

# Humanity's Journey of Discovery

Presented by Charles F. Bolden Jr.

Penn State College of Engineering Commencement

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What an honor to be here tonight at the invitation of Dean Justin Schwartz to address the graduating Class of 2019 of the Penn State College of Engineering. My deep appreciation goes out to Dr. Amy Pritchett for her diligence and persistence in leading the effort to get me, at long last, to University Park.

To the faculty and staff; to all the parents, grandparents, aunts, uncles, cousins, children, grandchildren, and friends who are with us ... it's an honor to share this very special evening with all of you.

To the Class of 2019 – this is my favorite part – congratulations! You did it!

With your new Penn State diploma comes a piece of a very significant legacy. Five of your predecessors made their way to NASA to become astronauts. Beginning with the late Paul (PJ) Weitz '54 and the first Black astronaut to go to space, Guy Bluford '64, that list now includes Robert Cenker '70 (with whom I flew my first Space Shuttle mission aboard the Orbiter *Columbia* in January 1986), James Pawelczyk '85 and Doctoral Candidate Zena Cardman who is a member of the Class of 2017 Astronaut Candidates or ASCANS as they are affectionately called.

Along with the many other now famous Penn State alums, they've raised families, raised the bar in their respective fields and at times they've raised hell.

Just imagine what *you'll* do! Tonight Class of 2019, you're going to cross a bridge from academic life here on campus to responsibility for leadership of our great nation. This is only the first bridge you'll cross in your young lives; it's the graduation bridge. It's a bridge between classroom and career. It's a bridge between present and future.

You're crossing this bridge at a pivotal moment in human history. Our planet has a very big "help wanted" sign on it – *trust me on this, you can see it from space (not really)* – and we're counting on your generation. We're counting on you to cure the previously incurable ... to tackle big challenges like climate change ... to teach us to live as one people on this beautiful planet. We're counting on you to lead humanity's journey of discovery.

You're part of the generation that will travel to an asteroid ... that will walk the surface of Mars ... and, yes ... will return home safely. As you prepare to cross this first bridge, I have a few pieces of advice for you.

The first concerns not just where you'll go, but how you'll get there. Although this is my first visit to University Park and Penn State, I feel right at home here, because even though I grew up many miles away in South Carolina and I attended a long-ago major rival in football and wrestling – the U.S. Naval Academy – I have long admired your competitive spirit, your quest for excellence and your dedication to the spirit to serve. I am awed, for example, by Penn State's comprehensive health system caring for more than one million patients a year. And I am truly inspired by THON, the world's largest student-run philanthropic organization that raised \$10.6 million this year and more than \$168 million since 1977 to benefit pediatric cancer research. That's a worthy example for all of us to keep in mind – and something of which you should be eternally proud as you embark on your careers.

I can tell you that as NASA Administrator, my top priority was our people. It's a great source of pride that at the same time we're reaching new heights in space and aeronautics, we're also the #1 rated, best place to work in the federal government six years running.

When you're a great place to work, the best and the brightest want to come and work for you and with you. What's more, they tend to want to keep working with you, too.

So my first piece of advice is to keep in mind that your success is not only about the work you do, but *how* you do it.

It's also about with *whom* you work. The late legendary Pittsburgh Steelers coach Chuck Noll once said that, quote: *"I can't tell you how much you gain, how much progress you can make, by working together as a team, by helping one another. You get much more done that way. If there's anything the Steelers of the '70s epitomized, I think it was that teamwork."* End quote.

I'll attest from my firsthand experience that this holds true whether you're leading Marines, flying combat missions, or piloting a mission in space.

None of us would be here were it not for the shoulders on which we stand. So my second piece of advice is *"don't let a day pass that you don't approach someone who means a lot to you and thank them for just being themselves and for helping you be you."*

With this in mind, graduates, I hope you'll join me in showing appreciation for your team – the parents and grandparents who cared for you and got you here; your family members and friends who have stood by you and traveled near and far to be with you today. Join me in standing ovation and a round of applause for them.

In my life, I've been blessed to go to space four times, and to travel to nearly every corner of our planet. Nothing I've seen compares to the awe of looking into the eyes of my children and grandchildren. If you choose to start a family, love and care for them every single day as your loved ones have cared for you. **DON'T LISTEN TO ANYONE WHO SAYS YOU CAN'T DO SOMETHING OR DON'T BELONG.** That brings me to my third piece of advice – it's a lesson my parents taught me and my wife and I try to teach our own kids and grandkids: Be bold, be

fearless, dream big, and by all means, don't listen to anyone who tells you can't do something or you don't belong. Especially for the women and minorities in the class: Don't waste your time trying to explain yourself or your identity to anyone. Don't feel like you have to justify why you are where you are. This applies to the workplace or anywhere else.

