

Good afternoon, Members of Congress, Ms. Hall, Dr. Linn, and guests.

In 1961, the first human, Yuri Gagarin, and the first American, Alan Shepard, launched into space. President John F. Kennedy announced the national goal of landing on the moon before the decade was out. In this year, for the first time, a woman was appointed to be personal physician to a President – Dr. Janet Travell. President Kennedy established the first Presidential Commission on the Status of Women, chaired by Eleanor Roosevelt. The Dick van Dyke show debuted, with one of my favorite actresses, Mary Tyler Moore, who would later become an icon for professional career women. This year also marked the official beginning of the Vietnam War. A period of profound change.

1961 also happens to be the year I was born. These significant events illuminate the world into which I arrived. I was lucky – lucky beyond belief – to be born at this time, into this country, to my parents.

I believe firmly that we are all a blend of genetics and situation. For me, that heady brew of time, place, and personality launched me straight into low earth orbit as one of only three women to command a multi-crewmember space vehicle. It is not a coincidence that all three of us are American.

What I experienced was: Environment, Education, and Opportunity. The rest was up to me.

First, I had a supportive environment. My parents always told me I could do anything I wanted. In the minds of Dave and Helen Melroy, a young military couple -- middle-class Americans -- that meant I could be a doctor, or a lawyer, or – when I showed an interest in astronomy – maybe a PhD scientist. Now, up to that time, I had thought about a lot of career options. I wanted to be a ballerina, a Roman Catholic priest, an author, or an astronomer. If this list seems unusual, it was because I actually believed my parents. OK, maybe I took longer than usual to stop believing in the tooth fairy and Santa Clause too. But, within a year or two of Neil Armstrong's first steps on the moon, thirty-nine years ago this week, I began telling everyone I met that I was going to be an astronaut. My parents successfully hid their astonishment and disbelief and continued to encourage me.

Next, I had education. I attended Wellesley College, one of the best liberal arts colleges in the US with a top-tier reputation for science. It also happens to be a women's college. I personally believe that a single sex education was, for me, a critical experience in developing the confidence in myself as a scientist. I had gotten by in high school by memorizing but that didn't fly with astrophysics. I was terribly discouraged in my freshman year, and fearful that I could never achieve my goal of becoming an astronaut. But the direct support of a few professors encouraged me to continue my difficult major. This level of intimacy with professors is a

hallmark of small liberal arts colleges, and I believe is a key element in the retention of women in science majors.

And because all the physics majors I knew were women, I never succumbed to the messages about not being able to do science because I was a woman. In fact, after I left Wellesley, I was so immersed in that perspective that I found the sometimes subtly communicated implication that women were inherently less talented at math and science, to be quite ludicrous. I was sorry and embarrassed for the people expressing that position, as if they had declared the world was flat.

Single-sex education is not for everyone, but having the opportunity is critical for many young women and men as well. It is important to recognize that boys and girls learn – and are inspired – in different ways, by different things. And that people learn in uniquely individual ways as well, which is why research into effective teaching is so very important.

Finally, I had opportunity. The US military played an enormous role in my future. The only astronauts I had ever heard of were military jet test pilots. So I decided that I was going to become one too, despite the fact that the military did not even let women become pilots at the time, much less test pilots. And incredibly, when I was in high school, the military opened up jet flying to women. This single event - opening a door to opportunity -- directly changed my future.

After my masters degree, I went into pilot training, the toughest year of my life. It was a big transition to go from the academic world of Wellesley and MIT into the military. I won't pretend that there weren't challenges. But I would like to remind everyone here that the military was also a place where I was paid exactly the same, and met promotion boards at the exact same time, as any man in the same job. There are not many career fields which you could say that about in 1984 – much less today.

After this point, things get a little boring. Basically I did exactly what I planned the day I decided to become an astronaut. I was a military pilot, flew in combat, became a test pilot, applied and was accepted as an astronaut, and eventually became a Space Shuttle commander.

