

## Dayton 2003 Centennial of Flight – “Vision of the Future”

By The Honorable Robert S. Walker

Here’s what I believe: In this century, men and women will board aircraft close to their homes, fly directly to their destination of choice, do so on pilot-less airplanes flown by nanoproducts accessing a global guidance network. Men and women will fly where they want, when they want with greater security and safety than flyers today.

Here’s what I believe: In this century, the human species will travel throughout the solar system and colonize those places that prove habitable. They will do so using nuclear plasma engines early in the century and later switch to anti-matter technology. The space voyages we now measure in months and years will be cut to weeks and months – in some cases days.

Here’s what I believe: The peoples and nations prepared to launch voyages of discovery in space and utilize advanced technology for air travel will dominate this century economically, culturally, politically and militarily. They will do so because of the new knowledge gained by faster, safer more secure travel and by making the new discoveries that are certain on the space frontier.

Some of you will share the visions that I just described; others of you will think them a little far-fetched. But whether you like or dismiss what I’ve told you that I believe, I want you to at least consider the threshold on which we now stand.

Imagine 100 years ago telling the people who had just witnessed man’s first flight that in less than thirty years technology would permit a solo flight across the Atlantic Ocean. Or that large groups of people would fly across the Pacific Ocean in less than forty years. Or that within fifty years trans-Pacific flights would be non-stop. Or that in less than half a century airplanes would break through the sound barrier. Or that in less than seventy years, humans would set foot on the Moon. You would have gotten a good deal of disbelief. Wilbur and Orville themselves, with all their years of frustration in achieving their goal, might have even laughed a little.

With that first flight the world stood on a threshold of unimaginable proportion. Sometimes it’s hard to see it, but so too do we today.

When the Commission on the Future of the United States Aerospace Industry issued its report late last year, we summed up our vision as *Anyone, Anything, Anywhere, Anytime*. We were not quite as futuristic in our description of that vision as I have been here today. After all, it was a government report. But woven throughout that report are all the building blocks it will take to exploit the future that I’ve described. And our clear message to policymakers and the American people was that the United States must stake its leadership claim in air and space during this century if it intends to continue its world leadership role.

What we saw was a threshold of opportunity – economic opportunity, technological opportunity, scientific opportunity, global security opportunity, and yes, the opportunity to extend the human presence to worlds beyond our own. And then we laid out in specific terms what we need to be doing now to exploit those opportunities.

We need government to coordinate its aerospace activities so that instead of interagency jealousies and rivalries, we have interagency cooperation. One such arena for cooperation that we saw as particularly critical was the creation of a new air traffic management system utilizing space based assets that are being developed for defense purposes but could also be used for civil aviation.

We need to get on with the business of building new generations of air and space technology. Specifically, we endorsed the Defense Department National Aerospace Initiative and NASA's plans to build an orbital space plane and use nuclear plasma engines for deep space flights.

We need to enhance the investment climate for those willing and able to build aerospace assets. While government investments are essential in aerospace, so too are investments made by individuals, businesses and the financial markets. This nation has failed to support a business model for aerospace that assures long-term profitability and success, and the Commission pointed out the reforms that need to be made.

We need to have a well-educated, skilled workforce capable of designing and building highly sophisticated aerospace technology. We called for lifetime learning and individualized curricula as ways of assuring the science and math skills required.

We need to be able to compete globally with our aerospace products. The present system of export controls is rendering our most important industries internationally uncompetitive. And that inability to compete is a direct threat to our national security far more dangerous than the threats the export controls were designed to prevent.

We need to increase our investment and attention on aerospace research and development. Only by staying at the leading edge of technology, in a world where technology can go through several generations of change in a matter of months, can we hope to maintain global leadership.

On these and several other issues the Aerospace Commission sought to issue a clarion call for change. Not change for change sake, but change necessary for taking advantage of the opportunities ahead.

If you focus on only where we stand at the present, you would ignore all the needs I just outlined and satisfy yourself that this nation is the most powerful the world has ever known and, at least, in military aerospace technology, we are generations ahead of anyone else in the world. But I have an automobile-racing license. One of the first rules of racing is to never look at where you are right now because you are going so fast that where you are is meaningless. Your focus must be well down the road so that you anticipate your moves and the dangers ahead. It's a racing lesson that has a lot of applicability to policymaking.

