Air Force's future R&D through the mid-1970s. This study continued Theodore von Kármán's post–World War II work, *Toward New Horizons.* Indeed, the Air Force institutionalized this type of long-term planning study.

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In September 1966 Schriever retired from the Air Force after thirty-three years of service to the nation. Since then he's served in numerous advisory capacities for the U.S. government and has worked tirelessly to further research in some of the nation's leading corporations. Notable among his endeavors are his chairmanship of the President's Advisory Council on Management Improvement and his service on the President's Foreign Intelligence Advisory Board, the Defense Science Board, and the Ballistic Missile Defense Organization Advisory Committee.

How did Schriever manage to amass such a list of accomplishments? He was a superb leader who inspired subordinates to believe that their mission was vital to the nation's welfare. A hard worker, he led by example. His approach was to study a problem thoroughly, and once he was convinced of a position, he did not hesitate to stand up to higher authority. He never backed down from a fight, but rather than go toe-to-toe with an adversary, Schriever preferred to reason with intransigent authority. "Don't worry," he'd tell associates, "I'll see the boss later and persuade him." He usually succeeded. Similarly, Schriever learned how to communicate effectively with politicians.

On June 5, 1998, Falcon Air Force Base, Colorado, was renamed Schriever Air Force Base—an unheard-of tribute to a living individual. A self-deprecating man, with a puckish sense of humor, Schriever reacted with surprise when he was told that an Air Force base was to be named for him. "They must think I've died," he remarked. "No sir," I replied. "They just want you to know how much you're appreciated."

Whenever you visit Cape Canaveral or Vandenberg Air Force Base or whenever you witness a launcher lift off to place a satellite into orbit, remember the man who made them a reality—Gen. Bernard A. Schriever, USAF (Retired), Texas A&M University, Class of 1931.

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Panel III
Aggie Aviation: Leadership in Action

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Penrod S. Thornton

Deputy Director, Bush Presidential Library Foundation

Howdy. I'm Rod Thornton, and I'm the deputy director of the George Bush Presidential Library Foundation. We're helping to sponsor this event in conjunction with the U.S. Air Force and the Bush School. Today we have some esteemed former students here to talk about leadership skills that they learned while they were here at A&M and then went on to use in their illustrious military careers. All three men are retired general officers, two from the Air Force and one from the Army. They had great careers, and they'll give you some insight on what they learned while going through the university here. One of them is at least as old as I am. We went through A&M when it was a college.

Our first speaker, Gen. Patrick Gamble, graduated from A&M in 1967. He was a pilot with over 394 combat missions in Vietnam. He's held numerous command positions, his last being commander of Pacific Air Forces. He retired in 2001 and currently serves as president and chief executive officer of the Alaskan Railroad Corporation.

Our second presenter for this session is retired Army Lt. Gen. Randy House. General House graduated from Texas A&M in 1968. He held numerous command positions during his Army career, the last of which was deputy commander in chief of U.S. Pacific Command. Since his retirement in 2000 he's been an advisor to the National Reconnaissance Office and has assisted the Bush School doing strategic studies. He's currently a consultant and rancher residing in College Station.

Our third participant to address you is retired Air Force Maj. Gen. Jay Blume. General Blume graduated from Texas A&M in 1963. I know that for a fact because Jay and I were classmates. Jay's a fighter pilot with over 303 combat missions in Southeast Asia. He commanded NATO airborne warning and control aircraft forces during Desert Shield and Desert Storm, and he was the focal point for the last round of Air Force base closings. General Blume retired in 1996. He resides in Montgomery, Texas, about an hour's drive from here.

Please welcome our speakers.

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Gen. Patrick K. Gamble, USAF (Ret.)

Thank you very much, it's good to see you. It's a privilege to be here on an occasion like this, although it's a little daunting because it's a history symposium. To be asked to stand up and talk about when you were a cadet must mean that you're close to being historical. I'd never thought of it that way until just a second ago when I walked onto the stage. It occurs to me that I didn't really know at the time, when I was a cadet at A&M, the attributes a college, and then a university, were giving me. I simply wasn't, at that point, thinking about things like that. So to come back and reflect and pick out what Texas A&M gave me that might have imbued me with certain qualities, values, and traits that showed up at key points along a career is just a little bit more cerebral than it seems initially.

I got to Texas A&M in the first place because I told my dad I wanted to go to the University of Hawaii. He said, "No, but I'll tell you what you can do. You can go to any university or college you want to as long as it's in Texas." Sufficiently rebuffed, I was sulking in my room when my family had some friends over. They'd brought along a *Time* magazine article about Texas A&M University. It had a picture of the corps [Corps of Cadets] marching, and it was a good article. So my dad slipped it under my door, and I read it.

I wanted to go to a military school. I was a typical teenager. I really didn't plan ahead or think ahead. I didn't care about academics. I didn't care about grades. I just knew I wanted to fly fighters. I'd known that since I was a sophomore in high school, but I really hadn't figured out how to do it. My dad told me that if I wanted to go to the Air Force Academy, I had to get myself in. That was the way it was when I was growing up. You had to do things on your own. He'd give you advice, but you had to do the rest. Well, I just wasn't with it enough to take the time and effort to do what I should really have done to get myself prepared to go to college. So I came down to A&M.

My folks were on their way to Germany for four years, and I came down to A&M during preregistration, went to Dorm 16, spent the night, looked around, and really liked this place. Okay, so A&M it was. I signed up, and I remember walking back to the car and telling my folks.

I went to East Texas, where my grandmother lived. My parents dropped me there and then they took off. I saw them only twice in the next four years since they were Germany all the time I was at A&M. I worked for about ten weeks up in East Texas in a sweatshop at the back of a restaurant. My job was making

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tooth protectors for athletes, rolling them out, stamping them, putting them in bags, and selling them for a buck apiece. That was technology back then for athletes and was a new invention, by the way.

When it came time to go to school, I packed up everything I owned, said goodbye to my grandmother, got on a train, got off the train, got on a bus, got off the bus, got into a cab, and took the cab to—you guessed it—Dorm 16. Dorm 16 was one of those 1930s concrete things that looked like a bomb shelter. It was falling apart, and I thought well, you know, obviously nobody's going to live here. But I walked in, dragging my footlocker, and it took me about three hours to get it to the third floor where I'd be living. I did more push-ups in those three hours than I ever did in my entire life. Thus began my official career at A&M.

I can tell you I was not a great "Fish." I went into what I call the first phase. As I look back and think about it now, this was the catching-on phase. Fortunately, because of having attended a couple of good schools, academics for me that fall weren't hard at all. I thought, boy, this college is a piece of cake. But I really wasn't with it in terms of cleaning up my room. We wore khakis in those days. There was no air conditioning, so you sweated through your khakis, and because they were super-size, they just hung on your body. If you were tall, as I was, they were proportionally wide. So everything was huge. My clothes were all sweaty and wrinkled. I looked terrible. I still remember—it's just as clear as a bell—one day I decided at the end of class in the afternoon, before evening formation, to iron my khaki uniform again. I'd ironed it once the night before and had worn it all day, but I'd never ironed it in the afternoon. So there I was, ironing, and a junior who lived across the hall came into my room and asked, "Hey, what are you doing?" I told him I wanted to spruce up a little bit. And he started talking to me, and this was the first example I had, I guess, of what people today call mentoring. We really had a good talk. He said, "You're doing a great thing, it shows you've got initiative. It shows you're catching on, that you care. It makes all the difference in the world to the upperclassmen that you're trying."

That was my epiphany. From then on, I got it. The light bulb came on. I took my $16 a month, which was what my dad gave me for expenses, and I went down to one of the tailor shops. I had the zipper put in front of the khakis, I got them form-fitted, zipped those beauties so they wouldn't pull the buttons and look bad, got my shirts form-fitted, ironed those about three or four times a day, shined my shoes, and suddenly my whole world changed. It absolutely changed, and I was suddenly a "sharp cadet." Of course, reality set in when the second semester of academics hit me. That's how I discovered what's called mentoring. It really, really worked. I refer to the positive connotation of mentoring as opposed to the negative. I don't mean the "sucking-up" kinds of things that some people think of when they talk about what a mentor is supposed to do.

Second came what I call the tuning-in phase. I began to notice the upperclassmen. We Fish would discuss what made a good or bad upperclassman. I began to learn the difference between fear and respect. There were upperclass-

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men who were really tough on you, but they earned your respect. I was also aware of the ones who'd stand in your face and yell and scream and shout and pull their hair and try as best they could, given the tools that they had, to figure out how to be leaders. Yet they were missing the boat. They were trying to put fear into you to get your attention and ultimately, I suppose, your respect. What they were doing didn't work, and we knew it. So we began to make fun of these guys in a typical Fish way. We bottle-bombed them and did all kinds of things to them in the middle of the night. I was very conscious of the fact that you had to earn respect, and some people began to look up to you, which is important.

Loyalty was another thing that was really, really imbued in the pits—loyalty to your unit, and then loyalty to the upperclassmen you respected, who were the leaders. In one instance we took an upperclassman's locker and returned it at the Turkey Day football game—on the 50-yard line, of course. Well, he worked us over for about four weeks. We had to lie under the sink all night with the lights on, or we had to do push-ups all night long. But we wouldn't yield. We were a team. We were loyal to each other the way troops are loyal to each other in combat. It's the person next to you who's the most important thing when you're experiencing adversity.

The first time you experience success under those conditions, it's exhilarating. The upperclassman was delighted with us because we'd withstood everything he could throw at us. It was a momentous occasion, and we felt the pride. Loyalty up, loyalty down. We had it both ways in that outfit.

I was aware of the idea of teamwork. Fitness was a big part of it. Fit for life, as we say now. Believe me, it doesn't matter when you're a soldier what you do or where you do it, if you're going to be a soldier, you need to be fit. We were certainly conscious of being fit as cadets because we were tested over and over and over again. I was challenged probably more as a sophomore than I was as a freshman. Sophomore life was hell. In your freshman year, you were supposed to be able to get away with anything you could. Sophomore year was different. The punishment wasn't the same from the upperclassmen.

Then, there was the idea of presence. When I saw my company officer, when I saw those upperclassmen, they looked sharp. I wanted to be like them, and I went back and worked as hard as I could. There's one thing I'll never forget in my time in the Air Force. I never wore a pair of plastic shoes. I always shined my shoes. I always shined my brass. I always looked at my uniform. That was so important as a cadet, and it was so important all the way through my career. You wanted to look like a military man. You wanted to look like a commander, like an officer. It was important to have presence.

Then came the ideas of work and discipline. The psychology is a bit more complicated. The one closest to an individual, the one responsible for that individual, is the one who rewards discipline. You don't pass that off. You take care of that personally, regardless of the level of command. Rewarding discipline needs to be a personal thing. I believe that lessons are much stronger, and ties,

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of course, are much better, when rewarding discipline is not handed off to a second or third party.

As a commander in the Air Force, as a squadron commander, particularly, I had adjutants. I had people who did administrative work and who could easily pass out paper or award a medal or take administrative action against somebody who got into trouble. I always remember the effect of having a boss duly rewarding discipline, and that stuck with me all through my Air Force career. It was an element of taking care of people. I didn't think of it that way when I was a cadet, but certainly taking care of people encompassed rewarding and disciplining. I saw that for the first time at A&M.

Then there was team loyalty—loyalty to the football team, loyalty to the university, loyalty to the squadron. I was very, very conscious of this fierce loyalty that we call spirit my whole time at A&M, and it stayed with me.

There were the ideas of standards and goals. I never really understood them until I was probably a lieutenant colonel, and one particular commander brainwashed us as he tried to impress on us the importance of standards and goals. I could recall what I'd learned about them earlier in my life, putting them out there and seeing what they meant, but I'd never really thought them through intellectually until they were presented to me or taught to me, not once, not twice, but I think at least seven times when this particular commander talked about the importance of things like standards and goals, and what he said sank in.

Something I believe in very much is the idea of style. The style of an organization reflects its principles and its values. Principles and values espoused by the leadership and embodied by the group form the personality, the style of an organization. I think style is very, very important to try to understand and to be aware of and to promote in an organization.

The next phase was the confidence phase. After having grown up in the corps and having become a junior, I'd acquired a great deal of confidence. It was sort of my fearlessness. There was nothing I couldn't do, other than get great grades. Corps positions were available, and it never occurred to me that I couldn't handle or couldn't perform in them. When I moved into one it was very comfortable; it fit like a good sports coat.

I went to summer camp as a junior. When I walked in that first day I was told, "You're the first group commander of the session, you'll be in formation in about two hours, and, of course, make sure everything's ready." I got everyone organized, got them briefed, got them out there, and marched them around; it was a piece of cake. I wasn't doing anything I hadn't done before, and it never occurred me that I'd have difficulties. As a result, I walked out as a cadet at summer camp, not because I was so great; but because of what I'd been given, the tools I'd been given, and the way I dealt with people. It was just so natural, it was bound to be. I had such a great advantage over cadets from other schools.

The goal, I think, of institutions like Texas A&M and the corps is to produce the best second lieutenants possible. Not necessarily those who make general or

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who have great careers, but to make the best second lieutenants they can and send each one to a commander in the Air Force and say, "Here, now, he or she is yours." And that individual has values, came from values-based organizations, has the tools, the character—and this is important, too—character plus performance. You've got to have them both. You don't take them one at a time. You've got to have them both to be a terrific second lieutenant.

It never occurred to me that I wasn't going to be a great second lieutenant. I never had a doubt, I mean, I just knew because it felt so right. It felt like such a comfortable fit after being at A&M for four years. I never asked myself, "What am I going to do? Will I be able to do it right? Will I be able to hack it?" Those questions never crossed my mind.

Likewise, in pilot training, I never asked myself, "Will I pass? Will I fail" It was just a steppingstone toward the goal I'd set. I don't think I'd ever have had that attitude had it not been for my time at A&M and all the things we experienced as a class. We came out as second lieutenants, ready to go to war, to go to pilot training, to succeed in pilot training, and then to do what the country wanted us to do. That was what we were all about then. And that's kind of where the horizon was for the group of young cadets who graduated in 1967.

As I look back and, as I said before, not necessarily understanding then all of the things I've just talked about, I realize the importance of A&M as an institution in teaching, training, and educating its cadets, in imparting skills to them. It's extraordinarily important. If an institution's growth and expansion ever cause it to lose the idea of leadership training as a core competency, if we ever lose that, then Texas A&M will become just another great, large university doing good things, but without the one element that I think has gained it its reputation over the years. You don't ever talk about Aggies when the concepts of spirit and leadership don't dominate the conversation, and the corps today still owns the heartbeat, the pressure, and the pulse of that whole area, that whole dimension of this university. Whether it's A&M or whether it's the Air Force Academy or any of the military schools, they all do the same thing. Young people come from all segments of our society—now male and female, between the ages of 17 and 22—and in four years, you've got to take them and mold them somehow and present them as second lieutenants to the military, to the Air Force. Boy, what a job! What a job! And it takes an absolutely first-class, first-rate institution to have even the ghost of a chance of doing that successfully. Only a few do. This is one. Most have given up. That's what I remember about my early days at Texas A&M University.

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Lt. Gen. Randolph House, USA (Ret.)

Thank you for taking time out of your schedules to come to Texas A&M, and if VMI [Virginia Military Institute] asks me to go there, I'll pay them back, too. I graduated in 1968, but I'm class of 1967. I've been following Pat Gamble for four years; he graduated on time. He talked about his grades. Let me tell you, they were great compared to mine. But it's an honor and a privilege even to be on the same platform as this team. Baseball's World Series and manned flight both began about a hundred years ago, and although baseball, especially the World Series, has seen a lot of changes in a hundred years, it's still fundamentally the same game. But changes in manned flight, they're another story. My compliments to the Bush Library Foundation and to the Bush School for sponsoring this air power symposium and providing a forum where we can reflect on some of those changes.

Only yesterday I was in Washington, meeting with the director of the National Reconnaissance Office about the U.S. Satellite Reconnaissance Program. I couldn't help but wonder what the Wright brothers would have thought of some of the things we were discussing. I want to comment on a very narrow aspect of air power before I get into leadership at A&M. It's a part of air power that I know the most about, and it's air power that supported me during Vietnam and the First Gulf War.

I'm a soldier, not an airman, but I've always believed that Air Force, Army, Marine Corps, and Navy air were there to support the soldier. When I was a soldier in Vietnam, my aircraft was forced down on a mountain. As soon as it landed and we got out of the burning bird, I pressed the beeper on my emergency radio, and, just as advertised, a voice came up saying, "Beeper, beeper, come off voice." It didn't me take long to figure out that I was talking to the lead of a flight of F–4s out of Da Nang. The planes quickly came down from the heavens and executed repeated Thunderbird-like low passes over our location. I'm convinced that their maneuvers deterred any adventurism by the masked enemy in the area. They continued to do that until a couple of helicopters were able to come in and extract my team from the jungle. I guarantee you, the importance of air power is obvious when you're in that situation.

Twenty years later I was a tank brigade commander in the First Gulf War. We didn't fight for four days, we fought for thirty-two. We were part of Gen. H. Norman "Stormin' Norman" Schwarzkopf's deception plan of going up and down the Wadi al-Batin before commencing the ground attack. On one of those trips

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along the wadi, we came under intense Iraqi artillery fire from very modern South African guns. They outranged my artillery so I couldn't return counter-battery fire. If it hadn't been for repeated sorties from numerous U.S. Air Force A–10s silencing that enemy artillery, more of my soldiers would certainly have become casualties and we might not have accomplished our mission that day.

So you see, as a soldier, I, as much as anyone, have a great personal appreciation for air power and airmen and for Vietnam-era Bird Dog pilots like my classmate, General Gamble. I'll always be thankful to him and that group because they were down where we were in the small arms fire of Vietnam. They displayed remarkable professionalism and bravery directing air strikes around me as I commanded an infantry company in my second tour of Vietnam near Hue, the A Shau Valley, Khe Sanh, and the demilitarized zone. You probably can't appreciate what folks like Pat Gamble did for the soldiers and the Marines who were on the ground in that conflict unless you've been talking to Bird Dog pilots or had seen how they were able to direct those strikes. They saved me on several occasions.

I'd like to end my brief remarks, though, with a few comments about Texas A&M leadership in the 1960s. I defer to Pat Gamble's detailed analysis. I guarantee you that I relate to everything he said and won't try to repeat it because I couldn't say it as well as he did. I came to A&M to be a veterinarian. Vietnam changed all that, and I soldiered for thirty-two years. I tell young people, "If you think you've got your life all plotted out, you might want to go lie down under a tree until the thought passes, because often life just doesn't work out the way you think it will."