OK, well, NASA has not been at all boring! NASA has been another experience in opportunity for me and a joy for me from the day I arrived over thirteen years ago. It might be that that was because when I walked in people knew I was a future shuttle commander based on my background as a test pilot. But I think it's very significant that at the Johnson Space Center, a highly technical organization, over 1/3 of our employees are

women, and even more significantly, 1/3 of our senior management are women. There is no glass ceiling at NASA.

Never has this been clearer than the historic day last fall when Peggy Whitson and I shook hands across the hatch between the Space Shuttle and the International Space Station, the first time two women commanded space vehicles at the same time. As a young woman, I dreamed of commanding a spacecraft. It never occurred to me in my wildest dreams that two women might be commanding spacecraft at the same time. And this was coincidental; it was no publicity stunt, nothing cooked up by media specialists. It just happened that there were enough women in the office and we had worked our way into those leadership positions. The key here is the critical mass. I believe that when you achieve a certain percentage of women in an organization, gender ceases to become an institutional issue. To illustrate this point, when Peggy and I were in space many women expressed excitement over the historical nature of our flight. One of the women flight directors put out a call that all women who helped plan, train, or execute STS-120 should show up for a picture together in Mission Control. Now, Mission Control is a BIG room. She sort of expected thirty or forty women to show up. Let me show you the picture taken that day – everyone was amazed and inspired when they realized the room was filled to nearly bursting!

I learned a lot on the way to the moment that Peggy and I shook hands in space, but the things that affected me the most happened long before these events. As time has gone on, it has only cemented my belief that the most significant events happened early in my life. After that, it was a matter of momentum.

So let me tell you what my life experience has taught me to believe.

First, environment, which is the influence of an adult – parent or otherwise – giving the message of encouragement to a young woman is absolutely critical.

Second, the faculty engagement characteristic of small liberal arts colleges has made a significant difference in retention of women in science and math majors.

Third, at some point, whether it is elementary, high school, or college, women and men can benefit from an opportunity for single-sex education, or by learning in an environment which understands the different ways to inspire men and women.

Fourth, equity in pay has a profound effect on both women and men in validation of professional value.

Next, achieving a critical mass of women in an organization -- such as NASA has achieved through many years of effort -- is essential to breaking the glass ceiling.

Finally, I have learned from speaking to many students over my 13 years as an astronaut that real concepts, real solutions, real jobs, inspire students as no classroom environment can.

I won't deny that personality played a role in all the events that brought me to the honor of speaking before this august audience. There were a lot of people who told me, overtly or by implication, that I was wrong, that I didn't have a chance, that I was uppity. I do know that for some reason I never paid the slightest attention. In fact, it spurred me on. Maybe I was naïve. Maybe I was just stubborn. I know what my dad would tell you. I do know that I just have that personality that if you tell me I can't do something, I will insist on doing it.

But I am not the smartest, most talented woman I have ever met. How many of those wonderful women in my generation have we lost along the way to other less satisfying careers because they believed for too long that they couldn't do it?! You should not have to have a pigheaded and ornery personality in order to succeed. We must encourage all girls and women early on to believe in themselves and their abilities to succeed in Science, Technology, Engineering and Mathematics careers. And you are the people who can make it happen by helping to provide: Environment, Education, and Opportunity. This is MY version of EEO.

This is much more important than some idealistic goal. There is an enormous challenge ahead for the United States. We are not demanding enough math and science from our students, and the rest of the world is poised to leap ahead in the technology that controls our lives. Computers, cars, cell phones, aircraft, spacecraft, petroleum engineering, alternative energy, environmental engineering. Don't see this issue as a threat, but as an opportunity. I have found, in the course of speaking to many students across the years, that real life problems have a way of enthusing and inspiring students what it really means to be an engineer or scientist. The more we emphasize real problems that they can actually see in our society, the more young women will engage.

NASA understands this at a fundamental level. The challenge of my generation of astronauts has been to fly the Space Shuttle and assemble the International Space Station. However, in 25 years we plan to send a human being to Mars. This exploration effort is enormously more complex than anything ever attempted, and will require the will and the skill of a whole generation. The first woman to walk on Mars is in school today. Let's not let her down -- let's help her get there.