Being in control at a particular moment is not necessarily a formula for winning. A really skilled racing driver, Mario Andretti, has given us another race rule that applies to policy in our rapidly changing world. He said, "If you're in control, your not going fast enough."

Consider a couple of challenges in our immediate future. The Chinese will likely launch a human space flight within weeks. This is not just a one-time exercise. The Chinese space program is robust and, in my opinion, is aimed at going to the Moon within a decade. While this development does not necessarily represent a threat to us, the technological and economic potential such a program represents is certainly a strategic challenge. We may be in control of today's space agenda, but are we going fast enough?

The European decision to proceed with their Galileo program as a competitor to our GPS system represents another interesting challenge. If you remember my first visionary statement where the backbone of free flight was a global guidance network, think of Galileo as Europe laying their claim to the building of that network. The economic implications are enormous. Today, GPS is our control of a major global asset, but are we going fast enough?

With so many things that the Aerospace Commission found that we need to do and with some clear challenges just ahead of us, why then would I say that we stand on the threshold of great opportunity? Because the forces of change that are engulfing us are so profound that they have to lead to opportunity.

A generation of Americans, your children and grandchildren, are growing up with skills in information technologies that are intuitive in ways most of us cannot begin to understand. Those skills will be translated into great advances.

There are new technologies rising with the potential for profound impact, nanoscience and hydrogen energy to name a couple. If you project the geopolitical impact of a switch from oil to hydrogen over the next 20 to 30 years, the world changes in remarkable ways.

History has shown us that in periods of dynamic change, the momentum for exploration increases. As we learn more we want to learn even more. That's the opportunity I see. The urge to explore and discover new knowledge will be enhanced as we open this century. Think of the forces set in motion when the Wright Brothers combined the relatively new technology of internal combustion with control of wing surfaces to permit flight. You do not have to look much below the surface to see the same potential today.

I tell you this because I believe it. It is for me as Winston Churchill once said, "I knew nothing about science, but I knew something of scientists, and had much practice as a Minister handling things I did not understand. I had at any rate, an acute perception of what would help and what would hurt, or what would cure and of what would kill."

From my days as a member of the Science Committee in the U.S. House of Representatives through my service on the Aerospace Commission, I have had a chance to glimpse the future and have looked at policies that will either help or hurt, cure or kill. And I have come to recognize that the choices are never easy. But the book of Luke, Chapter 12, verse 48 reads, "Unto whom much is given shall much be required."

Here is some of what is required go capture the visions I sketched earlier.

We must build a whole new air traffic management infrastructure that relies upon automated systems and communicates directly with information systems aboard each individual aircraft.

We must create new composite aircraft structures, strong and lightweight utilizing new smaller, quieter and lighter weight engines which permit the building of relatively inexpensive airplanes to buy and operate.

We must make aircraft good neighbors where they take off and land so that airports are seen as economic assets rather than community burdens. We can do that with quieter engines and environmentally friendly operations. We must give people the same sense of confidence stepping onto an airplane without a pilot as they are stepping into an elevator without an operator.

We must think of our space program as our legacy of exploration that is worth our investment because it calls forth our courage, inspires our imagination and produces new knowledge and new understanding. We must create power technologies that allow us to conduct voyages in the solar system that are inside a politically acceptable timeframe so that accomplishment of them becomes a political imperative.

We must be prepared to accept the risks as well as the accomplishments that come from all exploration, but particularly exploration of the most hostile environment ever faced by humankind.

We must be aware that if we do not chose to lead in the exploration and exploitation of air and space, others will, because the ability to move people, goods and munitions anywhere, at anytime is the formula for global dominance in this century.

The conclusion I draw is that we have been given an opportunity to seize. We are required to address the needs, meet the challenges and move aerospace at least as far forward in this century as our fathers and grandfathers moved us in the century just past.

When the Wright Brothers gave humans their wings they extended not only the capacity of the human body but of the human mind. We gained the ability to extend our vision and our dreams. For some that meant the opportunity to visit far distant lands, for others to dream of visiting far distant worlds. We are different today than we were 100 years ago because we can fly. We are different today than we were 100 years ago because what was once the miracle of flight has become routine. We will be different 100 years from now because humans will populate the heavens. We will be different 100 years from now because flight will continue to inspire the imagination.

Here's what I believe. By daring flight in air and space, we reach to touch creation's face. Look up to see the destiny of humankind. Look up to see America's destiny. Look up and you also be looking ahead – ahead into a new century of flight.