I arrived at A&M in 1963 and moved into Dorm 17, next to Pat, with some notion of what good and bad leadership looked like. You don't grow up playing nine years of Texas football and being too slow and too little not to have a real appreciation of what good or bad leadership looks like. I think General Rudder's A&M positively influenced a lot of young Aggies in those days. I know it did me. For one thing, it taught me how important names and geography are, and their relationship to physical fitness, because if you forgot an upperclassman's name or his hometown, you did a lot of push-ups.

Additionally, A&M reinforced from my football days the importance of teamwork. General Gamble spoke about this a little bit, but one "Fish," unless he's very big or the upperclassman is very small, cannot storm into an upperclassman's room, drag him outside on a cold morning, and drench him with ice water. It takes teamwork to do that.

Seriously, I'd like to highlight many A&M professors of those days and, for sure, many ROTC [Reserve Officer Training Corps] instructors, both Air Force and Army. I seemed to have interacted with individuals from both groups who demonstrated wonderful leadership traits and techniques, which many young students like me wanted to emulate on a daily basis. I remember a bit of what they taught us. I remember a lot of what they coached and mentored us on.

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At the time, I didn't really care about the Corps of Cadets. I didn't come to A&M to be in the corps; I came to A&M to be a veterinarian. If you were a native Texan, and you wanted to be a horse doctor, you came to A&M; but if you dropped out of the corps during that time, you also dropped out of A&M. You didn't just become a non-regular. Within about six months you became a private in the infantry in Vietnam.

I credit my instructors, especially the ROTC instructors, who just kept talking to me at a time when I wasn't sure of exactly what I wanted to do. I'll always be indebted to those gifted instructors for the mark they left on me. I'm sure that when I was at A&M a lot of its faculty were doing important research and were writing important books, but they didn't influence me very much. The ones who influenced me the most were the ones who took time to coach, teach, mentor, and do the many things that General Gamble talked about as he described what a cadet went through then. I'll always be grateful to them, and I thank them. I still keep in contact with some of them. The two I admire most, one from the Air Force and one from the Army, retired as lieutenant colonels, but I always call them Sir.

So I came to A&M to be a horse doctor, but because of events and people, I didn't, and along the way I witnessed up close and personal small pieces of air power, for which I'm very thankful. I witnessed a lot of outstanding leadership that started at A&M and continued through thirty-two years of soldiering. Thank you. I appreciate the opportunity to be with you, and I'll meet you on the high ground.

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Maj. Gen. Jay D. Blume, Jr., USAF (Ret.)

Being retired and trying to concentrate chiefly on golf and a few other things now, I thought I might start off with a golf story. Early one morning, a gentleman was on the first tee and was trying to get started. He adjusted his stance and got ready to hit the ball when a booming voice came from behind him in the start shack and said, "Will the gentleman on the ladies' tee please move back to the men's tee." A little frustrated, he moved back and started getting his stance and prepared to hit the ball. Again, the giant voice came from the start shack, "Will the gentleman on the first tee, the ladies' tee, please move back to the men's tee." After the third time this happened, he really got frustrated. He turned around and yelled back to the starter shack, "Will the gentlemen in the starter shack please be quiet while I hit my second ball."

When I was asked to come and make a few remarks, I thought I'd be brief. I thought, what is leadership? It's providing direction and guidance to others. I really don't think it's doing things right; I think it's doing the right things. I tried to break down leadership into, maybe, just three things that I experienced at A&M. I don't say these things started here, but I think they began to mature here, when I was in the corps [Corps of Cadets]. I actually started here in 1959, so I'm talking about the early 1960s. The elements I decided to focus on today are having integrity, accepting responsibility, and learning to be the example.

Here at A&M, I started to really pick up on such things as self-discipline, trying to do the difficult things, such as making good grades. (Even though I tried hard, many times I didn't succeed, like the other gentlemen.) I took pride in living by established military rules. I didn't come from a military family. I came from east Texas, from just a good Christian family living over there. I had no idea of what the military was like.

I took pride in my appearance, and I developed confidence in the actions that I was requested to take and in those that I did take. Elements of discipline continued to grow and certainly intensified during my cadet career here at A&M, subsequently during my military career, and into my civilian life in industry.

When I was a junior, the honor code was initiated, or at least I became aware of it then. It was modeled on the honor codes at the Air Force Academy, Annapolis, and West Point. Honesty was very important. The A&M honor code clearly articulated my personal beliefs at that time; it certainly strengthened my resolve to live up to them. It aided me in acting on my beliefs. I really bought into it. I know some of my classmates didn't, but they later wished they had.

In trying to think of an example of how discipline affected me once I got into the military, I recall that I flew a lot of sorties west of Kontum, supporting Army actions along the Mekong River between Cambodia and Vietnam. According to the rules of engagement at that time, you couldn't attack targets over the line in Cambodia. In the evenings, as things cooled off and the sun started going down, you could see campfires starting to glow over in those valleys, as far as the eye could see. Those were the North Vietnamese who were going to enter Vietnam; they just hadn't gotten there yet, or they'd retreated, back into their Cambodian sanctuary. Frequently, you'd have unexpended ordnance, and flying along the river and looking over there, you realized how easy it would be to just make a right turn, maybe, or just make a left turn, and roll in and pound one of those spots, and you wanted to do it, but the rules said no. And from what I learned here, if the rules said no, you didn't do it. I was able to resist what seemed to be a very lucrative target opportunity.

The second element of leadership I'd like to mention is accepting responsibility. As you know, when you rose in rank in the corps, you received more responsibility. I assumed the responsibility, certainly, as a first sergeant with classmates. As a junior, I got married and assumed other responsibilities. I became a member of the corps staff. I was a day student liaison officer and had responsibility for a lot of day students as well as a young wife. (She's still with me now, forty-two years later.)

After graduation, in the period between my commissioning and entering military service, I got a job up at Fort Worth working for General Dynamics on the F–111 aircraft. I was working in crew station design, and I started thinking about the responsibilities of my position there. I found it quite demanding to be designing elements that would go into an aircraft that maybe one day I'd have the opportunity to fly. I did get to fly the aircraft and design several things that actually wound up in its crew station.

For an aviator responsibility increases as flying opportunities expand from fighter pilot to flight lead, to instructor pilot, to flight examiner, and then maybe to mission commander. I had all of those opportunities. I was very fortunate to be a flight commander and a squadron commander. I also commanded two wings, one of which was the NATO [North Atlantic Treaty Organization] component at a technical training center.

Finally, as a staff officer, I worked directly for the secretary of the Air Force and the chief of staff back in 1995. As I checked in, Gen. Merrill "Tony" McPeak, the chief at that time, challenged me to do the analysis for the upcoming base realignment and closure process. I assumed the responsibility of providing the Air Force with the very best analysis possible.

The third part of leadership is being an example. As a cadet, you always had to balance the competing requirements of academics, your corps duties, and fun (because you can't get along without fun). Certainly, the military and industry are absolutely no different in this regard, but I found that military jobs were big-

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ger; the rules were usually more detailed; and the consequences were potentially much greater. If a tough mission was to be flown, the leader needed to be out front. If a briefing was contentious, the leader needed to present it. In flying, the leader always had to do his part pulling additional duties with all of the required extra hours to set an example. I think these three essential leadership elements began to mature personally with me right here when I was a cadet, and they continued to develop throughout my career in the military and my career in industry. I think they really served me quite well.

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Q&A

Audience Member: Tell us about the impact of Gen James Rudder, quite a dynamic individual. I believe he arrived in 1959 and became president of the university by 1960. Did you all have contact with him? Were you all aware of his background?

General House: Thank you very much for that question. I'll take the last part and answer it first. I didn't have daily interaction with General Rudder. The only students, the only cadets, who did were either really good or really bad, and I was neither. I did get a chance to meet with him privately, right before I went to Vietnam, just months before he died, when he was still president of the university. I'll never forget what he told me. I was a second lieutenant at the time and had come to visit a professor here. The professor asked me, "Do you have your uniform?" I was headed to Vietnam and the uniform was in my pickup truck, so I answered, "Sure." He got on the phone and called the president's outer office and said, "Let's go see the president." So I walked in there in my greens. General Rudder asked a few questions and then said, "Well, you're headed to Vietnam. You've got to do two things. You've got to accomplish the missions to standard, and you've got to take care of the troops. If you do those two things, you'll be a pretty good officer."

I'll never forget that. I do have a favorite story about General Rudder, though. In September 1963 I'm sure Pat was in the same dormitory I was, and it was our first or second night on campus. General Rudder was down on the basketball floor with a microphone, and he was talking to us about "Aggieland" and some of the leadership pieces that Pat talked about and then he said, "Let me tell you about taking Pointe-du-Hoc on the 6th of June 1944." I have to tell you that I didn't know then where Pointe-du-Hoc was, but I listened intently, and he told us about training in England and commanding the Second Rangers and climbing up the cliffs. I was entranced. At about that time, a Texas thunderstorm came in and blew out the electricity. It went pitch dark and of course the general's microphone went out, but nobody said a word, nobody moved. He just kept talking; his voice came out of the blackness. He talked to us about bayonets and Germans and stuff. About the time he was finished with his presentation, the lights came back on, and I remember telling my Fish buddy, "This guy's really good."

General Rudder was very close to Lyndon Johnson and Sam Rayburn. He wasn't an educator, per se, but some of the things he did on his watch really made a difference. When Pat and I came here, it was still A&M College. I think it was in the year before we arrived that you could choose whether your class ring said Texas A&M College or Texas A&M University. Rudder made the decision and had gotten the support to change the institution from Texas A&M College to Texas A&M University. This wasn't a trivial decision, not with all the for-

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mer students who'd say, "I don't want us to be university, we're TA&MC." Rudder overcame their reservations because of the power of his personality and his great political contacts.

The second thing he did was to make the Corps of Cadets voluntary. When I got here, when Pat got here, the total enrollment was about 9,000 or 10,000 students, and 7,000 of them were in the corps. Most of the rest were in veterinary school; a few were graduate students who were veterans. So you knew when you came to A&M you were in the corps. Rudder changed that. Not many people had the clout to do it, but he was right to do it at the time.

The third thing he did was to admit women to the college. When I speak to students, and I do mentoring here, the main thing they complain about is the parking. They have one parking complaint after another, and I tell them, "When I was a cadet what we complained about was the fact that there were no women. I have to tell you, between no parking and no women, I'll take no parking any time." In 1964 Rudder rammed co-education through the Texas legislature. Elise Gamble was living here on campus. Her daddy was working at A&M, and she was one of the first co-eds. I think there were only nine women that semester because the legislation came in August and school started in September. There were no women's latrines. There seemed no way you could really do what had to be done, but General Rudder made things happen.

The fourth thing he did, for which all of you who are Aggies today should be grateful, was to maintain Texas A&M as a land grant college. At the time, land grant colleges across the nation were becoming state universities, and we were to become Texas State University. General Rudder went to see Sam Rayburn and told him, "We will always be Texas A&M."

So those are my stories of General Rudder. I believe he made a tremendous impact on Texas A&M as we know it today. Thank you for the question.

Audience Member: Texas A&M in the 1950s and 1960s was steeped in machismo, in Texas conservatism. How did you deal with the introduction of women and with diversity in the program, given the era from which you came?

General Gamble: I'll start off by saying that in 1993 I was the commandant of cadets, 34th Training Wing, at the Air Force Academy, in what I unequivocally tell people was the toughest, most personally enlightening job I ever had in the Air Force. It took every ounce of intellectual capacity to deal with people and work people issues. It competes with the job of unit commander because, I think, the more senior you get and the more responsibility you have, the more you realize that people issues are the ones that occupy your time. It doesn't matter whether you're in a staff job or whether you're a commander: You deal with them intellectually. You sit down, and you think them through, and you realize that each case has to be considered on its individual merits. I discovered this particularly when I was the commandant. Before that, I'd been a wing commander

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and a squadron commander, and I approached the commandant's job applying the same lessons I'd learned from the beginning. The fundamental blocking and tackling issues are people issues and the problems associated with them.

I alluded to this with respect to young people. A military school has unique problems as I see it. Others may see it differently; we're certainly analyzing that now, very carefully. But as I saw it then, you had seventeen-to-twenty-two-year-olds of both genders; you had them living in the same environment, and the physiology of the changes between a seventeen-year-old and a twenty-two-year-old is a fact of life. Certain patterns of human behavior cannot be countered; they have to be co-opted. Putting men and women together in a close environment, under stress like that, then, for four years, having whatever society gives you, that's the key. Society's been in constant flux in terms of its values, and the kids we had were the kids of parents whose values had changed considerably from the values I was familiar with. What these kids could get away with in their high school halls were things that would get them bounced out of the academy. When they walked in our door, we had four years to change them, make them meet Air Force standards, and walk out our door as second lieutenants.

We had what I called the Great Social Experiment, and I honestly didn't know if it would be successful. We weren't getting the same kinds of people who came in when the academy opened in the late 1950s, and subsequently through the 1960s. I don't mean to indict them, because everything that our chief of staff said about their being wonderful, courageous, and willing to step forward and do what the country asks them to do, is true. These young people are Americans, part of a great nation. They're terrific.

But I'm talking about determining, for example, the honor code. As I looked at honor violations, my view at the time was this: The only difference between eighteen-year-olds who come to a higher-level institution like the Air Force Academy and those who go to Florida State, or those who don't go to college at all, is intellectual capacity, what God gave them in terms of "smarts." Only a little bit of difference determined whether they went one way or the other. In terms of what society had given them, in terms of mores and values, of what they'd received from home, or hadn't received, both groups were the same. Math SAT scores of academy-bound cadets were higher than those of the other kids, but all came from the same schools, the same families. The imprint that they had as seventeen- or eighteen-year-olds was the same for all when they walked in our door. What I found out was, three days after they walked in, we made them raise their hands and take an oath, the honor code. I was convinced by the time I left there that they had no idea of what an oath was when they took it.

I'd talk to them, give them little scenarios. I'd say something like, "Let me describe a situation and you tell me whether you think lying or cheating were involved." They'd say, "No, that's not lying," or "No, that's not cheating." Then I'd say, "Yes, it is." They'd say, "No, it's not." I realized we weren't on the same wavelength, and in three days we were bouncing out kids who had no idea of

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what honor meant. We were developing good programs that would teach them, stepwise over the years, so that by the time they left us, they'd know exactly what honor meant. But in three days, I wasn't sure if they understood what human relations were about, what lying and cheating were about, and what values were about. They needed a lot of the valuable education and training that institutions like A&M bring to our lieutenants who go into the service. They have a huge task to accomplish in four years because what society had imprinted on the kids who came to us in the 1950s and '60s is so different from what society imprints on the kids who come to us today. As I said, certain attributes of our young people don't change, because they're Americans. Courage and a willingness to be part of the team and to step up and assume responsibility and then do the right thing when nobody's looking are what you hope you can teach them before they become lieutenants. I don't have pat answers.

I remember turning to the dean and saying, "Dean, you've got 535 officers instructing here at the academy. How many of these social scientist, Ph.D.-level people are addressing this social problem today so that when the next group arrives here in four years we'll have a better way to deal with what's a huge issue?" It needs rigorous analysis. You can't just take a guy out of a fighter cockpit and put him in here and say, "Okay, make it work." That's just winging it, which doesn't work here or anywhere else. What we have is a social problem that needs real attention. The institution, I think, has to put its resources and efforts into solving it, and that's exactly what we're doing today.

Am I confident that what we're doing will work? I'm confident that what we're doing is right. I still think we have a great social task, a tough row to hoe. The things that are wrong will be identified and corrected, whether they're here at Texas A&M, whether they're things having to do with gender or hazing, and whether these are the same old things that have gone on for years and years. We're addressing those things, in my opinion, for the right reason, to imbue values, in a way today that's far more productive than it was before. Before, what we did was more for macho reasons and the traditional reasons of the institution rather than for producing second lieutenants, so that once they were launched, you didn't tell them they were going to be generals. You'd say, "I'm going to give you the tools to be the best second lieutenants you can be, and once you land as second lieutenants, you're on your own. You've got the tools, use them. You'll face competition, and we'll give you a leg up on that competition. If you remember the good things and do your best, you're going to be successful."

I think that's what you can tell second lieutenants coming from our institutions today. When they graduate, we're going to give them the tools to be successful. But the process that produces them is still very difficult, and it needs more analysis and more work. I think now, more than ever, that's occurring. I see it here at A&M. We certainly see it at the academy. The other military institutions might not be on the front page of the paper, but I'm sure that doesn't mean they're not just as busy doing the same things we're talking about here.

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Geopolitics and Astropolitik: A Framework for Outer Space Strategy

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It's both a pleasure and an honor to address this conference celebrating the first century of air power leadership. It's my charge to broaden the mandate of the conference and point out that the modern vision of air power isn't air alone; it encompasses both air and space power. Consequently, I'm here not to speak of air power leadership so much as to speak of space power leadership, a niche I trust you'll find provocative and perhaps even enjoyable. I begin with a popular question in current discussions of air power leadership, and then pose a similar query for space.

In 1982 Lt. Col. Timothy Klein asked simply, "Where have all the Mitchells gone?"[1] The air power leaders Klein observed about him were efficient, industrious, and quiet. Nowhere, he asserted, could be found the bombastic and irascible presence of an air power zealot the rank of America's Billy Mitchell, Italy's Giulio Douhet, or even Britain's Hugh Trenchard. Indeed, the modern Air Force seems to eschew the maverick pilot who carves out a place in the popular imagination, separated from and above the control of proper chain of command. Successful leadership in the new Air Force tends to be managerial, Klein argued, much more in the mold of business efficacy than of reckless derring-do. Careful husbanding of resources is valued over boldness, caution over ardent spirit, the prospect of planned evolutionary change over breakthrough innovation. Promising more than might be delivered is thought to be a sure path to failure. Such entrepreneurial individualism as Mitchell displayed may even cut against the grain of a proud tradition of service and subordination to civilian authority.

My good friend and colleague, David Mets, has pointed out that such a melancholic longing for heroes past may be ill-placed. Perhaps he suggests a more useful question: "Do we really want more Mitchells?" Would such eccentric nonconformists be appropriate or even useful in the very successful and professional Air Force of today? And, given the iconic status that Mitchell has achieved over the years and the disputed positive role he may have had in air power legend, it may be worth questioning whether Mitchell himself was truly a Mitchell. Whether the Air Force today is bereft of Mitchells and whether this

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is for its detriment or betterment we may never determine. What's interesting is that the giants of air power seem to have reigned prominently in the first half of the first century of air power.

