Christine: Good evening, and welcome. I'm Christine Wilkinson, senior vice president and secretary of the university, and president of the ASU Alumni Association, and I welcome you to the 2016 conversation with President Crow. To begin with, I would like to acknowledge a few special guests. We have representing our board of regents, regent Greg Patterson. Greg raising his hand. Regent Bill Ridenour and regent—student regent Mark Naufel.

I know this is a traditionally very busy week as school begins and everybody's back from the holiday and the legislature has started, but we do have a number of very esteemed guests here, and I'm just going to mention the groups. We have members of Arizona legislature here tonight, mayors and council members from various municipalities, several of our educators from throughout the educational community, volunteer leaders, our trustees of ASU, and our alumni board and national alumni council. If you're part of any of those groups, raise your hand. There we go. Thank you all for being here.

These dedicated individuals that I've just talked about give their time and energy in helping us move or communities and our university forward, and we really appreciate that. We hope to partner with all of you as we reach common goals. Like many of you here, I've had the pleasure of being part of the university and part of President Crow's team over the last several years, and to see it grow and evolve and help advance that same community. It's a unique place, and one that we are proud of its foundation, while still trying to create new and better solutions to a number of different problems, both local, national, and global.

Tonight, we'll hear President Crow talk about what it really means to be innovative and how ASU's institutional commitment to innovation is not about one place, one individual, or one idea, but about thousands of people weaving in their solutions, weaving in their strategies to provide a better place and a better future. Before we get to tonight's presentation, I invite you again to submit a question. You just fill out the card, and you pass it over to the aisles, and someone will magically collect them. If you want to tweet them—and I'm not one of those people—you follow those different signs up there. I had to ask, was that a pound sign, or was that a hashtag. You know what you can do if you want to. Call, write, tweet to ask those questions. We also use social media, and those are listed up there as well.

At this point, I would like to introduce our speaker, our host. I know that since he joined our Sun Devil family in 2002, I've had
the special opportunity to be part of the executive team that's here tonight in helping to see a vast array of opportunities throughout the—all corners of this university in which he has touched and made a difference. When it comes to perpetual innovation by the desire to serve others, make a difference, and add continuous value to the degrees earned as ASU, President Crow is a man on a mission.

Sit back, enjoy the journey, see what is going on, and let your imagination help fill what the future is in ASU's continuing to design and redesign the 21st century higher education. Please welcome to the stage the higher education leader that was chosen as the number one innovative president in the United States, and our 16th president, President Michael Crow.

President Crow:

Thank you. Thank you, Christine. You might note something strange up here on the stage. I have collected all of the tomatoes that some of you brought, and we've been working busily back there to integrate these into the actual discussion. Those of you that brought these tomatoes, these aren't even rotten. These would hurt. [Laughter] It's funny. I'm sitting here, and so I decided for some reason—I wasn't really quite sure why I did this—to have a normal day today. The normal day for me today was 17 regularly scheduled meetings, and then all of the unscheduled meetings, which means that I get up here, and I stand up here.

I gave several public talks yesterday and some other things, so I'm feeling a lot like a political candidate, except for one thing. I'm not angry. I'm not upset. I don't happen to think the country's about to go down the tubes. I happen to think we live in the greatest country that the world has ever seen with unbelievable potential and unbelievable means to innovate. I happen to think that Arizona is a place where you can do things that, in other places, they can only talk about. I think that we have proof of that by the fact that we are able to, in this moment when America needs new models for higher education, they need new ways to educate, new ways to advance, new ways to do things, we have literally been able to move and innovate at light speed, which is a comparative term. [Laughter] Comparative light speed, which means we're only moving about 80 miles an hour compared to a normal university, which moves at about eight miles an hour. That's light speed.

It is wonderful to be here to have an opportunity to talk about what innovation means. As some of you have been to these talks before, I apologize ahead of time. This is not a—I'm not a jokester. I give lectures, and I have slides and things that I move back and forth,
and I'm working through a concept. Tonight, I have one concept. Innovation. Innovation. Now, there's nothing new about that word. Many of you have been innovators. Many of you have been parts of innovative things.

You're living in an innovation. It's called the United States. Nothing like this place ever existed before. Nothing. There was never a place where—before us where the people were it. No king. No religious ruler. The people. There's never a place where you could, in that same place, practice whatever religion you want to practice or not, period. End of conversation. You live in an innovation. Within that innovation and all that it means and all that it represents, we are in one of the most innovative places, where innovation is unencumbered. Nobody gets in the way of other people's ideas here. If you start throwing rocks at somebody else's ideas, they just tell you to shut up and sit down. Get out of the way. Let's see if the idea works.

