

**TICKER TAPE TO TICKET:
THE NEW MOMENTUM OF HUMAN SPACE FLIGHT**

Remarks by

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Good morning. It's a pleasure to attend an event commemorating a man with so many sides to his life.

I don't pretend to know nearly as much about Robert Heinlein as most of the people here. But, as the Associate Administrator of the FAA's Office of Commercial Space Transportation, I share his enthusiasm and passion for rockets and space. And that's what I want to talk about today.

The world recognizes that the United States has built a record of leadership and distinction in space flight. From Mercury, to Gemini; from Apollo to the Shuttle, we have achieved brilliant things and fired the imagination of millions.

Our success grows from a firm and unambiguous approach to human space flight that says: "We can and will do this and excellence must guide our path."

That commitment has not and will not change.

But other pieces of the space world are moving and changing. And the pace of change is accelerating as the nation renews itself in space flight.

You can see it in many ways from how we organize, to the hardware we fly, to the people who fly on it. I'll have a little more to say about that in just a minute.

First, though, let me share with you how I literally almost tripped over something that made me see the changes more clearly. I'll call it the ...

TALE OF THE TAPE

A couple of months ago, I was in New York on business and walking along Broadway. I looked down and on a granite strip in the sidewalk it said, "March 1, 1962 * Lt. Col. John H. Glenn Jr., the First American to Orbit the Earth."

As it turned out, I was in what's called "The Canyon of Heroes," the New York route of ticker-tape parades. They've installed granite markers in recognition of each of the 202 parades held there.

The John Glenn parade marker got my curiosity up, so I did a little more checking and here's what I found out.

Between 1926 and 1938, a total of 16 ticker tape parades honored aviation achievements. Between 1962 and 1969, five parades recognized American milestones in space.

But there have been no New York parades for aviation in more than half a century, and only one ticker tape parade in honor of space flight in the last 38 years.

For a nation that produced the first solo flight across the Atlantic and first landed men on the moon, you have to wonder why the parades have stopped and what that means.

Maybe one reason the parades have stopped is that we have made what once seemed miraculous into something that appears to be routine. As for what it might mean, there is a tendency to think that when something like a testimonial parade no longer happens that perhaps something's been lost. After all, there hasn't been a ticker tape parade for anyone or any reason since the year 2000.

Why not? Is it possible that we really have lost something? Is it possible that we've become so complacent and that indifferent?

It seems to me the emergence of an answer to that ... at least as it relates to space ... can be found by looking at what was going on around the time of Robert Heinlein's death in 1988. Four years earlier, you could have bought the first commercial cell phone. It cost \$4,000, was the size of a brick and weighed almost three pounds.

The year Robert Heinlein died, the FAA's Office of Commercial Space Transportation marked its fourth year of operation, and NASA turned thirty. A year later, the rock group "Queen" turned out the modern anthem of youth with their song, "I want it all ... and I want it now."

All these things are related to the state of current events in space.

Obviously, the cell phone is a metaphor for technology advances, advances that have been coming at us non-stop and high-speed for a generation now.

The existence of both NASA and the commercial space industry, two separate entities, suggests there's more than one way to do something and more than one something to do.

And the notion of, "I want it all and I want it now," relates directly to attitudes. It is perhaps wise, though, to keep in mind that just because people want it all, doesn't mean they're interested in everything. William Burrows, in his book This New Ocean, points out that when Columbus left Spain for his first voyage to the New World, not everyone in town turned out to wave good-bye.

Regardless of age, progress ... even adventure ... can sometimes be a hard sell in a diverse nation of different agendas, myriad interests and different opinions about how to spend money.

So ticker tape parades may be out of fashion for now, but it doesn't automatically follow that we've lost something. All we can be sure of is that something has changed. In fact, when it comes to space, things really are changing and it isn't a question of losing anything. We've been gaining steadily and there's a strong case to be made that we are gaining more all the time.

So let me make that case.

The United States, even with the predictable differences of opinion, has a robust space program.

In fact, we actually have evolved two complementary yet very different models for space flight in this country. One can be called the national model and the other, the private model. These two separate and distinct space drivers, operating side by side, are building a momentum that is redefining the reach of space flight and enlarging the opportunities for space access.

I'll describe both to make clear the combined potential.

NATIONAL MODEL

Early suggestions of a National Model for space go back at least as far as July of 1955. That's when the National Science Foundation and the National Academy of Sciences announced construction of a small, unmanned satellite in conjunction with the International Geophysical Year (IGY). According to the announcement, the Department of Defense was to "provide the required equipment and facilities for launching the satellite."

By 1956, the plan had taken more definite shape ... and grown.