It's now been over forty years since the first manned space flight sent Soviet cosmonaut Yuri Gagarin into orbit. The event was far more publicized, and perhaps considered far more momentous, than that first human flight at Kitty Hawk. Massive public spending in support of national space programs had been well underway before the event, dwarfing the amateur efforts of garage-scale aviation pioneers and tapping into the energy and talents of tens of thousands of scientists, engineers, and space enthusiasts. Here we are, possibly already past the golden age of space exploration, unable even to long for equivalent visionaries of space power, for such simply have not risen above the many capable and proficient stewards of the world's military space programs. There are no space Mitchells to miss.

In 1996 Colin Gray's short article, "The Influence of Space Power upon History," appeared.[2] Its last line asked simply, "Where is the Mahan of the Final Frontier?" How is it that this new ocean has failed to spawn a strategic theorist of the rank of America's Capt. Alfred Thayer Mahan, or Britain's Julian Corbett? This is an enticing question. Why have land, sea, air, and, as I will show, even rail power managed to spawn titanic prophets of change, and yet outer space, the most imaginatively visionary arena of all, has not? This isn't to suggest that space hasn't had great leadership. It has. A succession of great Air Force generals, starting with Bernard Schriever and Hoyt Vandenberg, and, in my personal experience, John Piotrowski and Robert Herres, have made their marks in the Air Force annals of space power. These men represent the very best of not just space leadership, but of post–World War II Air Force leadership. So where is the Mahan of space?

It's possible that a space Mahan or a space Mitchell simply cannot come to the fore. The conditions that create military visionaries in the early development of new technologies applied in the cauldron of war are generally absent in space. From its very inception, for example, humanity's entry into the cosmos was tied inextricably to the specter of nuclear missile annihilation. Every operational space launch vehicle today began as, or was adapted from, a ballistic missile program. These weapons of war, beginning with Germany's vaunted V–2, were from inception carriers of terror and broad destruction. The desire of most who worked on the manned space program of the United States was that it would not usher in a new era of totally destructive war but would usher in an era of peace and cooperation. It may be that there's no room for military power zealots to thrive in such an environment.

Moreover, space exploration carried no mandate for national destiny that propelled the passions of earlier zealots. For them, the future belonged to the great nations, those ready and willing to seize the mantle of leadership and to force, if necessary, states of lesser vision to bend to their will. To the contrary, humankind

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was expected to enter space in a powerful show of borderless unity. Only the smartest and the most physically fit are chosen to enter space as representatives not only of their countries and families, but of all of humanity. Likewise, in the postwar age of democratization that nurtured early space exploration, not lost on the Air Force's rank and file, a notion that the best and brightest of even the lowest ranks could contribute and succeed under propitious conditions further stunted the emergence of zealots. Mitchell, Mahan, and others like them were elites of the upper classes, imbued with a surety of belief that they were born to greatness. The military aristocracy of cadre interwar militaries that generated past visionaries was suborned to the massive standing militaries of the Cold War era.

Ultimately, it's because so many have been willing to send into the heavens only the best of humanity, shed of atavistic impulses and prepared to join a larger community—and not use space as a base for national or individual power, or manipulate its characteristics for greed or honor—that military visionaries haven't stepped forward to declare a new manifest destiny for the state that seizes and controls space. Military applications for space, in this environment, aren't likely to capture the popular imagination and propel their advocates to hero status. Quite the opposite; such persons would be labeled villainous.

Because leadership in space strategy and development is more closely associated with worldviews than individuals, I must continue with a treatise on theory. Although I'm sure it's not what you expected, I trust you'll find it enlightening.

Current international relations political theory generally divides the panoply of worldviews into three broad outlooks: Wilsonian idealism or liberalism, Marxist collectivism or socialism, and Hobbesian realism. Arguably the most prevalent of these is the last, yet it's been conspicuously absent in academic and theoretical debates concerning space exploration. Wilsonian idealism is based on the tenets of a peaceful and democratic world order as espoused by Woodrow Wilson. It includes the notions that law and institutions are important factors leading to peace and that weapons are a basic cause of war. Hence, prevention of space weaponization through treaties and existing international organizations is its key pillar of space exploration. Equally prominent in the history of space development—because of the bipolar power structure of world politics through most of its developmental stage—has been the position of Marxist-inspired collectivists, who insist that space should not be appropriated by the nations or corporations of the Earth, and that whatever bounty is realized there must be shared by all peoples. Collectivist efforts are generally focused on legal and moral arguments binding states in a system of global wealth-sharing. Hobbesian realists, inspired by the political teachings of Thomas Hobbes, generally perceive the condition known as anarchy—that awful time when no higher power constrains the base impulses of men and states, and both survive by strength and wit alone—to be the true condition of international relations. Might indeed makes right to these theorists, if not morally, certainly in fact. For them, states exist in

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a perpetual condition of war. Periods between combat are best understood as preparation for the next, inevitable conflict. The harshest view in this group is called realpolitik.

For the reasons outlined in the discussion of leadership above, the realist view has been set aside as states jockey for international space leadership. Accordingly, the debate hasn't been about whether or not space should be weaponized, but about how best to prevent its being weaponized; not about whether space should be developed commercially, but about how to ensure that the spoils of space are distributed fairly to all. There's been no room for the view that states persist as the primary agents in international relations, nor that state-based capitalist exploitation of outer space would more efficiently reap and distribute any riches found there. It's for these reasons, I insist here and in several other venues, that space exploration and exploitation have been artificially stunted from what might have been. If little profit can be made legally from space, for example, little incentive exists for private corporations or nations to spend great efforts developing its commercial potential. It occurred to me that an injection of realist thought was precisely what the great space debate needed to jolt it from its post–Moon landing sluggishness. My intent was to add the third point of a theoretical triangle in an arena where it had been missing, so as to center the debate on a true midpoint of beliefs, not along the radical axis of two of the three worldviews. So I developed a harsh realist statement of space theory called, appropriately, astropolitik.

Beginning with an examination of one of the oldest and harshest lines of realist strategic thought, clustered under the heading of geopolitics, I'm asserting that the application of space technology is simply the latest in a logical line of techno-innovations in the continuing process of refining geopolitical theory. In this presentation the essential quality of classical geopolitics is captured, and its reach extended to the realm of outer space, a transition called astropolitics and, where appropriate, astropolitik.[3] If geopolitical theory developed for the Earth and its atmosphere can be transferred to outer space, then, *a fortiori*, the utility and value of its fundamental concepts and holistic design remain relevant, and are suitable for a set of revised or neoclassical geopolitical propositions.

In its narrowest construct, then, astropolitics and astropolitik are the extension of primarily nineteenth and twentieth century theories of global geopolitics into the vast context of the human conquest of outer space. In its more general and encompassing interpretation, it's the application of a prominent and refined realist vision of state competition into outer space policy, particularly the development and evolution of a legal and political regime for humanity's entry into the cosmos. Though historians have done an adequate job of describing the realist, even harsh realpolitik view of humanity's tendency toward confrontational diplomatic exchange in the chronology of space exploration, no similar effort has been made to place a stringent conceptual framework around and among the many vectors of space policies and chronicles.[4]

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Thus I propose combining the elements of space and politics recognized as realist into their proper places in space strategy. While it may seem barbaric in this modern era to continue to assert the primacy of war and violence—"high politics" in the realist vernacular—in formulations of state strategy, it would be disingenuous and even reckless to try to deny the continued preeminence of the terrestrial state and the place of military action in the short history and near future of space operations. In the process, I explore five primary propositions:

1) Many classical geopolitical theories of national military development are fully compatible with, and will prove readily adaptable to, the realm of outer space.

2) The most applicable of these theories will be concerned with military power assessments of geographical position in light of new technologies. Such assessments have been made for sea, rail, and air power and can be viewed with analytic perspicacity as segments of an evolutionary process. Space power is their logical and apparent heir.

3) The special terrain of solar space dictates tactics and strategies for efficient exploitation of space resources. These strategies impact on political development, highlighting the geo/astrodeterminist political relationship.

4) The concept of space as a power base in classical, especially German, geopolitical thought will require some modification, but will easily conform to the notion of the exploitation and use of outer space as an ultimate national power base.

5) Finally, a thorough understanding of the astromechanical and physical demarcations of outer space can prove useful to political planners and will prove absolutely critical to military strategists. An optimum deployment of space assets is essential for victory on the current terrestrial and future space-based battlefield.

Since I've constructed astropolitik from geopolitical predecessors, some definitions are necessary to set the terms of the argument. Geopolitics is the study of states as spatial phenomena and the geographical bases of their power. This definition accounts for the object (states) and format (geocentric or global worldview) of study. It also points to the locus of interest (power) and suggests the hard realist paradigm with its *ultima ratio* of violence as the primary expression of state power. Geodeterminism is the tenet that geographic location—influenced by such factors as climate, availability of natural resources or endowments, and topographic features including mountains, plains, rivers, and oceans—ultimately decides the character of a population and the type of government and military forces that emerge. When the military planner accounts for the largest-scale effects of topography to influence decisions on deployment of forces, he invokes geostrategy. Geostrategy is concerned with the worldview,

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and is therefore quite distinct from tactical, operational, or conventional strategic military thinking. Ideally, geostrategists attempt to gain a global advantage over competing states. In lieu of that eventuality, they attempt to deny the geographically preadvantaged state's potential domination through the maximization of scarce geopositional resources.

Flowing from geodeterminism are theories of the organic state. In this view, the state is perceived as a living organism so that analogies to individuals and species can be made. Beginning with the benign domestic analogy, the notion that what's good for the individual is good for the state, a social and political construct is made. Such theories naturally tend toward social Darwinism and are used to justify some natural basis for the superiority of one people or state over another. When combined with geostrategy, the outcome is a necessarily competitive worldview. The most radical of these hybrids was the German school of geopolitik, developed in the 1920s and '30s and perverted into a pseudoscientific and abhorrently racist action plan for the Nazi domination of Eurasia. So compelling and seductive is the logic of organic state theory that I've named my work after it—not to champion its methods or the outcomes that have arisen, but so that the reader can never forget the depths to which this useful line of theory once sank. By keeping its tainted memory constantly at the forefront of astropolitik analysis, we don't have to repeat its mistakes.

From these historic tendrils, we can draw out similar distinctions in astropolitics, here defined as the relationship between outer space terrain and technology and development of political and military policy. From this I'll draw out astrostrategy, the identification of critical terrestrial and outer space locations, the control of which can provide military and political dominance of outer space or at a minimum insure against the dominance of an opponent. I'll then devise a harsh astropolitik strategy, a determinist political worldview that manipulates the relationship between state power and outer space control for the purpose of extending the dominance of a single state or people over the whole of the Earth. This is the radical argument that I believe stretches the debate over space exploitation to its fullest extremes.

The influence of emerging technologies on geography, in essence the practical shrinking of the Earth, is the foundation of geopolitical strategists' thought. A protogeostrategist who fully grasped this relationship was German economist Friedrich List.[5] He recognized that the incorporation of railroad technology would fundamentally alter the political relations of the major powers in Europe. He saw a national rail network as the cement of German unification, changing the strategic position of Germany from the beleaguered battleground of Europe to a defensive bulwark operating with the advantages of interior lines. The military importance of rail power that List described in 1833 was overwhelmingly validated in the American Civil War and most emphatically so in the Franco-Prussian War. Today, global or strategic satellite networks can provide the same advantages of interior lines that List so passionately advocated for

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operational ground combat. Quick redeployment of military assets, efficient monitoring of all fronts, and to a significant degree, a nationalistic sense of unification are all enhanced from the external lines of space orbit.

Perhaps the most memorable of the geostrategists was Britain's Sir Halford Mackinder.[6] His geopolitical worldview was that history could be interpreted as a grand cyclical competition between land- and sea-power states, and he foresaw the end of Columbian-era naval dominance with the advent of the railroad. Mackinder divided the globe into three primary regions: the Heartland, or pivot area (with a Russian tenant); the Inner Crescent, the marginal lands surrounding the Heartland's periphery (including Western Europe, the Middle East, the Indian subcontinent, and China); and the Outer Crescent, those regions separated from the Heartland and Inner Crescent by water (including the entire Western Hemisphere, Britain, Japan, and Australia). Each region defined a function in the international state system, the most important of which was the Outer Crescent's mandate to prevent consolidation of the vast Heartland, a purpose made problematic with the technological innovation of the railroad. This emerging capacity would allow the efficient consolidation of the enormous landmass of Eurasia under a single state, one that would give rise to an impregnable land power that couldn't be defeated from the sea. In time, the immeasurable natural resources of the Heartland state would allow it to construct a navy that, for sheer numbers alone, could overwhelm the peripheral sea powers. Inevitably, the world would be a single empire ruled from its natural core.

The key dynamic was the change in transportation technology and the importance of military mobility. When the horse was domesticated and bred to allow for the unnatural weight of a rider, the primacy of cavalry emerged and the medieval dominance of the central steppe hordes was assured. Grand improvements in sailing technologies allowed the seafaring states of Europe to encircle the central Heartland and efficiently patrol its borders, shifting power as necessary to contain the mighty interior, the efficiency and speed of sea movement effectively cancelling the advantage of interior lines. The advent of steam power and the railroad initially accelerated this condition, as the first short-range railroads simply fed goods and supplies into oceanic commerce that were hitherto inaccessible. But, as railroads grew to transcontinental scope, the balance of power appeared to revert to land-power states, to the Heartland.

Until the railroad, sea power's advantage was its virtual monopoly on force projection over the world's most efficient trade routes. Railroads, Mackinder reasoned, would fundamentally alter the global equation and allow Eurasia's land-based powers to regain the dominance they held when cavalry reigned supreme. The Heartland, impervious to deep power projection from the sea and endowed with the resources necessary to build a monolithic military force, eventually would consolidate under a single state that could conquer the world. The Outer Crescent powers were natural allies who could retard the development of the Heartland's power by maintaining strict control of the sea and encouraging

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continuous warfare among the fragmented Heartland and Inner Crescent states to prevent them from turning their capacities outward. Crucial to Mackinder's theory was the notion that if a state desired control but could not physically occupy the critical keys to geodetermined power, then it must deny control of those areas to its adversaries. Absolutely crucial to the continued welfare of the Outer Crescent states was preemption of the formation of a powerful eastern European state, for, "Who rules East Europe commands the Heartland. Who rules the Heartland commands the World Island. Who rules the World Island commands the World."[7] In the discussion of strategic terrain in outer space that follows, the Mackinderian view is prevalent.

Sea power predates rail power most assuredly, and advocates of strong navies were evident long before List, but the first true geostrategic advocate of sea power was the American naval officer, Alfred Thayer Mahan. Mahan believed that maritime power was the key to great power status and this power was to an overwhelming extent geodetermined. Mahan argued that a national geographic position allowing for the concentration of naval forces (and, when appropriate, their dispersion) was paramount in the state-power equation. In addition, the maritime state must be endowed with a suitable "frontier" seaboard, studded with "numerous and deep harbors" combined with ready access to the open ocean, and "a population proportioned to the extent of the sea-coast which it had to defend."[8] In the realm of astrostrategy, I'll show that there are analogies to a suitable frontier or coastline in space and that, instead of harbors, the spacefaring nation must be endowed (or have access to) effective land-based launch, monitoring, and control sites.

Such advantageous physical features alone wouldn't ensure that the seafaring state had the tools necessary for maritime dominance, however. The character of a nation's people must also be specially endowed. They must at the very least be appreciative of the value of sea-based activity, if not wholly immersed in it. They must be commercially aggressive, rational profit-seekers who recognize the potential bounty of sea trade and who through hard work and persistence will achieve wealth from it. This citizenry will form the peacetime commercial fleet, gaining the skills and experience necessary to make a vast national reserve for mobilization in conflict, at all times supporting through their taxes and other contributions the vibrancy of the sea-based national enterprise. The government, too, must be outfitted with appropriate institutions and political officeholders ready and able to recognize and take advantage of the state's position and attributes. Such a national character is evident in the potential for success in space endeavors, too. All spacefaring nations have attempted to tap into a national fascination with space exploration if not directly to manipulate their populations with promises of vast profits and adventure.

Mahan saw the sea as a "wide common, over which men may pass in all directions, but on which some well-worn paths emerge for controlling reasons."[9] These controlling reasons were predicated on the efficient movement of goods,

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and the geography of the Earth provided natural corridors of trade. The state that could control these corridors would realize such enormous commercial benefits that through its subsequent wealth it would dominate other states both militarily and politically. Crucial to his theory was a discussion of chokepoints, globally strategic narrow waterways dominated by point locations. It's not necessary, Mahan argued, for a state to have control of every point on the sea to command it. In fact, such a strategy would be worse than useless. The military force required would drain every scintilla of profit from trade, not to mention every able-bodied seaman more usefully engaged in commerce. Instead, a smaller but highly trained and equipped force carefully deployed to control the bottlenecks of the major sea-lanes would suffice. Control of these few geographically determined locations would guarantee dominance over military movement and world trade to the overseeing state.

For the United States, Mahan advocated the establishment of naval bases at strategic locations (including Hawaii, the Philippines, and some Caribbean islands) and the construction of a canal linking the Pacific and Atlantic Oceans. Thus if a natural chokepoint didn't exist, it was possible in some cases for the forward-looking state to create one, and in the process eliminate a source of potential weakness. Moreover, this particular undertaking would alter the world's existing trade routes, bringing the "interests of the other great nations, the European nations, close along our shores."[10] Mahan was adamant that the United States must take its place among the world's great powers, and his ultimate aim in advocating a canal in Panama was not the strategic efficiency that might be created, but the necessity it would entail for America to become a global power.

With the demise of its Cold War peer competitor, the United States has the luxury of reducing its land, sea, and air forces and channeling increasing monies and efforts into its space activities. Whether it will do so remains to be seen. It may, however, be unable to avoid its newfound space responsibilities. In a bit of a stretch, the United States may already have created its first Panama Canal in space. The Navstar-GPS navigational satellite network was originally deployed to enhance American military power, but because of its subsequent utility to global commercial navigation, the network has become indispensable, and the United States Air Force now finds itself in the curious position of having to maintain from its own funds an asset that contributes billions of dollars to the world economy. The creation and maintenance of global space-based communications and navigation systems, clearly modern informational chokepoints as the world becomes increasingly reliant on these assets, has brought the interests of other states quite close along our astropolitical shores. The United States must be ready and prepared to commit to the defense and maintenance of these assets or abrogate its power to a state willing and able to do so.