Tonight's talk is about innovation, but innovation in the context of—and I want you to work with me this way—how would we advance large elements of our population to the highest levels of creativity? How would we take on all these challenges that we're facing? How will we continue to lead the world in new ideas and new solutions for the rest of the societies around the planet as they are evolving? How will we work with them? How will we do all these things? How will we innovate to be as creative and as powerfully transformative as we've been in the past?

I was looking at some data the other day, and I wove some of this into a talk I gave yesterday about what the world was like in 1905 in the United States. Only a small percentage of doctors had ever been to college, and they had a well-deserved term to describe them. Quacks. Most of them didn't know what they were doing. 20 percent of the population was illiterate. The economy was on the order of a 40th of the size of its present size. I won't walk you through all of this, but the way that we went from, at that point, eight percent of the population having graduated from high school and less than one percent having graduated from college to the society that we have now is that we figured out how to innovate, to innovate quickly, to innovate on a sustained basis, to not complain.

There's a lot of complaining going on now. I'm like, really? At least in the family I grew up, if you complained, no dinner for you. My father, “I don't eat with complainers. Go to bed.” Literally. [Laughter] "We'll see if you're hungry and done complaining in the morning.” What is innovation? How many of you have some
kind of a supercomputer on your body? I say supercomputer because this is a computational device more capable than the lunar lander that was landed on the moon in July of 1969. This device. How many of you have one of these or own one of these? This is a Blackberry. This is my iPhone 6S. [Audio cuts out 00:10:56 - 00:11:07] my birthday. I'm wearing three advanced computational devices, but no, innovation's slow. The country's near collapse. There's hardly anything going on.

I can ask my watch—I asked it the other day, what was the population of the United States at the time—the population of the United Kingdom at the time of the American Revolution? 12 million. About the size of Illinois. What was the population of the United States at the time of the American Revolution? Two million. About the population of the west side of Maricopa County. There have been unbelievable innovations and unbelievable changes, and I'm gonna walk you through some of these things. Where do they start? They start in your head, but people don't understand that it's a complex process.

Believe it or not, this is the last 150 millionth year of the trail of the evolution of what you think of as a tomato. This object is going down the right side over the last—between 123 and 183 million years, an object which has, through natural selection of natural forces, adapted, adapted, adapted, adapted. It started out in the potato family of plants. It kept building texture—natural tomatoes, by the way, don't look like this at all. Anyone know what a native wild tomato looks like? Looks a lot like a blueberry, tastes terrible. I'm gonna come to this in a second. This thing, this plant, it evolved by adaptation to nature over 183 million years from its point of origin in its genetic history.

All this stuff on the right, just believe me that when the scientists wave that all around, you just believe what they say. Millions of dollars of work, thousands of people. Tomato. Now, this object right here—I gave a lecture this morning in a class that I teach every spring semester about the tomato. This tomato, you think of it as food. This is not a Nebraska or Iowa beefsteak tomato, because I wouldn't be wasting it. I'd be eating it back there by myself. This tomato is a technology. Humans have altered this. They have innovated over and over and over and over, hybridizing this tomato, forming the shape, the color, the texture, the weight, the pest resistance, drought resistance, everything.

We have innovated and innovated and innovated this object so much so that this is an innovation that came to us in a natural form,
and we humans altered it. Now, it is not only the product of natural selection and evolution. It is the product of purposeful designed changes by human beings to produce what we want. This is a technology that is the product of the innovative process. The innovative process is never one guy. There's always these superhero models of some mega-genius. That guy invented the Internet. Not Al Gore. That person is the superhero who did this or that.

Christine said it in the introduction—in the introductory comments. Innovation is a collective process. It's an engagement process. It involves hundreds of people around a single thing, thousands of people around a big thing, hundreds of thousands of people around big ideas. Sometimes, hundreds or thousands of years. We have been hybridizing plants through selective breeding as human beings for probably about 10,000 years, an innovation process that we figured out trial and error, trial and error, back and forth, back and forth. "Gee, did you see that plant came out bigger. That plant didn't kill me. Last time, it killed Wilbur."

Now, we have moved beyond that, but the process of innovation is a deliberate process. There are sometimes accidental or serendipitous innovations, but it is a deliberate process. The tomato is a technology. Just keep that in your mind. Now, in my office, we agonized about how to find a picture big enough to show you what 1,000 square miles of tomato production produces for the billions and billions and billions and billions of pounds of tomatoes that you presently consume—I'm still sticking on innovation—you got to stay with me here—so that you can have a tomato at almost no cost at almost any store at any point in this entire country, 365 days a year.