In my younger days, my dream was to attend the U.S. Naval Academy and to serve my country – just as my father and my uncles had done in World War II, when African Americans had to fight for the right to serve in our Armed Forces. Growing up during the days of segregation here in the U.S., it was an uphill battle. When I came of age, no one in my South Carolina congressional delegation would provide an appointment nor nomination to the Academy as was required for admission. So I wrote President Johnson asking for help. I never got a response, but that possibly led to Congressman William Dawson of Illinois providing me the appointment I needed to be accepted. Rep. Dawson was himself a veteran of World War I and only the third African American elected to Congress in the 20th century.

After a 34-year career in the Marine Corps, I had the honor of serving as Administrator of NASA under the nation's first Black President.

Now when I say, “dream big” that doesn't mean you'll always know what the future holds. Growing up, I never conceived that someday I'd become a Marine Corps jet pilot, let alone pilot the space shuttle. When I finally made the decision to apply for the astronaut program, I was 34 years old and serving as a Marine Corps test pilot. Before that I had never even thought about being an astronaut – I figured it was just out of the question.

So my fourth piece of advice is to never stop reaching for new heights, even if you don't know exactly what they look like or what they will be. This applies both to you personally and to your generation as a whole.

There is a big handoff that's about to take place. Bigger than the Nittany Lions' Trace McSorley handing off to Saquon Barkley. I'm talking about the handoff from my generation to yours. Your generation is going to take the things that people of my generation started and make them your own.

Remember I talked about that “Help Wanted” sign? It's your generation – each and every one of you in the Class of 2019 sitting here today – that's going to provide that help ... that's going to prove something President Kennedy said (and I quote) *“No problem of human destiny is beyond human beings.”* (End quote)

I want to invite you to close your eyes for a moment and imagine a future where human beings and robots work together to pioneer Mars and the Solar System.

Today, we're further along on humanity's journey to Mars than ever before in human history and it's your generation that's going to complete this journey. You're going back to the Moon and you're going to land human beings on Mars. Think about that for a moment and picture

yourself in that first Martian crew. The feet in the first boots on the Red Planet could be here with us tonight. Okay – open your eyes.

I call your generation the “space generation” because of the expansive way you look at our world, our universe and the possibilities they contain.

You’ve come of age in a world where Skyping and Face Timing with someone half a world away is just a routine part of life. That used to be the stuff of science fiction.

You live in a world where astronauts from many nations fly together in space every single day and where we’re preparing to extend the human presence farther into the solar system. That used to be science fiction, too.

In 2015, we sent the *New Horizons* spacecraft past the Pluto system. When that happened, the United States became the first and only nation to have flown by or visited every single planet and dwarf planet in the solar system.

We’re now only a couple years away from sending the James Webb Space Telescope a million miles into space – which will open the door to finding undiscovered planets and galaxies. Already the Hubble Space Telescope – which, at 29 years old and going strong, is older than many of you – is giving scientists enough new data and discovery to fill the entire Library of Congress, every single year.

We’re moving beyond the limits of our own imagination. Already, we’ve located Earth-like planets orbiting stars in another solar system.

A child born this year will never have known a time when commercial companies were not regularly carrying cargo to space ... or human beings weren’t living and working aboard the International Space Station. In the last year, we’ve flown commercial astronauts on suborbital flights into space and we may launch the first commercial orbital spacecraft into space carrying US astronauts from Florida’s Space Coast before the end of this year.

Perhaps your own children and grandchildren will never know a time when human beings haven’t been living on Mars.

You might have heard President Obama and President Trump declare, we’re pushing out into the Solar System not just to visit but to stay. This isn’t science fiction – it’s your generation’s future. But these achievements don’t come without risk and danger.

This brings me my final piece of advice: don’t be afraid of failure. Even the very best of us get lost and falter sometime and anyone who tells you they know exactly where we are headed, probably isn’t being straight with you.

Graduates, while no one can tell you for sure where our world is headed in the years to come, I believe that your generation, with your passion to succeed, will take us to a better place.

A place worthy of the planet I've been blessed to see from space -- where its serenity and lack of political borders belies the truth of what sometimes happens on the ground.

As you cross this first bridge – the graduation bridge – into your future, I fully expect that you'll build this better world and in the finest Penn State tradition, you'll do it by dancing, dreaming, discovering, drawing, inventing, creating, thinking, playing, writing, running, healing, helping and imagining your way into the future.

You'll make this a better world because YOU ARE PENN STATE! Go Nittany Lions!