Britain's rise to power came, Mahan believed, because it had exploited its location across the sea routes of Europe. Because the efficient movement of

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goods and capital in the nineteenth century was a factor of sea capacity, the nation or nations that controlled the most modern navies and the world's critical chokepoints could dominate the lanes of commerce and thus the economic lifelines of an increasingly interdependent globe. A modern astrostrategist can and should make similar arguments. Because of their advantages in fuel efficiency, specific orbits and transit routes in space create natural corridors of movement and commerce. Space, like the sea, can potentially be traversed in any manner of direction, but because of gravity wells and the forbidding cost of getting fuel to orbit, over time, spacefaring nations will develop specific pathways of heaviest traffic. The state that most efficiently occupies or controls them can ensure itself domination of space commerce and, ultimately, of terrestrial politics.

Geopolitics is perhaps the most adept body of international theory when applied by a state dealing with systemic change, and geostrategists have been remarkably prescient in their ability to project the effects of a specific new technology on the extant state system. In the last hundred years, the pace of technological change has been breathtaking, and geostrategists have weighed in all along the way. H. G. Wells, for example, was one of the first to recognize a coming revolution in military doctrine and tactics with the arrival of the combustion engine and the automobile and was able to heavily influence British strategy prior to World War I. Of note is Wells's description of the impact of the "land ironclad," a mobile fortress that was much larger than, but was essentially the harbinger of, the modern armored tank.[11] Many others followed Wells, the most notable among them enamored with the growth of air power.

The first of the air power theorists was Giulio Douhet, an Italian air marshal who wrote extensively of the coming revolution to be caused by air power. Though his vision was far-reaching, even he didn't recognize the full impact of this new dimension on the battlefield. Douhet insisted, for example, that "aerial bombardment can never hope to achieve the accuracy of artillery fire."[12] Despite the fact that aircraft were essentially unimpeded by Earth's surface features (a critical change in the evolution toward astropolitics), they were limited by critical air routes, which required precisely located take-off and landing fields and effective maintenance and repair facilities at major centers.

The American Army Air Corps's Brig. Gen. Billy Mitchell accepted Douhet's view that air bases represented vital centers of military operations and he worked assiduously to extend theory into practice. In 1925 Mitchell professed that for America in the air age Alaska had surpassed Mahan's Panama as a strategic focus. Aircraft based there could maximize their radius of action against potential foes. The visions of these theorists shaped the future of air power, and the tenets they professed could shape the future of space power. As the air age gives way to, or at least coincides with, the space age, much can be learned and adapted from their vision.

Finally, Russian-born American industrialist Alexander de Seversky transposed the air model to a three-dimensional depiction of the Earth, and from this

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perspective he determined that the geographically important areas of decisive action were, after World War II, over the Arctic regions that separated the United States and the USSR most directly. This perspective of the Earth as a sphere in space, and not a flat Mercator projection, allows for the conceptual transition to an astropolitik worldview.

I've asserted that the classical concepts of geopolitics are remarkably transferable to the terrain of outer space. Indeed, I claim that the application of space technology is simply the latest in a logical line of techno-innovations in the continuing process of refining geopolitical theory. I've found it necessary, then, to refine my argument and apply theory directly to the physical properties of space. Like Earth, space has topography, is rich in gravitational mountains and valleys. It contains vast untapped energy and material reserves that are alternately dispersed and concentrated. Danger zones of deadly radiation have been charted, and peculiar anomalies of orbital mechanics have been discovered. On the basis of these realities, solar space can be divided into four distinct regions, which are created, separated, and defined primarily on the mathematical tenets of orbital mechanics:

1) *Terra* includes the atmosphere, from the surface of Earth to just below the lowest altitude capable of supporting unpowered orbit. Here the atmosphere is the conceptual equivalent of a coastal area for outer space. All objects entering from Earth into orbit and reentering from space must pass through it. It lies on the surface of the Earth, *terra*, where all current space launches; command and control; tracking; data downlink; research and development; production; antisatellite; and most servicing, repair, and storage operations are performed. *Terra* is the only region or model that's concerned with traditional topography (continental forms, oceans, etc.) in the classic geopolitical sense.

2) *Near-Earth space* ranges from the lowest viable orbit to just beyond geostationary altitude. Near-Earth space is the operating medium for the military's most advanced reconnaissance and navigation satellites and for all current and planned space-based weaponry. At its lower end, near-Earth space is the region of post-thrust medium- and long-range ballistic missile flight. At its opposite end, near-Earth space includes the tremendously valuable geostationary belt. Currently, near-Earth space is the most critical arena for astropolitics.

3) *Lunar space* is the region just beyond geostationary orbit to just beyond lunar orbit. Earth's Moon is the only visible physical feature evident in the region, but is just one of several strategic positions located there. Included are the Lagrange libration points (named for the eighteenth century French mathematician who first postulated their existence). These are locations where the gravities of orbiting bodies (Earth and its Moon) effectively can-

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cel out each other. The potential military and commercial value of a point in space that's virtually stable is highly speculative but imaginatively immense. The occupation and control of these points is of such vital importance to many space professionals that an advocacy group called the L–5 Society was formed to influence national policymakers (L–5 has been absorbed into the National Space Society, where many of its former members are now primary officers).

4) *Solar space* consists of everything in the solar system (that is, within the gravity well of the Sun) beyond the orbit of Earth's Moon. The exploitation of solar space is the next major goal for manned missions and eventual permanent human colonization. The near planets (Mars and Venus), the Jovian and Saturnian moons, and the many large asteroids in the asteroid belt undoubtedly contain the raw materials necessary to ignite a neoindustrial age. From a defined astropolitik point of view, solar space also contains the *lebensraum* for a burgeoning population on Earth.

Additionally, astropolitics describes critical areas or potential chokepoints in space as those stable areas (including the planets, moons, asteroids, and libration points) where future military and commercial enterprises will congregate. These are the coming ports of space, collocated with the valuable mineral and energy resources estimated to be there, Mahanian way stations on the various routes to these resources. Inextricably tied to these ports are the lanes of commerce of space, specific routes of travel that are easy to project. Unlike popular science fiction movies and television, spacecraft do not travel under continuous energy discharge. Energy bursts are used to change vector and velocity, primarily for orbit maintenance or orbit transfer. To be sure, the currently most important factor in space travel is conservation of fuel, and therefore the most important constant in the space travel equation is delta-*v***,** denoting change in velocity. Delta-*v* determines the cost of space travel because it's essentially an indirect measure of the amount of thrust (read "fuel") that gets spacecraft from point A to point B, given the relative velocity of the two points and the amount of time desired to get to them. A body in motion in space will remain in constant motion until an outside force acts upon it. The outside force of consequence is gravity. If dollars are the currency of economics and power is the currency of realist models of political behavior, then delta-*v* is undoubtedly the currency of astropolitics.

The most efficient way to get from orbit A to orbit B (the proper language of interplanetary space travel) is the Hohmann transfer. This maneuver is a two-step change in delta-*v*. Engines are first fired to accelerate the spacecraft into a higher orbit or to decelerate it to a lower orbit. When the target orbit is intersected, the engines fire again to circularize and stabilize the final orbit. This standard maneuver is so valuable for the conservation of fuel that future lanes of commerce and military logistics in space will be Hohmann transfer orbits between

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strategic orbits and stable spaceports. The British ruled their vast empire by controlling a few critical outposts. Similarly, whoever occupies critical space chokepoints—terrestrial launch facilities; low Earth orbit in near-Earth space; the Moon and libration points in lunar space; and the planets, primary asteroids, and major moons of solar space—will be guaranteed dominance and control of space lines of communication and commerce.

The final zone of space to be considered is *terra*, Earth itself. Ultimately, efficiency and economy will dictate that all essential space operations, including construction and launch, tracking and control, and various forms of commerce will occur in space. For now, however, all of these functions are earthbound. The importance of *terra* will not diminish, nor will the necessity of political control over it. The astropolitical question, given current realities, is simply where to place the vital centers on Earth to obtain the greatest efficiency? Here I will discuss launch center location as the example, in part because the originating launch site of a spacecraft has a significant impact on its orbit. The equator, for instance, has exceptional value especially for the launch of a spacecraft into geostationary orbit. This is because Earth's spin can assist in attaining orbital velocity, and Earth's relative velocity decreases from 1,670 kph at the equator to zero relative velocity at the poles. Because the minimum velocity necessary for climbing out of Earth's gravity well is just over 28,000 kph, a launch due east at the equator would have to achieve a speed of only 26,400 kph relative to achieve orbit. Conversely, a satellite launched due west along the equator would have to add 1,670 kph and, thus, would need to achieve a velocity of almost 29,700 kph relative to achieve orbit—a 3,300 kph difference. The fuel-delta-*v* impact is plain. To illustrate, a European rocket launched due east from the French Space Center at Kourou, French Guiana, just 5 degrees north of the equator, receives a 17 percent fuel efficiency advantage over an American rocket launched due east from Cape Canaveral, about 28.3 degrees north of the equator. In perhaps a more powerful example, a space shuttle launched due east from Cape Canaveral has a cargo capacity of 13,600 kg. A space shuttle launched due west from roughly the same latitude (from the U.S. Western Space Range at Vandenberg Air Force Base) can barely achieve orbit with its cargo bay empty.

Another factor in terrestrial launches is that the latitude of launch affects the inclination of the orbited spacecraft. Launches due east 90 degrees from Cape Canaveral will enter low Earth orbit at an inclination of 28.3 degrees. Indeed, launches due east from any site on Earth will have an inclination exactly the same as the launch latitude, given a two-stage direct insertion launch profile. Launches on any other azimuth will place a satellite into orbit at a greater inclination than the latitude of the site. Thus the launch site determines the minimum inclination, with a launch due east. A launch due west allows for the maximum inclination (in the case of the Cape, 151.7 degrees, or 180 minus 28.3). Launches due north or south will result in a polar orbit, that is, an inclination of 90 degrees relative to the equator.

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The polar, Sun-synchronized orbit is in fact one of the most important for military reconnaissance and weather imaging. A spacecraft placed into polar orbit passes over both the North and South Poles. If placed in a slightly retrograde motion—greater than 90 degrees inclination—this configuration allows satellites to eventually fly over every point on Earth, and to remain in sunlight at all times—extremely important for satellite cameras that image in the visible-light spectrum and for satellites that require continuous solar access for power. The most efficient launch azimuth for the placement of a satellite into a polar orbit is due north or due south.

A space launch center able to send rockets both due east and either due north or due south thus has distinct orbital efficiency advantages. Because rockets eject lower stages and occasionally destruct in flight, launch sites must have considerable downrange areas of open ocean or unpopulated landmass (at least 1,000 km). Optimum astropolitical launch points, those offering such areas, are the northern coast of Brazil, the east coast of Kenya, and any of several Pacific islands east of New Guinea. These locations are all sovereign national territories with astropolitical international importance.

With an astropolitik-defined context and a realpolitik purpose, it remains for us to imagine a strategy that a leading space nation should employ to maximize the advantageous principles of both worldviews.

The regime for outer space as typified by international agreement and committee action has ostensibly been created on the overarching principle that space is the common heritage of all mankind and on the norms that no nation should dominate there, that no large-scale military weaponry should be there, and that no large-scale military activities should occur there. The accepted rules and decisionmaking procedures of the contemporary outer space regime are summarily described in the many multilateral treaties negotiated among the world's spacefaring nations, primarily through the diplomatic channels of the United Nations. This regime is routinely hailed as a model of international accord, an extension of the most successful international agreements already in place, and a framework for subsequent treaties. That the regime was constructed by wary superstates trying to prevent one another from gaining permanent advantage there is of little import, and the fact that the accord continues to limp along doesn't refute the observation that consensus on space law and military activities has not been reached. Some of the leading treaties haven't been accepted by all countries, and outer space declarations by the United Nations have lacked the unanimity needed to provide authority. This absence of general accord on legal standards—and in a few instances, the lack of participation by the United States—is troublesome.

The *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies* (the Outer Space Treaty), signed into force in 1967, is the central document in the extant regime. Today, it has attracted ninety-six parties, including the United

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States and all the other major spacefaring countries, and another twenty-seven signatories. The Outer Space Treaty is of unlimited (i.e., permanent) duration. It was the modern world's second so-called non-armament accord. Subsequent to the 1959 Antarctic Treaty, it attempted to avoid a new form of colonial competition and the extension into the heavens of the Cold War's increasingly virulent military rivalry. In relatively brief form, the treaty provides the basic framework for international order in outer space, introducing principles that are expanded and elaborated upon in later documents.

Briefly, the Outer Space Treaty provides that the exploration and peaceful use of outer space is in the "common interest of all mankind" [Preamble]; that the exploration and use of outer space "shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind," that the exploration of space shall be open to "all States" in accordance with international law; and that the facilities established for the scientific investigation of the Moon and other celestial bodies shall be open with "free access to all" [Article I]. In addition, outer space, including the Moon and all celestial bodies, is not subject to national appropriation or claim of sovereignty [Article II]. The nations of the Earth shall "undertake not to place in orbit around the Earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction, install such weapons on celestial bodies, or station such weapons in outer space in any other manner." The treaty further stipulates that "the Moon and other celestial bodies shall be used by all States Parties to the Treaty exclusively for peaceful purposes. The establishment of military bases, installations, and fortifications, the testing of any type of weapons, and the conduct of military maneuvers on celestial bodies shall be forbidden" [Article IV]. In areas of commerce, nation-states shall be responsible for all national activities in outer space, "whether such activities are carried on by governmental agencies or by non-governmental entities" [Articles VI and VII], and the launching state "shall be internationally liable for damage to another State Party to the Treaty or to its natural or juridical persons by such object or its component parts on the Earth, in air space, or in outer space" [Article VII], effectively removing private competition from the cosmos.

From an astropolitik worldview, the legal regime in outer space, verified several times in subsequent treaties through the 1980s, is a stifling impediment to national power and economic well-being, despite its past utility as a check on Soviet expansion and an ambiguity that allowed the spinning of support for almost any activity (or the prohibiting of almost any activity). The time has come for a new regime constructed on a state-centric, capitalist worldview. The backing for such a change appears to be present in the current Bush administration. In its neoconservative view, with great power comes great responsibility. The United States owes it to the world to provide the structure for a vibrant global economy and a Pax Americana. The undergirding belief is that a hegemon of sufficient power can, for the good of all, benignly and unilaterally influence the

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principles and norms of a world regime and establish the rules and decision-making procedures necessary for world order.

Any new regime or strategy bent on achieving a Mahanian domination of outer space must at a minimum take into account and plan for six aspects or dimensions of sound leadership. The first attends to society and culture. The astropolitical society must be farsighted and enthusiastic for space exploration and conquest. It must be prepared to forgo expenditures on social programs and various personal commodities to channel maximum funding into a national space program. It must be imbued with national esprit. It must be industrious (to use Mahan's concept) and fascinated with new technologies and the acquisition thereof. It must revere science and the study of technology. It must be tolerant to accept the potentially paradigm-shifting revelations of scientific exploration at this magnitude of effort, and must be able to accept competing alternatives to scientific standards so that an academic marketplace of ideas can flourish. It must have a sense of adventure, or at least have a sector of society willing to undertake the tremendous risk involved in space exploration and make heroes of those who do. Society must consider space conquest a moral imperative, necessary to the survival of the human race; it must also perceive itself as best equipped to dominate in this arena so as to bring the best ethical and moral values of Earth into new realms. If society doesn't already incorporate these sentiments and attributes, state leaders must assume the responsibility of inculcating and nurturing them.

The political environment, the second aspect or dimension of astropolitical leadership, must also be considered. The astropolitical state must be efficiently organized for massive public technology projects (e.g., self-sustaining space stations). Perhaps counterintuitively, this means liberal democratic and capitalistic in character. The centrally planned economies of the twentieth century showed a fearsome ability to marshal resources and coerce populations into making the sacrifices necessary for constructing national space programs, but they were unable to sustain those programs at the highest levels. Related to the first dimension, and now part of strong state/weak state literature, are governments that rely on force or perceptions of efficiency for legitimacy (essentially authoritarian models). They must expend tremendous amounts of political and monetary resources in maintaining social order (police power) or economic competence (planned production through micromanagement). In the former instance, the authoritarian state gains legitimacy by its ability to project force, that is, to protect its citizens from both internal (criminal activities) and external (foreign militaries) harm. If it cannot monitor and control its population or protect it from foreign adventurism, it cannot justify outward expansion. In the latter case, the centrally planned economy must outperform the decentralized counterexample of the free market. Neither requirement is likely to be met in the astropolitical future. The liberal democratic state, to the contrary, receives its legitimacy from the will of the people. It shouldn't need to expend excessive funds on social con-

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trol. If its people are imbued with an astropolitical vision, they'll support tremendous space program expenses. The state wouldn't have to squander resources to force compliance. As to the economy, Marx recognized that free-market capitalism is the most efficient producer of wealth, and the historical record shows the folly of those who attempted to compete with free-market theory using other means and models. A free people committed to space exploration will generate the wealth necessary to sustain a long-term vision for space dominance.

The terrain of space and the terrestrial basing requirements for space support operations have already been discussed and need no further elaboration here. However, with respect to the third aspect or dimension of astropolitical leadership, the physical environment and the requirements of the spacefaring state are of interest. The state should be geographically large enough to incorporate a broad natural and industrial resource base and have the sites needed for terrestrial space support. It should also have a sufficiently large population able through taxation to bear the extreme expense of space dominance efforts and to continually renew the large number of inventive and technologist positions required to maintain its space operations.

The state's military and technology base is the fourth aspect or dimension of astropolitical leadership. Because of the danger involved, the military has always been at the forefront of space exploration. The military should be organized and trained such that it has the strongest initiative to deal with a multitude of contingencies and unanticipated events within the framework of a state-determined strategy and policy. The vast distances and communications lag inherent in space travel will require brazen ingenuity and formidable courage. To maximize efficiency, the potential space-dominant state must integrate all of its armed forces and use the advantages of space control to their greatest effect. The state must have centers of higher learning for technological innovation and for military science, strategy, and tactics. The state must be preoccupied with technological innovation. It must be the world leader in new applications. It must be prepared to fund massive scientific projects on the order of the Manhattan Project (e.g., a superconducting supercollider).