Innovation also produces results. It produces results that engage a combination of forces, collective forces where the government might invest in research, market forces that drive. That's probably related to the production of ketchup. Anybody eat ketchup? Anybody not like ketchup? Two people in the same row right over here. Are you guys related? Kind of. [Laughter] Again, innovations then allow scale. They allow new things, new conceptualizations. You go from a natural thing, a native tomato. You hybridize, you hybridize, you hybridize. You genetically map. You scale, you scale, you scale. You have ways in which you can control the outcome. You innovate for purpose.

Albert Einstein, smart guy, "If I had 20 days to solve a problem, I'd spend 19 days to define it." 19 days to define it because guess what
an innovation is that no one uses? I don't know. A piece of paper in
the trash. [Laughter] An innovation that no one uses is what? Who
wants to take a guess? It's something that somebody might use at
some point if they can remember it, but an innovation that's not
used is forgotten. To be an innovation, it must be used. It therefore
must be useable. It therefore must be translatable.

Lots of things about innovation, lots of words. Excellence, value,
disruptive, collaboration, problem solving, knowledge, solutions.
Change all these things. You hear people talk all the time, "Oh, I
wish we had a better government." I wish we had a better
government also, but they won't listen. It's all about innovation,
which is very difficult for certain institutions to do. It's extremely
difficult for academic institutions to do. Extremely difficult. Not to
innovate as individuals. I don't mean as scientists or theorists or
artists to innovate—many of them are powerful innovators,
powerfully creative—but as institutions.

Here's an actual dictionary definition of innovation. New idea,
device, or method. Innovations are not just little robots. They're not
my Apple watch and my other stuff up here, my gizmos. When I
work at night, I have an iPad, a laptop, an iPhone, a Blackberry,
and my Apple watch, and they're all working at the same time cuz
I'm asking them different questions. Those are devices, and what
I'm doing is a method. The provost is laughing. [Laughter] He gets
products from that. It's an act or process of introducing new ideas,
devices and methods. First, new ideas are innovations. New ideas
are innovations if people use them. New processes, new acts, new
ways of introducing them. Those are innovations in and of
themselves.

Innovations are not just tools. They're not just technology and
products. They're also processes, organizational models. The
United States of America is an organizational model. It is an
unbelievable innovation. Tools. Those are obvious. Push versus
pull. What pulls innovation? The market pulls. In our capitalist
economy, the wonders of capitalism, the powers of capitalism, it
pulls innovation. The market demands this. The market wants that.
The market needs that, whatever it is. Then there's push. What
does push innovation mean? It means the market's not making the
pull. The idea is just coming out of someone's head. It's some
variation from how we've done things in the past. Both of these are
going on at the same time.

Philosophies. How can a philosophy be an innovation? If we
brought Karl Marx back on the stage up here and stood him up
here and said, "Professor Marx, how'd your theory go?" How was his innovative theory, his philosophy? How well has it done? There were some interesting ideas in there, but didn't work. Failure. That's a philosophy. That was an innovation that didn't work. Innovations also have to work. Again, just to re-emphasize this, you can think all you want about what you want something to do. It must work. There's different types. Just think of this again.

I apologize. I still am a professor. I've been a professor for a long time. I love quadrants. On the bottom, do you have existing users or new users for your innovation? In the case of the university, existing users would be the same kind of students that we always have. 17 to 21-year-olds. In the past, 17 to 21-year-olds who were all males or all white or all from the same background or all from the same culture. We'll call that existing users in the historical model. Then going up the other side in terms of offerings. Is it what you've always been shelling out the same way you teach, or are there new offerings, new something, new gizmos? The banana that walks over to your cereal bowl. Now, that's a new offering.

Most universities would be located in that bottom left quadrant. Not all. Basic innovations, manage, incremental change, they allow and permit individual innovation. It's hard for them to change their users or to move from their existing offerings. In fact, sometimes in some of these institutions, they'll spend ten years arguing about whether or not they want a new degree program. Ten years. Half the people involved in the discussion are dead by the time the discussion is over. There's something about speed in innovation also. I'm gonna tell you about how we do some of these innovations.

Now, there's another concept related to innovation that's absolutely, absolutely essential to understand. Joseph Schumpeter is a brilliant economist from Austria who came to the United States, and he laid out a whole bunch of theories, and you can read all of his stuff. I took a lot of stuff about him, and I studied the philosophy of economics, and he was until the middle of that. The philosophy of economics is a fantastic subject, as is the philosophy of science, but it's this idea of creative destruction. That volcano going into the sea, if there was a town in the way, I would say it is gone at that point. Creative destruction. The earth is an example of the forces of creative destruction. It destroys while it builds.