There would be 600 American rocket launches and a dozen satellites. According to a National Science Foundation report printed by the U.S. Senate Committee on Appropriations, the American IGY effort was to examine a whole catalog of scientific questions, including ... interestingly enough ... these three: "Is the climate of the earth changing? Are glaciers receding? Will melting ice sheets someday flood coastal lands?"

I repeat: That was 1956.

All this science was to take place, however, at an unfortunate and volatile time, right in the middle of the Cold War. So what began as international cooperation became overshadowed by international competition. When Sputnik went up in 1957, the race was on.

National defense became an overriding issue. National prestige was on the line. The ground shifted and what was once the domain of science became a matter of security.

To make sure this country would accept no back seat, the space program became a powerful symbol, and NASA was born to organize the effort.

The President would set the goals, the Congress would set the funding levels, but NASA would command the grand, national space

enterprise. People and resources from all over the country poured into the effort. And, in time, as we all know the results were spectacular.

Our space effort began with a number of key characteristics.

1. It was national in scope. *National*. In fact, the early U.S. space effort was something like a national mobilization.
2. Congress created NASA. NASA employees were federal employees.
3. It was centralized, drawing people from every state and resources from nationwide suppliers for use in accomplishing specified goals.
4. It was mission oriented.
5. It was expensive.
6. The national effort was taxpayer funded. As such it was and remains subject and sensitive to the understandable influence of a broad and shifting public opinion.

It would, of course, be too much to say that the national space program was embraced by acclamation. But early on, even the skeptics surrendered to curiosity. It was breakthrough science, wonderful entertainment, fresh and harrowing while probing the unknown.

Our work in space was viewed as directly connected to national goals, to the taxpayers and to the fact that with the exception of a select few, we were all members of the audience.

So when the triumphs began, the audience watched by the tens of millions on television and threw ticker tape by the ton in New York.

Then, in the early 1980s, another model for space flight began to come into view ... the Private Model.

PRIVATE MODEL

In the difficult domestic years following the early Apollo launches, national enthusiasm for space flight became less national and less enthusiastic. Maybe it was a matter of cost. Maybe it was the civic militancy of the time. Perhaps it was too much familiarity with the extraordinary.

Whatever the reason, an added dimension to space flight began to emerge in the form of commercial space transportation. Its profile was much lower but its role was vital as expendable launch vehicles began to orbit the satellites that, among other things, helped revolutionize communications.

Just about the time commercial activity began, the President issued an executive order creating the Office of Commercial Space Transportation and putting it in the Department of Transportation. That was in 1984. In 1995, the office became part of the Federal Aviation Administration where it remains today.

The Office of Commercial Space Transportation is the office I lead, and it's the only office in the U.S. government that regulates commercial space transportation. We focus on three areas.

We license all commercial space launch operations, more than 190 launches so far without loss of life or damage to private property. We also license the operation of reentry vehicles and issue experimental permits for suborbital reusable launch vehicles.

And we license the operation of spaceports, six of them so far ... at Vandenberg Air Force Base in California; Mojave Airport in California; Kodiak Launch Complex at Narrow Cape in Alaska; the Mid-Atlantic Regional Spaceport at Wallops Island, Virginia; Cape Canaveral, Florida; and our newest at Burns Flat, Oklahoma.

By law, it's also our role to facilitate, promote and encourage commercial space transportation. That's important not only for what's there but also for what's missing. It doesn't say a thing about "operate." And that's the whole point of commercial space.

The private model has a number of key characteristics.

1. First and foremost, it's private. It's driven by private, developers. It's not government-run or federally funded.
2. From the time commercial space began right up through 2004, it involved expendable launch vehicles carrying payloads.
3. The private model is about to debut scheduled, suborbital space flights for private citizens.
4. Instead of exploration, the new field of what's called space tourism is about citizen access to space.
5. Since it's a product of the private sector, commercial space is not a national rallying point and isn't designed to be. It's a consumer choice.
6. It is a freshly competitive venture, with new vehicle builders targeting a range of services including both passengers and payloads.

From this list of characteristics, it should be clear that commercial space is business, not government. Commercial space is potentially a service, offering to meet governmental needs. This is a retail effort.

And that fact is probably the most clear right now as we approach the era of scheduled private human space flight.

The private model is a matter of individual choice, separate and apart from any group approval. If a person decides to make a suborbital flight and can afford it, that person will buy a ticket and go.

And that's the key distinction.

Human space flight was once recognized with rare, ticker tape honors and viewed by a national audience. Now people in the audience will be able to buy a ticket and go for a space flight themselves. The ticketed passenger might never get a ticker tape parade. But at least he or she will have a chance to visit space because private enterprise made it possible.

THE DARK ENERGY EFFECT

Let me assure you there's no hyperbole in what I've just said. Even so, I know some will say, "Well, I don't see much going on in space. Things seem to be tailing off."