The state's economic base, the fifth aspect or dimension of astropolitical leadership, must be structured and exploited appropriately. The industry of the state must be robust, high-tech, and adaptive to change. New applications for space resources and space exploration products are imperative. Government assistance in research and development and the free distribution of those results to civilian industry are vital, as is a civilianized or commercial space industry. The government is an inefficient decider of which company produces what goods. The market through free and decentralized entrepreneurship can better determine the most cost-effective and highest quality providers of space products. The identification, monitoring, securing, and controlling, where vulnerable, of logistics and supply lines is necessary. The anticipation to future needs, given the lag in innovation and production, is paramount. The state should be prepared to rein-

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force areas of successful strategic production with subsidies and the release of classified technology, if need be, but within the free-market paradigm; it should loathe interceding unless market failure is evident. Entrepreneurship is as vital to the state wishing to dominate space as it was to the early domination of the seas by Britain.

Finally, theory and doctrine must lead the way. Strategy is more than just military maneuver and tactics. Theory and doctrine are more than just operational planning; they are the means for organizing knowledge, the lens through which we perceive the world around us, through which we evaluate and make sense of the infinite database of reality. Space theory and doctrine must encompass and coordinate all astropolitical dimensions. To be sure, the number of categories or dimensions is not as important as the concept that all relevant variables are accounted for. A plan of coordinated advance is necessary along all dimensions of all spectra in order for strategy to succeed. A force of the highest trained and best-equipped soldiers will be trapped and decimated if their logistics chain is ignored. The most fervent space power proponent as head of state will not likely succeed if he or she cannot shape a complementary consensus among the population. Yet theory and doctrine do more than just coordinate and illuminate. The difference between theory- or doctrine-driven strategy and, for instance, technology-driven strategy is profound. The first integrates new technology into a coherent vision; the latter abandons foresight and follows the apparatus wherever it leads. One is proactive; the other, reactive. One wins; the other loses. Analogous to one who accepts the authority of technology or economics, or any other dimension, over strategy is the child who receives a hammer for a gift. Suddenly, a new world appears, full of nails, and they all need pounding.

Simple is not necessarily easy, and complex is not necessarily hard. The six dimensions of astropolitical leadership can begin taking form via a simple three-step strategic plan.

First, the United States should declare that it's withdrawing from the current space regime and announce that it's establishing a principle of free-market sovereignty in space. To build popular support for doing so, it would craft and release propaganda touting the prospects of a new golden age of space exploration and highlight the economic advantages and spinoff technologies that space efforts would bring. This is critical because the old regime is not only to be dismantled; it is to be replaced. The United States can legally withdraw under the provisions of the current regime. Placing this action first, it demonstrates its respect for the rule of law, which will be useful as it attempts to gain international signatories for the new regime.

Second, using its current and near-term capacities, the United States should endeavor immediately to seize military control of low Earth orbit. From that high-ground vantage, near the top of Earth's gravity well, its space-based laser or kinetic energy weapons could prevent any other state from deploying assets there and could most effectively engage and destroy enemy terrestrial antisatel-

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lite facilities. Other states should still be able to enter space relatively freely for the purpose of engaging in commerce, in keeping with the principles of the new commerce-based regime. Just as in the sea-dominance eras of the Athenians and the British before them, the military space forces of the United States would have to create and maintain a safe operating environment, free from pirates and other interlopers and perhaps from debris, to enhance trade and exploration. Only spacecraft that provide advance notice of their missions and flight plans would be permitted in space, however. The military control of low Earth orbit would be, for all practical purposes, a police blockade of all current spaceports, monitoring and controlling all traffic both in and out.

Third, the United States should establish a national space agency to define, separate, and coordinate the efforts of commercial, civilian, and military space projects. This agency would also define critical needs and deficiencies, eliminate unproductive overlap, assume the propaganda functions iterated in step one, and merge the various armed services space programs and policies where practical. In this environment a separate space force, coequal with the Army, the Navy, and the Air Force, might be established, but it's not deemed vital at this time. As part of its propaganda effort, the agency will need to accelerate manned space efforts. This is the one counter to the efficiency argument but it's necessary. Although it's expensive to send and keep them there, humans in space fire the imagination and cull extraordinary popular support. Oberg makes the subtle argument that humans "have and will continue to possess a keener ability to sense, evaluate, and adapt to unexpected phenomena than machinery."[13] A complementary commercial space technology agency subordinate to or separate from the coordination agency could assist in the development of space exploitation programs at national universities and colleges, fund and guide commercial technology research, and generate wealth maximization and other economic strategies for space resources and manufacturing.

That's all it should take. These three steps would begin the conceptual transition to an astropolitik regime and would ensure that the United States remains at the forefront of space power for the foreseeable future. Details would be sorted out in time, but the strategy clearly meets the six elementary requirements previously articulated, from society and culture to theory and doctrine. It places as guardian of space the most benign state that has ever attempted hegemony over the greater part of the world. It harnesses the natural impulses of states and societies to seek and find the vast riches of space as yet unidentified but universally surmised to be present while providing a revenue-generating reserve for states unable to venture there. The strategy is simple, bold, decisive, guiding, and, at least from the hegemon's point of view, morally just.

Where it falls short is not in its assumptions, especially those supporting technical requirements for seizing low Earth orbit. Such is its least problematic aspect. The national will to embrace and implement such a stark plan is the essential lacking ingredient at this time. The vital role of leaders is to shape pub-

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lic opinion and national decisionmaking and to make real what was once just a possibility. Billy Mitchell may have done it for air power. Do we really want someone to do it for space?

Several assumptions animate this analysis. Domination of low Earth orbit already gives—and will continue to give—a tremendous advantage in terrestrial combat. Because of its location at the top of an unflankable high ground, space, or at least low Earth orbit, *can* be controlled, and the state that does so first should be able to use its positional advantage to prevent others from gaining a foothold there. Moreover, no state relies on space power for military and economic success more than the United States; and, for this reason, no state has a greater incentive to place protective weapons there.

The United States has unprecedented power. It can use that power, threaten to use it, promise not to use it, or divest itself of it. Space leaders will need to deal with the powerful realist impulse to unilaterally weaponize space. How this process plays out is far from certain.

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Notes

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Panel IV
Air Power: Gulf War I to Gulf War II

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Dr. Wayne Thompson

Historian, Air Force History

About eighteen months ago, Maj. Corvin Connolly proposed that we all come together for these three days. I don't think he realized how much work getting us here was going to be for him and for a lot of other people, but he did it, and I'll always be grateful to him for this occasion.

Our topic is air leadership, especially in the period since Iraq's invasion of Kuwait in 1990. Many in this room have been very much concerned with questions of air power and air leadership in the last thirteen years. Before then, I was a student of the Vietnam War. I'd written a book on the bombing of North Vietnam, but since the summer of 1990, I've been almost entirely engaged in current events. Along the way, I was the historical advisor for the Gulf War Air Power Survey.

Let me introduce our panelists. Dick Anderegg is the new director of the Air Force history program. He's a fighter pilot with combat experience in Vietnam, and he wrote an enlightening book about the changes the Air Force went through in the decade after Vietnam. In 1991 he was a wing vice commander at Clark Air Base in the Philippines when Mount Pinatubo erupted, and he wrote a book about the event, entitled *The Ash Warriors*. More recently, he participated in the Air War Over Serbia study group that formed after Operation Allied Force.

Second is Dr. Perry Jamieson, who of all Air Force historians is the one who knows the most about ground operations. He's written many books, but today I'd like to emphasize *Lucrative Targets*, on the Kuwaiti theater of operations in the Gulf War. As yet unpublished is his book about the 1996 Khobar Towers truck-bombing incident, a major landmark on the road to the Global War on Terrorism. It was the deadliest day for the Air Force in the period that we're discussing.

All three of us have worked with an office in the Pentagon called Checkmate. It's an office that helps the joint commands and their air components plan air campaigns. Another Checkmate veteran, Gen. Patrick Gamble, presented his views on leadership with the Aggie roundtable group. The presence of several current Checkmate officers here testifies to a long, fruitful relationship between historians and planners.

Lt. Gen. Daniel Leaf, Vice Commander, Air Force Space Command, was scheduled to be on our panel today. Unfortunately for us, Secretary Roche found something more pressing for him to do, but he's sent a videotape that's been transcribed for the purposes of this proceedings volume.

Air Power Leadership

About twenty years ago, I organized a conference on air leadership, and my starring speaker was Gen. Curtis LeMay, who did so much to build the Strategic Air Command [SAC]. He'd already been retired for almost twenty years, but for most of that time he'd had a major influence on the Air Force. Not until the 1980s did his influence begin to wane. Then, for the first time in a long time, we had a fighter pilot as chief of staff of the Air Force, Gen. Charles Gabriel. Since July 1982 every chief of staff of the Air Force has been a fighter pilot.

Only a little over a month ago, we buried General Gabriel in Arlington Cemetery, and only one week later we had Gen. Bill Creech's funeral there. In some respects the fighter-pilot counterpart of General LeMay, General Creech was in charge of the Tactical Air Command [TAC] at the time it was becoming the predominant command in the Air Force. General Creech had led TAC for six years. General LeMay had commanded SAC for even longer, eight years, and had been Air Force chief of staff afterward. If you have that long a tenure in the most important command, your protégés tend to be very influential people for a long time to come. That's certainly been true of General Creech's protégés. They've been running the Air Force right up to today. Gen. John Jumper, our current chief of staff, is a protégé of General Creech. The high-water mark of fighter-pilot control of the Air Force came right after the Gulf War, when SAC disappeared into a new Air Combat Command run from the old TAC headquarters.

I don't want to oversimplify the transition from an Air Force run by bomber pilots to an Air Force run by fighter pilots. You might think that when fighter pilots took over the Air Force from General LeMay and SAC we likely would have gotten a much more undisciplined Air Force, and that bomber discipline would then have given way to the freewheeling style associated with fighter pilots. The curious thing is that under fighter-pilot generals, the Air Force became more disciplined, more careful, more cautious. You could explain that in many ways. I go back to the Vietnam War. That war brought the fighter pilots to preeminence. It was their war more than it was the bomber pilots' war. Fighter pilots in Vietnam had to fight under constraints that became part of their way of thinking.

With restrictions came technological developments, especially guided bombing. An emphasis on precision and reducing loss of life, both among those who were dropping the bombs and those people in the target area, contributed to the more careful Air Force that we have today.

This new capability, however, produced tension in the Air Force between caution and pride. One thing that didn't go away when fighter-pilot generals took over the Air Force was a tendency to brag about the potential and the actuality of air power. They saw a wonderful new capability developing, and they didn't think other people understood. Meanwhile, the caution learned in Vietnam was reinforced by a growing jointness.

When the Gulf War brought these conflicting impulses to a head, jointness was working in favor of the Air Force. Although all of the American services and

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those of the other countries were flying under one air tasking order, the Air Force couldn't resist the temptation to brag. During the buildup for Desert Storm, Secretary of Defense Dick Cheney fired Gen. Michael Dugan as Air Force chief of staff for talking to the press. It was said that General Dugan was guilty of a breach of security, but his biggest sin may have been to suggest that air power could do it all.

We've seen in the 1990s a growing political maturation in the Air Force. That really came home to me last year when an Army general made serious charges about the Air Force's conduct of close air support in Afghanistan during Operation Anaconda. The old Air Force would certainly have rebutted such allegations, but the current Air Force chief of staff, General Jumper, took a different approach and embraced the criticism as an opportunity to improve relations with the Army. That approach was a great credit to the political astuteness of General Jumper and those who worked with him. Productive meetings with the Army paid big dividends in Operation Iraqi Freedom.

I've probably said enough for now about the top level of the Air Force. What we want to do next is look at case studies on what's gone on at the wing level in the Air Force. We turn first to Dick Anderegg and the ash warriors.

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Mount Pinatubo

C. R. Anderegg

Director, Air Force History and Museums Program

Thank you, Wayne. Howdy. I've been waiting two days to say that. I actually asked someone if it was appropriate to greet you that way. Because I didn't attend A&M, I wanted to make sure it was okay to say it.

We've heard a lot of discussion about acknowledged great leaders in the Air Force, albeit with different leadership skills. My discussion addresses some leaders you've probably never heard of and an operation that was little known outside the Pacific Air Forces. The operation wasn't well known because journalists didn't think it was a story until it was too late for them to get to it. There really wasn't much press coverage here in the United States and only a little on CNN. To me, it's one of the Air Force's greatest accomplishments, its response to the eruptions of the Mount Pinatubo volcano in 1990, just eight and a half miles west of the west wall of Clark Air Base in the Philippines.

At the time, Clark Air Base was the largest U.S. military installation outside the continental United States. It hosted the 3d Tactical Fighter Wing and had as a tenant Thirteenth Air Force headquarters commanded by an Air Force major general. About 20,000 American citizens—active duty military personnel, dependents, and civilian employees—lived there. It was a large base, triangularly shaped. Its apex pointed west, and eight and half miles farther west was the Mount Pinatubo volcano. The air base itself measured about five miles from west to east, where the runways were located. It was pretty big, covering twenty-six square miles. The Abacan River essentially formed its southern boundary, and to the north flowed the Secobia River. Located between those two rivers was an alluvial plain, built on the ash of previous Pinatubo eruptions.

Mount Pinatubo hadn't erupted for 600 years, so when steam started to appear from some fissures that had formed in the ground, the basewide reaction, including mine was, "Volcano? What volcano?" We immediately requested that a U.S. Geological Survey [USGS] team come to Clark to advise us because the surrounding jungle lay on the volcano's flanks, where we held our jungle survival school. Six guys, all with beards and wearing flip-flops, shorts, and T-shirts, arrived in about ten days or so. They were pretty easy to identify from among our civilians. We immediately nicknamed them the Beards. Using our helicopters, they established a ring of six seismographs around the volcano and

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placed a seventh one on the base. We monitored Pinatubo continually, and by the end of April, we knew we were dealing with a plinian volcano. That's an explosive volcano, like Mount St. Helens, not a lava-producing volcano, like the Hawaiian volcanoes. By the end of May, the volcanologists were predicting a 50 percent chance of an eruption within one year. By June 7, a very brief period in geological time from when the steam started to rise, their prediction changed to a 50 percent chance of an eruption within forty-eight hours!

We evacuated 15,000 people from the base within six hours. We sent them out in their cars, if they had cars, or bused them to the Subic Bay Naval Station, about twenty miles southwest. The real danger from this volcano was something called pyroclastic flow. It occurs when a volcano bursts. You've seen pyroclastic flow if you've seen pictures of the side of Mount St. Helens blowing out. Superheated, 600-degree-Celsius ash-laden air rolls downward or blasts outward—sideways, in the case of Mount St. Helens.

Some of you may have seen pictures of the calcified or petrified remains of the victims of Mount Vesuvius in their various postures, and you may have wondered why they didn't leave. Why did they just stand there and let all that ash fall on them? Well, they didn't just stand there. A pyroclastic flow wipes out everything in its path. It travels at about 100 miles an hour, depending on how steep the mountain is, and causes almost instantaneous devastation.

The volcanologists had also determined that during its eruption 600 years ago, Pinatubo's volcanic action had come right down along the sides of our base, well past the housing area. So we evacuated everybody, thinking they'd be safest at Subic Bay. We finished evacuating the base at noon on June 10. Thirty-six hours later, on June 12, the first eruption occurred. It went up to about 40,000 feet. Subsequent eruptions rose to about 85,000 or 90,000 feet, and they were absolutely silent; they made no noise.

About 1,100 people remained on base. Clark had the largest security police organization in the Air Force, 960 security policemen. Others remaining were 200 or 300 command and control folks, a few cooks, a few medics, and a few people to support the security police. The volcanologists told us not to worry, this was just throat clearing, not the main event. Our plan for evacuating people was to move them to the far side of the base because the pyroclastic flows in the previous 600-year and 2,400-year eruptions hadn't come down the rivers that far. We thought our people would be relatively safe there. Because I was the vice wing commander and in charge of the Crisis Action Team, I was to blow the siren. When the threat went away, we all returned to our duty stations.

The eruptions continued almost on a twelve-hour cycle. We had one at 9 o'clock in the morning and one at 9 o'clock at night on the twelfth, one at 9 a.m. and one at 9 p.m. on the thirteenth. We started to call it Old Faithful. No ash fell on the base. Upper-level winds carried it away. The base stayed beautiful. You'd never have known anything was wrong; there were no real problems. We learned then that we could track the eruptions with our base's weather radar. Using it, we

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could see the top of the volcano and where the ash was going. This was very good for the scientists, because they didn't realize it was possible until they observed it at Clark. We also noted that every time the volcano erupted, the barometric pressure dipped. Many people, including the Thirteenth Air Force commander, claimed that they felt the pressure change in their ears when the volcano erupted. Again, no noise accompanied any of this.

The eruption that turned out to be the "big one" came on June 15. It was as if someone had dropped a string of about six small-yield nuclear weapons across the entire mountain range. When we saw pyroclastic flows beginning to stream down the mountainsides, we said, "We're out of here." Actually, the night before, we'd acquired some very disturbing information from satellite imagery and analysis by the guys back in Washington and the USGS. The magma field below Clark was three times larger than the magma field that had caused the Mount St. Helens eruption. That's when we and the USGS guys looked at each other and realized that we weren't far enough away from the volcano.

So what was our mission? Why were we there? We were there primarily because we had a weapons storage area. It included many things that would be valuable to "bad guys" around the world, for example, Stinger missiles, C–4 and other kinds of explosives, and a considerable number of conventional Mk82s as well as regular dumb bombs. We also had 3,000 military family homes on the base that were unattended, as well as about 1,200 dormitory rooms, not counting the hospital, and radiology equipment.

The eruptions began at 6 o'clock in the morning and continued throughout the day. Seven eruptions occurred, each larger than the one before, and each larger than the Mount St. Helens eruption. The good news was that the lateral parts of the blasts were going away from us, not coming toward us. We'd predicted that; that was not luck. We knew from the USGS where the fissures were. We knew where the weaknesses were, but we still distanced ourselves from them as far as we could.

As if things weren't bad enough, at noon Typhoon Yunia arrived. When it reached Clark, it was a super typhoon; by the time it hit Luzon, it was down to a tropical storm. It brought six or seven inches of rain at about the same time nine or ten inches of ash fell on the base. Unfortunately, when the typhoon slammed into the ash, the ash and rain got all mixed up and it either mudded rain or rained mud, whichever you prefer, for the next twelve hours. At this point, 50 of us were left on the base: a 44-man security police team at the munitions storage area, my Crisis Action Team staff, and the Thirteenth Air Force commander. We left about two hours after Yunia struck.

Ash covered the roofs in the housing area, and we had water damage, too. The nine generators that provided all of our electrical power and the radiators for the diesel engines were flattened. The radiators were filled with ash. During the eruptions, we had earthquakes continuously, about one a minute that ranged from 3.5 to 5.5 on the Richter scale. They occurred over several weeks and then

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gradually abated and lessened in frequency. Eventually, the top 1,500 feet of Mount Pinatubo blew away, and a crater, called a caldera, formed 1.2 miles across and 1,500 feet deep. It completely changed the topography.

When volcanic ash gets wet and begins to flow, a lahar forms, whether on the ground or on a mountainside. The weight of the mudflow carries it into what has been the drainage system, which no longer exists because it's filled with ash. Consequently, new rivers are created. This hot ash flows at about ten feet per second, with boulders in it, and it goes wherever it wants to go. These are the killers in volcanoes, the lahars. One came across the base. A couple of days after the eruption, we had stuff about three feet deep in the housing area. If you kick it, you find it's still about 300 degrees Celsius just inches below the surface.

We'd evacuated dependents to Subic Bay, but they had no better luck because the typhoon dumped as much ash there as it did at Clark. The U.S.S. *Abraham Lincoln*, on its maiden voyage to the Gulf, was diverted to Subic Bay. We picked up 20,000 people: 5,000 already there and 15,000 from Clark. They were evacuated back to the States via Mactan, an old airfield down in Cebu, and on to Guam. They were then staged out of Guam, back to the States. Dependents left with what they could carry. In the case of a young mother with two children and a dog, what could she carry? She carried a little shopping bag of stuff; she left everything else at Clark or Subic Bay. We also evacuated pets, 1,700 pets. Dealing with them was a whole other story, and except for the actual human issues, posed the biggest problem we had in orchestrating the evacuation.

I'm not going to dwell on the leadership lessons we learned because I'm not sure how to define leadership, like the judge evaluating pornography who says, "I'm not sure what it is, but I know it when I see it." Leadership is hard to pinpoint. Many factors contribute, but among the most important is communication. The senior leaders at the base—the wing commander, the combat support group commander, the Thirteenth Air Force commander, and the public affairs guys—made a tremendous effort to keep everybody informed. They even put the volcanologists on TV to dispel myths and rumors. They had a "rumor of the day" show on the radio. You could call in and say, "I heard this rumor . . ." and they'd get back with the answer for you in ten minutes. That was very important.

Another factor was leadership by example. The base leaders never left Clark during the evacuation. They stayed, including the Thirteenth Air Force commander who, even though he also led Joint Task Force Fiery Vigil, which was meant to respond to the eruptions, kept his headquarters at Clark. He did this, despite being strongly encouraged by the Pacific Command chief to go someplace else. He said no, and I was there when he said no, and he said no when he was supposed to say yes. He stayed there on the front lines with the troops.

Leadership by example became important when we packed up the household goods in 3,000 homes and 1,200 dormitory rooms—every single one of them—in six weeks. We packed up all of those household goods and sent them back to the States. All were delivered to their owners. How much did people lose? Nine-

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ty percent of the people at Clark lost ten percent of what they had; ten percent of the people at Clark lost everything they had. In a few instances a house was unlucky enough to be hit by a lahar, which just kicked down the front door, took everything inside, then kicked down the back door, and carried it all out. One hundred ten buildings on the base collapsed, including most on the flight line, but none of the residences actually collapsed.

We packed up the senior officers' houses last. Our number one priority was that houses in the lowest lying area got packed first. They were at greatest risk to the lahars. We didn't care about rank or who lived where. The lowest-lying area got packed first, then the next low-lying area, and then the next. The street where the senior officers lived ran through one of the higher points on the base, so the houses there were packed last. This made a big difference to the junior people on the base, that the colonel's stuff went last and their stuff went first.

Other leadership factors involved decisionmaking and demonstrating the courage of convictions. When the Thirteenth Air Force commander decided to evacuate the base, he had to weigh the issues of safety and credibility. The safety issue concerned getting everybody off the base when it was time, although at that point we didn't know how big this thing was going to be. It turned out to be much bigger than we thought it would be, so it was good that he decided to evacuate. The credibility issue had two factors. One affected the base population. We asked ourselves, "If we evacuate all of the people and nothing happens, do we wait a week, or ten days, or two weeks before we bring them back? If we do bring them back, and the volcano reactivates, how do we convince them to leave then?" The other factor relative to the credibility issue had to do with our belief in how dangerous the emergency was. It was directly proportional to our distance in nautical miles from the volcano. At Clark, we knew how dangerous it was. At Hickam they weren't so sure we knew how dangerous it was, and in Washington they were sure we didn't know how dangerous it was. I was with the Thirteenth Air Force commander at his post on many occasions when he had to come in at night to talk to Washington, where it was still daytime. He put his career on the line fighting for the resources we needed to overcome the volcano, to get everything packed, to get that base closed down, and to come back.

The results speak for themselves. We evacuated 20,000 people. We didn't have a single loss of life of a U.S. citizen. Two young Filipino girls were killed at Subic Bay when the gym collapsed. There were 200 people asleep inside. Sentries got everyone out, except the two girls, who'd gone into an area where they weren't supposed to be and had shut themselves in a closet. No one knew they were there. When the gym was evacuated, they were left behind. We recovered 1,500 semitrailers full of equipment from the base, but that's another story. We shipped out all of the Stinger missiles, the C–4, and all of the munitions, about 280 tons, as I recall. We closed the base in November when we left. In my view, that was a great leadership story. That's one of the reasons I wrote the book *The Ash Warriors*.

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Khobar Towers: The Medical Response

Dr. Perry D. Jamieson

Historian, Air Force History

Howdy. I was born in Detroit and attended Michigan State University, but I'm learning, I'm learning. My topic is leadership and the medical response to the Khobar Towers bombing. What I'm going to say on this subject and what Mr. Anderegg has just said share at least three similarities. First, like his presentation, mine is a case study. Second, both get at issues of leadership in ways we don't usually think about. And third, the story I'm going to tell is, like Mr. Anderegg's, a success story of which our Air Force can be proud. Unfortunately, most Americans probably don't know much about it.

At 9:53 on the night of Tuesday, June 25, 1996, the northern section of the American compound at Khobar Towers in Dhahran, Saudi Arabia, was attacked. Terrorists backed up a truck bomb against the northern perimeter of the housing complex. Nearest the blast was Building 131, a dormitory in the northeastern corner of the compound. Nineteen airmen were killed: two were officers, and seventeen were enlisted men. All were members of the 4404th Composite Wing, Provisional.

The number of wounded, in my judgment, will probably never be firmly known. We always want exact numbers. Journalists want them immediately; historians want them eventually. We've learned that sometimes it's simply not possible to have them. One reason we don't have a full accounting, even of the American wounded at Khobar Towers, let alone of the Saudi wounded, is greatly to the credit of our young airmen. Many were wounded, but they looked around and saw their friends and comrades more severely wounded, or fatally wounded, and they considered their own injuries so slight that they refused to seek medical attention. So for that and other reasons, we'll probably never have a full accounting.

Lt. Col. (Dr.) Douglas J. Robb was the interim commander of the 4404th Wing's medical group at the time of the attack. He stated that 519 patients were treated for wounds. I think that's as good a number as we'll ever have. Of the 519 patients, 317 were cared for at Khobar Towers Building 111, the Air Force and Army Medical Clinic, which stood in the southwest part of the complex. The other 202 patients were taken to about a half dozen hospitals in Dhahran. Of those, 71 were admitted and 131 were treated and released. Of the wounded, the

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great majority, 90 percent Dr. Robb estimated, were wounded by lacerations from glass shards. The remaining casualties, fewer than 10 percent, suffered blunt trauma from flying objects.

I'll read one officer's description of the interior of a suite in Building 131, which explains the high percentage of glass wounds. He reported: "The fully occupied dormitory was immediately thrown into total darkness, with shards of glass, concrete, furniture, and other debris flying at high velocity. The blast occurred at a time (about 10 o'clock at night) when many occupants were in the common lounge areas of their suites. Glass patio doors in the lounge areas facing the blast produced a high volume of flying glass fragments."[1]

One of the remarkable stories in the medical response at Khobar Towers is that the first line of leadership that night came from the airmen as they did a remarkably successful job of caring for themselves and the people around them. The Air Force had in the mid-1990s, and still has, a program called Self Aid and Buddy Care. It's what outsiders would probably call first aid, although it's a bit more rigorous than that. But most people probably would think of this as the Air Force's first aid program.

Again, Dr. Robb said that about 300-plus patients came to the medical clinic that night. Some came on their own, others were brought by friends. The absolutely striking thing was that almost all of the people who came to the clinic that night with wounds showed, as Dr. Robb later said, some evidence—a bandage, a dressing, a splint—that they'd already been cared for. In the oral history interview he gave me, Dr. Robb said, "People were coming in with towels, with T-shirts, somebody used a broomstick handle for a splint, stuff they learned in Self Aid and Buddy Care training." He went on to say, "Our success was not only that we had doctors, nurses, and technicians, but that we also had 2,000 airmen trained in Self Aid and Buddy Care."[2]

The next line of medical leadership that night came from the professional caregivers. Many heroes and heroines appeared that night, and I don't presume to single out any one group, but in the more than seventy Khobar Towers oral history interviews that I conducted, one group that most people mentioned repeatedly was the one made up of the pararescue jumpers, the "PJs." They do two things that the great majority of us cannot do. PJs obtain emergency medical technician [EMT] training and they jump out of airplanes.

Dr. Robb pointed out that at the time of the attack there were eight PJs in the compound and, as he put it, "Only four were left standing after the attack; but they more than made up for their number and their condition with their actions." Capt. (Dr.) Morris R. "Mo" Treadway, Jr., a flight surgeon with the 58th Fighter Squadron, said, "It seemed like the PJs were everywhere."[3]

Another officer related: "There was one guy I remember, his head all bandaged up, his big old parachute rescue pack on, with all of his medical supplies. He was in shorts. There he was out on the patio of the medical clinic, slipping an IV line into one of the casualties. I'll never forget that as long as I live."[4]

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Other professional caregivers were present at Khobar Towers that night. They included four flight surgeons and twenty-two other medical professionals: dentists, nurses, and medical technicians. The 4404th Aeromedical Evacuation Flight assigned to nearby Dhahran Air Base contributed seven more EMTs and three nurses. The Wing's civil engineering squadron had twenty-eight firefighters and EMTs with crash-rescue training. The Army side of the clinic at Khobar Towers had a doctor, a physician's assistant, and eight more EMTs. Among the allies were a British flight surgeon and a med tech, and a French flight surgeon. In total, eighty-one medical professionals were on the scene that night.

All patients received their initial care at the clinic and, a short distance from it, at the Desert Rose Inn, the dining hall. As one of the flight surgeons later explained, that facility was ideal for the improvised use made of it. Because it was a chow hall, it was clean, air conditioned, had running hot and cold water, and its tables could be used as suturing stations.[5]

After suturing or other initial care, ambulances took some of the more seriously wounded airmen to hospitals in Dhahran. By 1 o'clock on the morning of Wednesday, the 26th—again, the bombing happened at about 10 o'clock Tuesday night—by 1 o'clock the next morning, more than 200 patients had gone to hospitals in Dhahran. The great majority of these people went to one of three places: the Ministry of Defense and Aviation Hospital, the MODA Hospital, nearby on the civilian side of Dhahran Air Base; King Fahd University Hospital, seven blocks north of Khobar Towers; and the Arabian American Oil Company Hospital, the ARAMCO Hospital, a few miles northwest of the Khobar compound. Dr. Robb and many other Americans praised the care that our airmen received at these hospitals.

More caregivers came to Khobar Towers. Another remarkable part of the story is the number of professional caregivers who were able to reach the scene very, very rapidly. There's been no military system in the history of the world that could do what the United States Air Force did that night. Saudi ambulances and medical personnel came. Of course, they were near at hand, but also arriving quickly were a medical team from the U.S. Navy's Administrative Support Unit in Bahrain; a flying ambulance surgical team—a FAST—from Incirlik Air Base, Turkey; an advanced cadre team—an ADVON team—and three augmented aeromedical evacuation crews from the 86th Aeromedical Evacuation Squadron, at Ramstein Air Base, Germany; a critical care aeromedical transport team—a C-CATT team—from the 59th Medical Wing, also based from Ramstein; and a stress debriefing team from the Landstuhl Regional Medical Center, about four miles south of Ramstein.

In June 1997, Dr. Robb reflected: "The people were just there, when you needed them. It was that way all night long, and it was that way for weeks afterward. I'm not talking about just the medics. I'm talking about everyone."[6] The emergency medical care given at Khobar Towers was one of the success stories in the history of the Air Force during the 1990s. It represented one of the most

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striking cases during that decade of leadership—leadership that extended across the ranks and across many different career fields—in the face of a sudden crisis.

I'm going to close with an anecdote that Dr. Robb related to me. It happened during the dead of night, while the flight surgeons and other professionals were sewing up some of the badly wounded patients on the tables in the dining hall. A young med tech approached Dr. Robb and volunteered to help do some of the suturing. Dr. Robb asked him, "Have you ever sewn before, have you sewn patients before?" The willing airman answered, "My flight doc let me throw in one stitch, one time." The medical group commander told the med tech: "You're qualified." Then Dr. Robb concluded the story: "I turned to Dr. Treadway and I said, 'Mo, keep an eye on him, help him out.' That's the kind of courage we saw in people stepping forward that night."[7]

The novelist and Civil War historian Shelby Foote once said that Lt. Gen. Ulysses S. Grant had "four o'clock in the morning courage." Foote explained that when General Grant was awakened by one of his staff officers in the early morning hours and confronted with bad news, he could quickly rouse and compose himself and then respond positively.[8] Our airmen at Khobar Towers, on the night of June 25 and 26, 1996, showed that they, like General Grant, had four o'clock in the morning courage.

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Notes

1. This presentation is based on the author's book manuscript, "Khobar Towers: Tragedy and Response," currently being reviewed by outside readers for publication by the Air Force History and Museums Program. The specific quotation here is from "Khobar Towers Bombing: Medical Response: Force Protection Lessons Learned," an undated briefing prepared by Lt Col (Dr.) Douglas J. Robb, commander, 347th Aerospace Medical Squadron, for Air Force Chief of Staff Gen Ronald R. Fogleman.
2. Capt Timothy Bailey with Nathan Alderman, "Buddies Cared," *Airman* XL: 10 (Dec 1996), p. 11.
3. Intvw, Perry D. Jamieson with Lt Col Robb, commander, at Moody AFB, Ga., Jun 6, 1997; intvw, Perry D. Jamieson with Capt (Dr.) Morris Treadway, Jr., flight surgeon, 58th Fighter Wing, Eglin AFB, Fla., Dec 5, 1996.
4. Intvw, Jamieson with Lt Col Robb.
5. Intvw, Jamieson with Capt Treadway.
6. Intvw, Jamieson with Lt Col Robb.
7. Ibid.
8. Geoffrey C. Ward et al, *The Civil War: An Illustrated History* (New York, Alfred A. Knopf Inc., 1990), p. 271.

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Air Power Leadership: From Desert Storm to Operation Iraqi Freedom

Lt. Gen. Daniel P. Leaf, USAF

Vice Commander, Air Force Space Command

Greetings from Peterson Air Force Base in Colorado Springs. As vice commander of Air Force Space Command, I wish I could join you at your symposium in College Station to look at a century of air power leadership, past, present, and future. But because duty calls elsewhere, I'll offer my contribution to your discussions in this videotape.

I've been asked to discuss air power leadership in the period from Desert Storm to Operation Iraqi Freedom and to assess where we've been and where we need to go. I'll do that from a mixed perspective. I watched Desert Storm as a spectator, a squadron commander at Luke Air Force Base, wishing I were in the area of responsibility and getting my CNN viewer's medal. I did get over to the area as a J–3 and an F–15 pilot during Operation Southern Watch and later in Operation Northern Watch, bringing elements of the 20th Fighter Wing to Turkey and flying the F–16 over Iraq. During Operation Allied Force, I was wing commander and saw that part of our air power employment, and the Air Force chief of staff asked me to lead a task force to look at our kill-chain enhancement potential during Operation Enduring Freedom. Again, I was a bit of a spectator, but with a better seat, if you will. Most recently, I directed the Air Component Coordination Element in Kuwait with the Coalition Forces Land Component commander. Because I've had a pretty broad view, I believe I'm reasonably qualified to present some points on where we are and talk a little about how we've gotten where we are, and what the future imperatives are.

Regarding where we are, I think the United States Air Force has in those ten to twelve years undergone a transition, has reached the pinnacle of its role as a trusted provider of air and space power. We're trusted by the joint services and by the national leadership. Frankly, I think we've always been pretty doggone trustworthy, but we've gained the trust of our service partners most especially by first telling them what we could do for the joint team and then delivering what we've promised in a very disciplined manner.

What's key to our having gotten that trust is, I believe, that we've enabled the command of air power. We've gotten out of the heavy-equipment-operator/ad-

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ministrator-of-an-air-tasking-order [ATO] mindset. We have commanders at every level—from air component commanders to wing commanders to flight commanders—who understand that there's a human element in war that must be addressed. We have to look at the battle with a bayonet sense, not just a Global Positioning System [GPS] accuracy sense. GPS accuracy is important, but battles are all about violence and warfare, with all of their attendant ugliness. So I think that we've gotten a better cultural sense in our Air Force of commanding air power as part of a joint team.

That wouldn't be very useful if we hadn't invested heavily in systems that enable the technical side of commanding air power. Since Desert Storm, we've envisioned an air operations center as a weapon system, not just as an administrative tool that allows an air component commander to command air power in combat. We built that. We had a good system at Vicenza during Operation Allied Force, and we were fine with what we had at Prince Sultan Air Base during Enduring Freedom and Iraqi Freedom. Now we're building to a common set of capabilities that any air component commander will have available to use in the command of air power during combat operations.

What's also key to our having built that trust is that we've become more understandable. The Air Force has become more understandable and has made some inroads regarding how we present air power. We still have combatant commanders and others who'll ask for a capability by tail number: "I want U–2 number such-and-such that can do this very specific thing." But we've gotten better at describing our capabilities—not just in terms of Air Force nomenclature or weapon or sensor nomenclature but in terms that suit whatever the need may be, for precision strike or surveillance, to cite two examples—and then packaging them. Our move to the Air Expeditionary Force methodology, which has been very valuable in providing some stability and predictability for our airmen, seems to have been just as valuable in describing a set of understandable capabilities to commanders whose job isn't air power and who don't always fully understand what we're presenting.