My response to that can be found in the stars themselves.

Until a few years ago the consensus view among astronomers was that the expansion of the universe was slowing down. The Big Bang had finally reached its speed limit. But then new data showed that the expansion was actually accelerating by reason of an agency referred to as "dark energy." Things were speeding up, not slowing down. We just hadn't noticed.

Although it may have escaped notice until now, that same expansion is taking place in the American space effort, and I can give you an illustration based on the private model I've described.

In less than three years time since the flight of SpaceShipOne, the President announced a vision for Space Exploration, followed by the recommendation of a presidential commission that "commercialization of space should become a primary focus.

Two months after that, the Administration announced a U.S. Space Transportation policy that called for the Department of Transportation to "encourage, facilitate and promote U.S. commercial space transportation activities, including commercial human space flight."

Then, two days before Christmas in 2004, the President signed the Commercial Space Launch Amendments Act of 2004, that essentially made the FAA, through my office, the regulator of commercial human space flight.

Today, roughly three years later, the momentum continues to build.

The 2004 legislation required two sets of regulations.

One set was to govern crew and space flight participants or passengers. The final rule was issued last December and its critical feature is the idea of informed consent. It means that the passengers have to be given the maximum amount of information related to the vehicle including the fact that no one is guaranteeing its safety. They have to be advised that what the passenger has in mind is a risky thing. With all the information available to the prospective passenger, he or she will make the decision to fly or not.

The second set of regulations governs the issuance of experimental permits for the testing of reusable launch vehicles. We issued the final regulations in April. The whole idea here is a streamlined means for developers to rigorously test the vehicles they eventually intend to use to carry passengers on suborbital flights.

I must emphasize again, here, that this is all just a framework for the operation of private entrepreneurs. Commercial space is private, not government work. We regulate space flight ... not identically but comparably to ... the way the FAA regulates aviation.

On the industry side, there have been no further private manned suborbital flights since October of 2004. But plenty has been going on in the shop and on the pad.

Space X has twice tested and declared operational its Falcon I rocket. It's an expendable vehicle, but Space X has made it clear that it has its eye on human flight.

Both Blue Origin and Armadillo are flight-testing unmanned vehicles. Armadillo has done seven launches so far under an experimental permit, and Blue Origin has done four. Bigelow Aerospace has a one-third size inflatable station in orbit, and a second successfully launched on June 28th.

Virgin Galactic is talking about scheduled suborbital flight with humans on board in 2009. Others are taking aim at a similar time frame.

All of this, of course, is fresh activity in an industry that in 2004 generated \$98 billion in economic activity, produced \$25 billion in earnings and 551,000 jobs.

LOOKING FORWARD

So where is all this leading? What does the future of commercial space look like? Let me give you a conservative ... very conservative ... view of the world a decade from now.

- We will have active, operational spaceports in different regions of the country. They will have evolved from where they are now into complexes offering not only launch services, but an actual attraction for people on the ground who want to see a spaceport and also see a rocket launch.**
- There will be regular launch opportunities for private human space flight. It will be a package experience involving training, instruction and other preparations for a suborbital trip. It will all happen on scheduled basis. It will be among the truly life changing events.**
- There will be a variety of private space carriers ... launching large, launching small, launching payloads and/or carrying passengers. These carriers will serve a variety of clients from technology companies to space tourism to the Department of Defense to NASA.**
- We will have a busy new world of small businesses emerging to serve the needs of spaceports, space entrepreneurs and space travelers.**
- New technical education programs will appear born of a fresh interest and expanded opportunity in the space flight business.**
- Finally, we will have invented a whole new area for sharp thinking, for ideas and for plans in industries that don't even exist today. We are about to step through the wardrobe door into a world that is very different from the one we live in now.**

Maybe that doesn't sound especially revolutionary.

But it is.

Within ten years time we will have taken the first steps toward what former Transportation Secretary Norman Mineta called, "the democratization of space flight."

America's space future will be even greater than its space history. There are two big "horses" pulling us into the new world of space. Those "horses" may be of different breeds, but we need them both to get us where we're going.

One is NASA, the national focal point of the federal effort to take mankind deeper into our solar system. NASA will spend the five years between 2010 and 2015 gearing up for its greatest ticker tape adventures ever.

The other space "horse" is private enterprise operating in commercial space, building the vehicles and selling the opportunity for citizen space flight. That's the area in which the FAA and my office are involved. And it's where the private sector will spend those years between 2010 and 2015 gaining experience, fully establishing its man-rated credentials, taking people into space. This is the horse that will take us to the future.

It really is both ticker tape and ticket. And the private human space flight parade ... where more people will be able to step out and join the march ... is about to begin.

Get your tickets now.

Thank you very much.