As to presenting air power, we've also made great progress in our expeditionary capabilities—getting to the fight, setting up operations, and executing them. Now it's embedded in our DNA. I have to say that nobody anywhere goes somewhere, sets up operations, and executes them better than the United States Air Force—not another service, not another nation-state, not another corporate entity, nobody. It's been to some degree that way since World War I. Cut to the bone of any airman, and you'll find an awful lot of meat and blood and a little bit of sweat and tears about being expeditionary, about going someplace, known or unknown, establishing an operation, and executing it smartly, safely, and with a pretty decent quality of life. That's how we get and attract good people.

Probably the most important element to becoming a trusted member of the joint team relates to our discipline in employment when we didn't get to do what we had to do the way we wanted to do it. I cite specifically our experience in

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Operation Allied Force. It's been said many times—many, many times—that no airman would have envisioned Operation Allied Force the way it was executed, and I'm pretty sure that's true, no airman I've met. But once we were issued a strategy, operations orders, and an ATO, we executed with extraordinary discipline. Some things we did meant more risk for our forces. Some things we were asked to do appeared illogical to your average airman or your average F–16 pilot. I was one of those average airmen, and we still performed with incredible discipline, every member of the United States Air Force, and that's pretty remarkable. I think our joint service partners appreciated our discipline.

Operation Allied Force also marked another transition for our Air Force, in how it's perceived. We were perceived as risk-averse. That's baloney. Being perceived as risk-averse was part of the myth, half-truth, and downright falsehood put out about the 15,000-foot floor initially in place for operations in Serbia and Kosovo. The Air Force chief of staff gave the example that if you were 15,000 feet away from a loaded 57-mm cannon and were asked to cross a big parade ground, you might feel very risk-averse. Actually we didn't. We took a great deal of risk. We often took more risk to not employ than to employ. We were extremely careful to avoid collateral damage.

We adjusted our altitude rules and got down to 5,000 feet on forward air controlled missions. You could employ down to 8,000 feet with the intent of staying as much as possible above 10,000 feet in Kosovo and above 15,000 feet in Serbia. We did what we had to do, which was to employ, and to employ effectively. Slobodan Milosevic is in jail, and all of Serbia was liberated as a result.

In Enduring Freedom and Iraqi Freedom our airmen demonstrated that they'd take whatever risk was necessary to accomplish the mission. In Enduring Freedom, when our land forces were in extremis, our airmen took extraordinary risks, as we knew they would and as they always have, to support those land forces, to protect them, to save them.

In Iraqi Freedom, Gen. Michael "Buzz" Moseley propounded a set of rules at the outset that no one would describe as risk-averse. As the land component approached Baghdad, General Moseley directed a campaign of destroying, not of suppressing, enemy air defenses. The airmen took many risks, and they knew it. Frankly, if the air component hadn't made significant inroads in lethality in addressing the air defense threat, we wouldn't have had the persistent air support that in my mind directly enabled the armored thrust through Baghdad that put the knife into the heart of the Saddam Hussein regime. I think we demonstrated that we are, in fact, not risk-averse. I don't think we ever were, but it's now clear.

So that's how far we've come. A final technical point relates to the evolving precision of our Air Force. We used a large number of precision-guided munitions in Vietnam, more in Desert Storm, and even more in Allied Force when the JDAM [joint direct attack munition] and the B–2 debuted, but the real transition to mass precision—where precision is the rule, not the exception—came in Enduring Freedom, and then, on a larger scale, in Iraqi Freedom.

The United States Air Force delivers precisely most of the time and it elects not to only when its firepower is unneeded or inappropriate. Even our area munitions are precisely delivered in large measure. We can deliver munitions day and night, through good or bad weather. These capabilities engender the kind of trust that allows an enlisted tactical air controller to direct a B–1 bomber, armed with JDAMs, to support a danger-close mission for an Army cavalry trooper who's surrounded in a dust storm at night. Now that's trust.

Additionally, the way we factor time into our precision calculations engenders trust. The preparation of the battle space for Iraqi Freedom allowed us to have a very robust, time-sensitive targeting methodology. The flexibility of our ATO cycle allowed us to respond to changing situations and to address targets of opportunity and targets of necessity very rapidly and precisely. Not just precisely by latitude, longitude, and elevation, but precisely by the clock as well.

That's where we are. I think we've gained extraordinarily as an aerospace force, and we're now the trusted teammate of the joint team of the nation. But what we've gained is also pretty fragile and can be lost in a heartbeat if we don't keep track of any of the elements we've listed. I submit that we should keep some things we do and have done even more in the forefront of our thinking.

We've assumed air superiority. As we entered Desert Storm, we knew the enemy would fly, and fly he did. After a few days he stopped, then flew again, but only to try to egress to Iran. We've reached the point where, for the air-breathing side of the force, the joint team's expectation is air superiority. Our standard is: The enemy will not fly.

If we don't maintain that standard, we'll lose our edge. The last time United States Army forces were bombed by an enemy aircraft was in April 1953. We need to hold that capability and deliver on our promise.

Just as important as air superiority, just as assumed, and, I would submit, at a little more risk, is space superiority. I don't say that just because I'm addressing you from Peterson Air Force Base and Air Force Space Command. As an F–16 pilot in Allied Force, I fundamentally changed how I employed the Block [the F–16] because I knew I'd have good-quality space imagery, that the coordinates mensurated for fixed targets, in particular, would be precise, and that my GPS would work. We have a much broader set of capabilities woven through how all of our components fight, and if we do *not* guarantee space superiority we'll be violating the trust of our joint partners, the national leadership, and the United States. We cannot afford to do that.

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Q&A

Dr. Thompson: General Leaf is part of a new generation of Air Force leadership at the top. He has no Vietnam service, and that's true of most of our generals now. Our chief of staff, General Jumper, is one of the last active duty airmen in the Air Force with Vietnam service. I haven't yet worked through in my own mind what that really means, but I think it's an important transition. Are there any other reactions to General Leaf's remarks?

Mr. Anderegg: Yes, I have one. General Leaf's focus on discipline was a little bit off our mark. I certainly had the feeling—coming in as a young fighter pilot in the mid-1960s and going to Vietnam—that I was flying in a relatively undisciplined force. I didn't realize that until I learned more about the employment of discipline later in my career. Now that I've had thirty years for it to cook in my brain, the thing that strikes me is that success and capability—mission capability—breed discipline. By that I mean that when you have a Mark A2 on an F–4 and you're trying to hit a target at night, your chances are zero, zero, and zero. After doing that for a while and going out and employing systems that can't do the mission, you notice an attitude beginning to permeate the force: "Oh, well, who cares? It doesn't matter, you know. I can't hit the target anyhow." Pretty soon we end up with forces that don't believe they have combat capability.

Today, as General Leaf said, our forces strongly believe they have combat capability. Now discipline is everything because we know we can kill the targets. Now a leader can stand out in front and say we're going to do this with restraint or we're going to use an all-out level of force because we actually can kill the targets. When people don't believe they can be effective, discipline is one of the first things that goes, and what we've seen is that now discipline—built greatly in my time of exposure to the force—is higher than it's ever been.

Dr. Thompson: Are there any further thoughts?

Audience Member: When you're talking about a hostile takeover, I wonder, since I spent fifteen years in SAC [Strategic Air Command} and ten years in AMC [Air Materiel Command], do you think that SAC went away in great measure because the Cold War ended?

Dr. Thompson: Yes, there's no doubt. What we were seeing, of course, was the end of the Cold War. Before then, we'd been using B–52s conventionally as early as Vietnam. So it made a lot of sense. But there was an emotional content to all of that at the time, I well remember.

Through the Gulf War, guided bombing was the work of fighters. But now, with our GPS and JDAMs, the bombers have become wonderful platforms for

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delivering guided bombs, and they're playing a more central role. It's not inconceivable that we'll see some bomber pilot generals at the top of the Air Force hierarchy. That leaves aside the whole question of space and the advent of unattended aerial vehicles. It's very interesting to think about where the leadership of the future Air Force will come from.

Audience Member: How does the Air Force think we should handle computers and separate the roles of officers and enlisted personnel?

Dr. Thompson: We're encountering a mountain of electronic data that's burying everybody, including historians. We need to find some way, all of us, to work with this data. We can now communicate more extensively with pilots in the cockpit, but what information should we be giving them?

I've had the pleasure throughout my career of working with the enlisted side of the Air Force. In fact, I've depended on enlisted historians. I can tell you there's nothing that enlisted personnel can't do. We have enlisted people who are better educated than our officers. How we should distribute work and leadership roles, I'll leave to wiser heads.

Mr. Anderegg: One of the lessons implicit in my presentation and in Perry Jamieson's was that, when we're under stress, our training kicks in. Although we all struggle as we try to get our arms around defining leadership, there's no doubt that we have to teach leadership. When the leadership training of the medic, of the lieutenant colonel operations officer who was at Khobar Towers, or of the staff sergeant who was with me at Clark Air Base in the Philippines kicks in, that individual steps forward without thinking. So we do train leaders, and we teach leadership techniques.

One technique we try to teach young officers deals with the personal side of leadership, of being involved with what's going on and knowing what's happening on the ramp, in the base personnel office, or in the military personnel flight. The issue of the e-mail deluge and the electronic deluge is something that we in the Air Force have to resolve when teaching leadership. E-mail is the lowest form of human communication, and when we depend on that, we eliminate the human element. I think we'll see, as we have in the past, that as new challenges arise, new educational methods must be applied to account for those challenges. Lots of Air Force leaders aren't slaves to their e-mails because they've figured out that an hour spent on e-mails is an hour nearly wasted compared to an hour spent going out and talking to the wrench-benders on the ramp.

Dr. Jamieson: I'll add to this discussion about our being overwhelmed by e-mails and phone messages. I've always been interested in air power history and military history in general. Because of my work on the Army in the 1800s, a few times a year I lead staff rides out of Washington, D.C. We aren't far from many

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of the great battlefields in the eastern theater of the Civil War. I see many professional military education advantages in staff rides. They get our officers and airmen and members of other services away from their e-mail, away from their computers, and away from their telephones. For a day, we get them out in the field, looking at a place where military history happened, and thinking about what it is to be a war fighter. That, in and of itself, is a very good thing.

Audience Member: Dr. Jamieson, did you look into other aspects of the Khobar Towers bombing?

Dr. Jamieson: The main focus of my work is along the lines that I presented here. When my book is published, you'll see that it emphasizes medical and other responses. I did try to write a survey history of the bombing, so I looked into the investigations that were done. Since you raised the question, I'm sure you know that among the resources available on the bombing itself we have the Downing Commission Report, the House National Security Committee Report, the Swope-Hawley Report, and the Record Report.

The Downing Report and I think at least one or two others were done in both classified and unclassified versions. Gen. Wayne A. Downing was asked to look into force protection issues in the theater. His report, to be of much value, had to be classified, but unclassified versions of it and other reports are available. Some were posted on the Web. People can read unclassified versions of the Downing, the Swope-Hawley, and the Record Reports on the Internet.

I'd recommend—back to the subject of our all being overwhelmed with more electronic information than we have time to read—a well-written article by a fine scholar, Dr. Rebecca Grant. It's called simply "Khobar Towers," and it appeared in the June 1998 issue of *Air Force Magazine.*

Dr. Thompson: You raise a really important question, because the Khobar Towers incident led to the resignation of a chief of staff—Gen. Ronald R. Fogleman. When he explained his resignation publicly, he didn't attribute it to the scapegoating of General Schwalier, but that's the message a lot of people got.

They were disappointed that he didn't use his resignation to make more of a protest. I was impressed with the dignity of the whole thing. He simply said that he wasn't getting along with the secretary of defense on a range of issues, and that he thought it would be better for the Air Force to have a new person in the job. People had criticized military leaders in this country for not resigning over Vietnam issues. I went to many conferences over the years when the resignation question came up. Generals were asked whether they thought the appropriate thing to do was resign, and the answer was always no. It was better to stay on board and do what you could. Now we have a different example of an important general who did resign, and we need to think about that.

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Dr. Jamieson: Wayne, that's a good summary, and I'd add only that, again, there's something to read. The best source, of course, is General Fogleman himself, if you can communicate with him. If you can't, he published an excellent interview with military historian Richard Kohn, a former chief of our Air Force history program. He's now Professor Kohn with the University of North Carolina history department. The interview appeared in the Spring 2001 issue of *Aerospace Power Journal*. In it, General Fogleman suggested, as Wayne Thompson has said, that he resigned for a broader series of reasons than simply the Khobar Towers bombing. But he addresses very directly the Khobar question, and it's an excellent interview.

Audience Member: I just got back from Kuwait in June, and I worked for a couple of general officers over there. I'm wondering how the Air Force will be affected by the increasing emphasis on jointness?

Mr. Anderegg: I'll go out on a limb here, because I'm not a joint historian. The perception of very senior civilian leaders in the United States for many years has been, I believe, that the services don't act jointly unless they're forced to. We can look at many successful joint programs today that were literally forced on the services because of cuts in the capabilities of an individual service. As a consequence, the services were forced to go to one another and ask, "How can we do this together, because if we don't, we're going to lose everything, or we're going to lose this capability?"

Maybe that's a cynical view, but it seems to me that as the forces grow smaller, we're going to see more melded, or merged, or joint, or combined forces and mission capabilities than we've seen in the past. That's just a right-off-the-top-of-my-head prediction based on personal experience.

Audience Member: Do you think we have the resources and manpower to sustain the current number of deployments?

Dr. Thompson: Ultimately, that's up to the White House and Congress—how much we're going to invest—and that, of course, comes back to the American people. They're usually accused of being unwilling to stay the course, although I've been impressed with how long they've done so. During the Vietnam War, for instance, it was amazing how long the American people were willing to stay the course. It's unpredictable at this point, but I'm not as skeptical as many are. I think 9/11 made a deep-down, visceral impression, and I think there's a broad understanding that we must pay attention to business. We may have to invest a lot more money than we'd like to, but I think there's a willingness to do that.

Mr. Anderegg: You know, we've seen a reduction in the total active duty military personnel number in the Air Force, a constant reduction since the Korean

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War to the present, including through Vietnam. During one year there was a little hiccup, when manning went up a little bit, but essentially we've been reduced from 1.2 million to 375,000 troops over a 50-year period. If there's a pendulum that swings, the question is, "Has it swung too far?" My answer to that is, "I don't know."

I have enormous confidence in our Air Force right now, but I think we all know that its size is an ongoing question. The Air Force seems to have been the victim of its own success in the minds of some in the public and the press. Since this panel addresses the 1990s, I'll mention Desert Storm, the First Gulf War. The air campaign in Desert Storm was so successful that people in the early 1990s could easily say, "Well, we have a fine Air Force, we have enormous confidence in the Air Force, this isn't something to be concerned about." But as the 1990s continued, and we had two air campaigns in the Balkans, and now we're at war against international terrorism, there's always something next. We always have to be ready, and this is going to be an ongoing question. We heard from Secretary Roche about our aging airframes, a problem that's going to be with us for a long, long time. You can't say, "We've been successful, we've got a great Air Force, now we can rest."

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Introduction of

President George H. W. Bush

41st President of the United States

by

Lt. Gen. Richard A. Chilcoat, USA (Ret.)

Dean, George Bush School, Texas A&M University

Good morning, ladies and gentlemen. We're going to hear from a very special speaker with a very special perspective. He's the namesake of our school and our most distinguished faculty member. He's a former commander-in-chief of our armed forces, the 41st President of the United States. He sets a great standard for every student who'll ever graduate from the Bush School of Government and Public Service.

He and his career epitomize the essence of public service, its nobility, and of selflessness, as does his military service, and extraordinarily so. At one time, he was the youngest naval aviator in World War II. On September 2, 1944, he was shot down in the Pacific near Chichi Jima. Rescued by an American submarine, he spent thirty days on the U.S.S. *Finback* while she conducted her war patrol. He probably ought to have received a set of dolphins for that. After disembarking at Midway Island, he flew back to Pearl Harbor.

What's most apparent in all of this is his demonstrated devotion to duty and selfless service. In those days, the circumstances of his shoot-down, survival, and return to safety would have authorized him to rotate back home and take a more secure job, perhaps something on a training base. The war and its dangers could have ended right then for him, but he was determined to return to his squadron. Eight weeks after being shot down, after hitchhiking across the Pacific on various ships and airplanes, he rejoined his aircraft carrier, U.S.S. *San Jacinto*, in the Caroline Islands, and ultimately completed his tour of duty.

To him, the phrase "duty came first" speaks volumes. It reminds me of the quotation you can see on the southwestern side of our museum as you ride along Barbara Bush Drive into the Presidential Library area. On the wall, carved in stone is "Let future generations understand the burden and blessings of freedom and let them say, 'We stood where duty required us to stand.'" Those words resonate heavily with me, a former soldier, as I'm sure they do with all of us. They apply to President Bush during the First Gulf War and to young officer Bush during World War II. Throughout his life he stood where duty required him to stand. For us in the Bush School, and for citizens everywhere, the quote and the man provide a great example.

Ladies and gentlemen, please join me in a warm welcome for the 41st President of the United States, George Bush.

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President George H. W. Bush

41st President of the United States

Thank you all very, very much. Please be seated, and thank you. I'm very disappointed to see General Jumper here. I'll tell you why. Do you remember the old story about the guy who died and went to heaven? Saint Peter asked him, "Well, what are you going to talk about in your entrance exam?" He said, "I believe I'll talk about the Jamestown flood." St. Peter replied, "Okay, but remember that Noah's in the audience."

Well, here I am, getting up to talk about not so much the Air Force, but air power, and in front of not only one expert, a man for whom I have great respect, a man whose country owes him a great debt, but in front of many other experts as well. And yet, when my dear friend Dick Chilcoat, who runs our school with such energy and such imagination, suggested that I might be "the closer," as they say, I couldn't say no. I'm delighted to see so many people here, proud of what this conference has accomplished; I'm a guy who was lifted up every day of his presidency by the Air Force, indeed by all of the armed services.

Welcome to the Bush Library. I was delighted when I heard that this conference would be held here to celebrate the first century of American air power, and we're indebted to the many people who took time out of their busy schedules to help make this enterprise successful. Some of you have been here before; some of you might be visiting for the first time. This place means a great deal to me and to the "Silver Fox" [Barbara Bush, the former first lady]. Barbara is now out on her book tour, heading off to Florida this morning, having just gotten back from New York. I told her, "Remember you're seventy-eight. You're in your seventy-ninth year. Act like a grown-up, will you?" "No, I've got to go onward." So on she goes, selling the book, which incidentally is a kinder and gentler book. It's not a get-even book. It's about our lives together for the last ten years.

I'm very sorry that I wasn't here to greet the secretary of the Air Force. Some of you got to see Jim Roche. I did have dinner with General Jumper, but I missed what I'm told was his wonderful, wonderful speech. Nor did I see Gen. Daniel James. I'm old enough to have known his father, for whom I had great respect and great admiration. I'm sorry I missed him and so many of the distinguished panelists, and so many others here at Texas A&M, at the Bush School, and at the Bush Library, which has become such an integral part of my life these days.

I hope this doesn't sound too fulsome, but in a way it's fitting that we're holding this conference here, deep in the heart of Texas. It was in 1909, and I hesi-

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tate to click off historical facts with the great Air Force historians with us today, that the U.S. Signal Corps, the Army Signal Corps, sent Lt. Benjamin Foulois to "Fort Sam" in San Antonio, not too far from here, to evaluate the airplane's military potential. Foulois's orders from his commander, Brig. Gen. James Allen, were simply "take plenty of spare parts and teach yourself to fly." Fast-forward to those unbelievable Air Force Thunderbirds we saw. After they came zooming over us, their taxiing in wing-to-wing was almost as dramatic as their flying in perfect formation.

It's clear when you see the Thunderbirds and then think back to old Foulois how far we've come in aviation. Lieutenant Foulois and his fellow members of the 1st Aero Squadron soon found that aviation was well suited to Texas, to its flat open spaces and its risk-taking people. Conversely, Foulois also discovered that progress in military aviation would come in dangerous increments.

It's been said, facetiously, that the bravest person ever to live was the first to eat an oyster. Such can surely be said of Lieutenant Foulois. To give you some idea of how dangerous military aviation was at the beginning, between 1909 and 1913, of twenty-four Army aviators who earned their wings, eleven were killed in training, seven more died in subsequent crashes, and six survived. I know I'm on very dangerous ground because you've already heard from a number of trained historians, all experts on this subject. But the point I want to make is that we should never forget the debt of gratitude that we owe to those pioneers who took tremendous risks to help set America on a glide path to air supremacy. In today's world, without air power, the military missions we ask our young men and women to perform would be much more difficult and, I think, in some instances, hopeless.

No doubt the gratitude I feel toward these early pioneers is intensified by the fact that I was president. I say this because the complete confidence I had in our Air Force men and women certainly made my job a lot easier. Three times as president I made the decision that only a president can make: Place our men and women in harm's way. It happened in Panama in 1989, in the First Gulf War in 1990, and then in a very different mission for our military, in Somalia in 1992. I can tell you this, the toughest decision a president makes is sending somebody else's kids out into battle. That decision was never an easy call, and it shouldn't have been. It shouldn't have been an easy call. At the start of his memoirs, our fellow Texan, Lyndon Johnson, wrote something that sums up the presidency fairly accurately, though not totally accurately for me. It goes like this:

> It's been said that the presidency is the loneliest office in the world. I did not find it so. Even during the darkest hours of my administration, I knew I could draw on the strength, support, and love of my family and friends. But if I was seldom lonely, I was often alone. No one can experience with the President of the United States the glory and the agony of the office. And no one can share the burden of his decisions or the scope of his duties.

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I agree with a lot of that, but I'm not sure about the lonely part. While we were in office we tried to avoid the inevitable camera shot. The photographers want you to pose in the Oval Office, you know, looking off into the horizon, across the south lawn. You can see the Washington Monument. And the cameraman keeps saying, "Just a little more angle, sir." You look up there, to depict the fact that you're all alone and that there's a terrible burden on your shoulders. Well, I didn't feel that way and I'm proud of myself for not posing that way. I'm also proud of Number 43 [George W. Bush] for not doing it. He goes about his work with conviction in his heart.

I agree with what President Lincoln said, though his problems were far greater than the ones I faced. The problems of the current president are much more complicated than anything I had to face. But Lincoln often spoke of being "driven to his knees by the weight of such decisions." I know exactly how he felt. I said at the Air Force Academy one time, I can't remember the exact words, but they were something like "You can't be an atheist and be the president of the United States." Legally you can, technically you can, but my own experience was more like Lincoln's. You'd better believe in something far greater than yourself, and you'd better spend some time saying your prayers. That's quite different from some of the thinking today.

Lincoln spoke of being driven to his knees. Both Johnson and Lincoln were presidents in great times of trial for our Union. Both were tested by war. Both did their very best, as they saw it, against great odds.

As for me, without a doubt, my experience as a scared little guy flying in the Pacific shaped my own views on the use of air power. It doesn't seem real that this year marks sixty years since I earned my wings at Corpus Christi Naval Air Station in June 1943. I then went on to do my duty as so many officers and men and women have done in the Air Force today.

Before I go any further though, I want to tell you something. I'm not here to tell you a bunch of war stories. There's a danger when you let an old guy start doing that. It's a terrible danger. I don't go to these reunions much anymore because when someone says, "Well, tell us about what you did, sir," or someone asks, "George, how did it go out there?" I'd start in telling them and then realize I'd be interrupted when some other nut would get up and tell me what he'd done out there in the Pacific, or somewhere else. I reached one conclusion: I'm now convinced, in my eightieth year, that my squadron single-handedly won the war in the Pacific, without any doubt.

Seriously, let me say I learned a great deal watching how President Franklin Roosevelt, my commander-in-chief back then, handled the diplomacy leading up to our entry into the war. Remember, it was a time of isolation right up until the attack on Pearl Harbor, although we'd participated in Lend-Lease. The way he handled things had my respect. He let the generals do what they had to do to win the war. Throughout the war, in one of the great displays of presidential leadership, this man of infirmity, courageously guided our nation.

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Suffice it to say, all of that had a big impact on me as a young ensign in the Navy. I must confess that my family, way back in the 1930s, were not FDR fans. They weren't Democrats; they weren't liberals, as we say. They were just plain old Republicans, and they weren't particularly enthralled with Franklin Delano Roosevelt. But he was our commander-in-chief, and that was all that mattered to my generation.

The day he died, Barbara and I were in a tiny apartment in Auburn, Maine. I'd come back from overseas, and I was first stationed at the Naval Air Station at Lewiston, and Auburn was just across the river. There was no TV back then. I remember hearing the news of his death on the radio. We both wept. It's funny how you can't remember a lot of historic details when you get to be my age, but I remember that day. I remember his death vividly, as if it were yesterday.

Like almost everyone else serving in World War II, and like many of you—General Jumper would be right up there with his combat experience—I lost friends. I saw men die before my own eyes. Like everyone who's seen death close up, I'm sure the experience will stay with me until the day I die. My experience in the Pacific during World War II helped me understand what war's really like, what it really means to those in battle. I think it helped make me a better president, having done my duty.

Later as president, I was always mindful that it was the people in the field who risked it all. I was always wary of sending somebody's kid, husband, wife, father, or mother off into hostilities, off to a place where they might get killed. Even when faced with such a clear-cut choice of good and evil that confronted me when Iraq invaded Kuwait on that fateful August day, I still worried a great deal about the men and women in uniform. You have to. You're the one who's responsible. But in those three instances—in 1989, 1990, and 1992—I never wondered if we were doing the right thing.

Standing before you today, I'm still convinced we did the right thing in restoring democracy to Panama and in bringing Manuel Noriega, an indicted and subsequently convicted drug dealer, to justice. I hope the darn guy never gets out of jail in Miami, or I'll be running for cover around here.

Air power and the Air Force had a key role, a courageous role, in all of that. We did the right thing in liberating Kuwait and in trying to keep the oil fields open. That was somewhat controversial and, unfortunately, it became a political issue in the Congress, whether to support the president in his determination to kick out Saddam Hussein from Kuwait. The vote came in almost along party lines, but we went forward, and the minute the battle started, we had the support, I'd say, of the entire Congress and of the American people.

Somalia was different. I remember sitting in front of a TV set with Barbara up on the second floor of the White House. It was in a treaty room, in what's now a presidential office. We'd watch a starving thirteen-year-old kid, just a wafer of a kid coming in and dragging her starving six-year-old brother into Mogadishu for a pitiful handful of wheat or rice. What we saw grew and grew on our con-

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science. I said, "We can't do this as a great country. We can't just sit here." I called Dick Cheney and Colin Powell, my dear friend who was then chairman of the Joint Chiefs. I said, "You guys come over." So they came over and I said," We've got to do something about it." They asked, "What's the mission?" I said it was a different mission. "The mission is to end the starvation, nothing else, not killing warlords or anything. It's to end starvation. What's it going to take?" They said, "Twenty-eight thousand, sir." I said, "Okay. You've got them."

We went in there. We did end the starvation, but unfortunately, what happened was, and I'm not assigning blame, the mission changed. I don't like mission creep. The mission changed. We saw our mission change to chasing and capturing warlords and to dusting Mogadishu. We saw two American helicopter pilots dragged by their heels through the streets of Mogadishu, and we really didn't do much about it.

The United Nations was in command then. That taught me another good lesson, although it's ex post facto because I was out, receiving what Winston Churchill called "the order of the boot." Well, I got that, and out I went. I've been happy ever after.

Nevertheless, I worried about mission creep then, and I worried about it all the time when I was president. People forget that little thing, Somalia, and actually I don't know if when I was president we had anybody killed over there. The only danger then was getting hit by a TV camera. All of the networks were on the beach when we were landing. "Just a minute. Your profile. You Marines, come in a little quicker here. You Air Force guys, off to the side." It was a rather messy situation, but I don't think anybody was killed in the fracas. Nevertheless, a president worries, and he should, when he asks soldiers, sailors, and coasties to go into harm's way.

In Panama, once the decision was made to go in, it was clear that the central challenge to using air power was the terrain. Panama is largely covered by dense tropical jungle. An American was held without warrant and without any legal process right there in the heart of Panamanian defense forces, and of course, Noriega was an indicted drug trafficker. So Panama presented an exceptionally different and difficult mission. But the Air Force performed with superb coordination, superb ability. Adding to the peril for our pilots was the fact that operational security had been compromised by a news report about planes leaving Pope Air Force Base, North Carolina, that ran on live international TV. You know, "Hack into it, Noriega, our boys are just taking off to come get you." This is a sad result of leaning over backward for a free press, which I favor, but I think sometimes some constraints are in order.

On the positive side, Panama marked a critical milestone in the development of air power, the inaugural deployment of the F–117As, the Nighthawks, which flew in from a secret base in Nevada. We saw how effectively stealth technology and smart weapons could work. Moreover, our technology helped us own the night.

Air Power Leadership

The best example of how we deployed air forces during our administration was our response to Saddam Hussein's unprovoked aggression against Kuwait, halfway around the world. Air power was a significant component of our policy from the very beginning. I'll never forget the day the Iraqis crossed into Kuwait and Brent Scowcroft, my dear friend and former Air Force general, great national security advisor, came to me and said, "You know we've been given assurances by [Hosni] Mubarak [Egypt's president], who'd been told by Saddam Hussein that he wasn't going in." The king of Jordan was told the same thing. But Saddam Hussein crossed over into Kuwait and occupied it, just like that. It was a very, very powerful moment, and a very important moment in history. The day after Iraq crossed into Kuwait, I offered a squadron of F–15s to King Fahd of Saudi Arabia, which eventually he accepted.

You've got to remember that this was a major cultural shock for the Saudis, indeed for the entire Arab world, to accept something like this. Placing our air power in the region was one of our first responses as we sought to contain, and then reverse, the aggression. I recall at one early briefing, Colin Powell observed that air power was the Army's most flexible means for projecting force. But everyone understood that air power alone wouldn't be sufficient to eject Iraqi forces from Kuwait. The pass would require ground troops, quite a few of them.

I was talking to General Jumper last night about Tony McPeak, who had General Jumper's job back in those fateful days of the 1990s. (I'd been briefed by him, by Norm Schwarzkopf, and by the others up at Camp David.) He'd made what sounded to me like rather extravagant claims about what the Air Force could do. When he left Camp David, I said to Brent, "Is this guy for real? Is Tony really on? I mean can they do all these marvelous things?" And he said, "Yes, sir. They can."

McPeak had gone to the Gulf right after the Iraqi invasion and returned about forty-eight hours later, before we knew we were going to have to go into battle if Saddam Hussein didn't leave Kuwait. I asked him over to the White House. Brent and Dick Cheney came, too. We were upstairs in that wonderful, quiet dining room and I said, "Tony, let me ask you a personal question. I remember all of this stuff you told me when we were at Camp David, and now you're back from the Gulf area. Can the Air Force really do what you told me it could do?" He said, "I'm more convinced that it can do it, and do it even better than I told you it could." That was very reassuring for the commander-in-chief.

But he was right, absolutely right. I'd talked with Tony McPeak about the civilians and our determination and his to eliminate, to reduce, as much as possible, civilian death and to reduce, as much as possible, damage to residential areas and religious areas. He convinced me that the targeting took all of that into consideration, and he proved to be right.

Fast-forward just a minute to present-day Iraq. Targeting considerations are still the same, but the technology is even better than it was. The smart bomb is even smarter. And that's been true in this new battle in Iraq, believe me. Thank

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God for that, because you don't want to see a lot of innocent civilians killed when their deaths can be avoided.

On the first mission of the First Gulf War as we watched television, Barbara and I saw the Baghdad sky light up with antiaircraft fire. And again, I worried about our forces. But Dick Cheney called later to say that 56 Navy planes had gone out, and 56 had returned safely. Another 200 or so Air Force planes had also gone out, and the report was equally positive.

When all was said and done, some six weeks later, more than 110,000 sorties had been flown and 79 U.S. service members had lost their lives. You mourn the loss of every single kid, of course you do, yet I also gave thanks that the critics who before the war had predicted 50,000 body bags were just plain wrong.

I remember the night before the war started. My dear friend Ross Perot was on the Larry King Show saying, "I know the man who knows the man who made 50,000 body bags for our troops." He was wrong. The night before we had to go into combat I was somewhat annoyed by that. (I can't use the expression that I'm thinking of right now.) I can understand the fear mongers and I can understand the negativity of some of the pundits, but I do think that when things go right, the American people should understand.

I believe in the Second Gulf War. I had a wonderful conversation with General Jumper about that yesterday. Yes, there are problems, but some things are going so much better than what the news media report. I know people who've come back from there, and I've talked with them. That isn't to say we don't have huge problems. We do. But I'll tell you one thing, this president of the United States [George W. Bush] won't quit and pull back. He won't do it.

Probably because of the heroism of some people right here in this room—some man, some woman, wearing Air Force blue, and some other people too—when the war ended, I was made a knight, a Knight Grand Cross of the Order of the Bath. Yes, you're looking at one, a real knight. Napoleon Bonaparte once observed that soldiers win battles, but generals get the credit. In my case I was fully aware that I was receiving the award on behalf of every kid who fought in the Gulf. Some weren't kids: Colin Powell, Norman Schwarzkopf, you name them. All have done a superb job, and I was the guy summoned to Buckingham Palace and given this knighthood, the Order of the Bath.

Well, if I ever entertain delusions of grandeur, or self-promotion, Barbara Bush is always right there to keep my feet firmly on the ground. When we got back home—this is a true story—I said, "Barb, how does it feel to be married to a real live knight?" She replied, "Make the coffee, Sir George."

In conclusion, if I were to offer a final thought about air power, I'd tell you that it's one of the solid reasons why I'm an optimist about our country. I tell this to these kids here, I'm optimistic. People ask, "How can you be optimistic with Iraq doing what it is and 9/11 and its aftermath and international terrorism?" Well, I remember the Cold War. I remember when two nuclear-armed powers were staring at each other. I remember when Germany was divided by an

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obscene iron curtain, a barbed-wired wall. We've come a long way, and we're going to win these battles we're into now. I'm an optimist about the kind of world in which your kids and my grandkids are growing up. So, I'm feeling pretty good in spite of the problems, the serious problems, that our Air Force and the other services face today.

Recently I came across an old saying from my Navy days, "ceiling and visibility unlimited, CAVU." (General Jumper indicated that the Air Force also uses that term.) Well, anyway, CAVU, ceiling and visibility unlimited, is my motto these days about life and about our country and about our world. You might wonder that I can say this with total conviction. My answer is, in part, because I've lived for so darn long. I've lived long enough to see our world divided by bloody war. In the case of World War II, we saw our world split by the opposing ideologies that I just mentioned. Two armed camps poised to destroy one another, waging an incessant struggle for global superiority. So here today, despite the deadly new challenges we're confronting around the world and despite the new challenges confronting our allies on the pathway to peace, we truly have gone from a world divided to a world transformed. Which, I hope, explains my ceiling-and-visibility-unlimited theory.

I have no doubt in my mind that the best for our country, this great country of ours, lies ahead. I want to thank all of you for taking time out of your lives to participate in this special conference. The architects of American air power have helped write one of the most important and successful chapters in the story of America's rise as a global superpower. And to all of you students of history, of all ages, thank you for striving to be thoughtful stewards of this proud, distinctly American legacy.

Lt. Gen. Richard A. Chilcoat, USA (Ret.)

Dean, George Bush School, Texas A&M University

Thank you, Mr. President, for your closing remarks, and thanks sincerely for your support and participation in this great conference hosted by the Bush School in collaboration with the United States Air Force History and Museums Program, supported by the Bush Foundation and Texas A&M University.

Almost 100 years ago, on December 17, 1903, at 10:35 in the morning, two brothers driven by vision, creativity, and courage completed the world's first successfully powered heavier-than-air flight from Kill Devil Hill, North Carolina, for a 12-second, 120-foot journey over land. A new industry, a new way of life, and a new world followed closely behind. The Wright brothers accomplished what few people had only imagined and dreamed about since the beginning of time. And the momentum of the powerful forces that they unleashed continue unabated into the twenty-first century.

In addition to President Bush, I'd like to offer special thanks to Secretary of the Air Force Dr. James Roche, and to Air Force Chief of Staff Gen. John Jumper, for their support and participation in the conference. I'd like to acknowledge and thank my co-chair, Col. Carol Sikes, commander of the Air Force Historical Research Agency. Also, I have to recognize the efforts of the most indomitable Air Force project officer in Aggie history, Maj. Corvin Connolly.

From our side, thanks to Col. Jerry Maxwell and the Texas A&M Corps of Cadets. Thanks to our great university staff for their good works. And finally, thanks to Dr. Arnie Vedlitz—I owe you, the Bush School staff, the Foundation staff, Michele Ride, and the entire team. You did it again!

Ladies and gentlemen, the advancement of flight was one of mankind's most remarkable achievements during the twentieth century. Still, we know that those accomplishments are merely a stage for the possibilities and potentialities of the twenty-first century. Some say, "The past is prologue." Yogi Berra says, "The future ain't what it used to be." No matter how you look at it, our conference was timely, and all of our presenters and participants gave us a great look at the past, present, and future of flight.

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