That is what innovations do. They creatively create new things by replacing them in the same way that this lava is going into the ocean. I'm not gonna spend an hour and a half, although I would
love to—this is one of my favorite charts in the entire universe. New innovations developed by who? By the way, to be an innovator in 1850, your mindset would be about the same as being an innovator in 2015. The difference is, nobody really needs that angle on that plow forged by a blacksmith in quite the way you used to think about it. It's the same process, but now we know a lot more than we used to know. We're infinitely more complex than we used to be.

New innovations now have to come from new kinds of thinkers, new kinds of creators, new kinds of folks. That innovation goes to an entrepreneur. We tell our faculty all the time that do new inventions, it's not the same thing. Innovator and entrepreneur are not the same thing. Entrepreneur is a business-minded person in this model who takes money or is a capitalist. They advance at risk their idea into the marketplace. They either make it or don't make it. If they make it, they make entrepreneurial profits. With those profits, all the rest of us live over there in the green. We often wonder about what goes on in the blue, and we have no idea about what goes on in the red. It's like, what are they talking about? They can do that now?

This is the growth model. This is how economies grow. This is how America was built. This is the process by which America was built. Now, enough of university—innovation 101. Now, university innovation. It's like an oxymoronic term. Universities themselves are innovations. Many universities built from whole cloth were unbelievable innovations at their time, and many of them are unbelievably successful today. Few of them, if any of them, are, however, ready for the environmental changes. Go back to the tomato. How did the tomato evolve? On its own, it made small changes in its own selectivity, adaption. It was adapting, adapting, not adapting, adapting, adapting.

The environment's changing around institutions called universities, and they're either adapting or not adapting, but in some ways, they don't have to adapt. What would be the reason that universities on a particular path don't have to adapt? The inputs are the same, but the principal reason is that they are not concerned about the overall outcome. They're only concerned about their particular niche in the environment. They're operating within their niche in the environment. In the bigger scheme of things, there's no collective assessment of why they should adapt to move outside of their niches, and so it's a conscious decision. They can be successful within their niche. University innovation. Universities have commonly been associated with basic or incremental innovation.
This is a little chart that we put together a few years ago. We're way up at the right up there. Innovative high risk. It doesn't mean taking risks like we're gonna crash the bus off the cliff. We haven't done that yet, and I'm not planning to be party to that. In this case, the quadrants are innovative high risk at the top, low risk at the bottom, small-scale at the left, and large-scale at the right. Now, all of these institutional types still exist. The Greek academies in the United States are Bowdoin and Amherst and Williams and Colorado College and Oberlin College and Pomona College and Occidental College and schools like that. I won't walk through all of these, but all these kinds of universities still exist.

Who would say that scale has gotten away from us? The population of the United States today—anybody know—today? 322 going to 450, 460, 480. Some models take it to 500. That's million people. Country was two million at founding. 30, 35 million at the Civil War. 150 million in 1950. Scale is really important. Unless you want to build thousands of very small institutions, thousands of them, or you want to send everybody to college in their grandparent's basement on an old Atari machine and try to save money. There might be some value in that for some kids, but—you're supposed to laugh. We're out there taking on that kind of position, the new America university.

Innovation outcomes. What do you get out of innovation? You get improved value, greater efficiency, all those things. Better outcomes, beneficial partnerships, improved quality of life in the case of universities. Satisfaction of market and national public needs. That is, we have a market that we're serving, but we also have public values that we're protecting. We exist as our type of institution in both spaces, both the public values space, which is to be lower cost, available, egalitarian in terms of our admission standards, and at the same time, we have unbelievable demand for our services. We're dealing in both of those at the same time.

Innovations at ASU. What do we do? That's our charter. You heard us talking a little bit about it in the opening video, but just take a look at that. Some of you have read it thousands of times, but I know none of you can yet cite it. Three things. Inclusion versus exclusion and measuring success of our students, public research to benefit the public, and taking responsibility for our community. That idea is the driver. It's the self we wish we could be. Now, how do we innovate to be that? You might say, I thought what's that you always were. No, this has been an evolution.
We had all the right materials historically at ASU, all the right leadership and decisions and the local culture, the Arizona culture. The founding of the institution. All those things created this opportunity for us to have this as the purpose of the innovation. Another key point in my talk here is that innovation without purpose is for what? This is for purpose. Purposeful innovation. Purposeful objectives.

What does Arizona want? I saw results on a survey recently. 85 percent of Arizonans—and the other ones, I'm not sure what they're thinking about. I think they've been—it's like, "I don't believe in anything, and I vote no." 85 percent of the population acknowledges the broader value of higher education. They support world-class education for lots of people. They believe graduating more degree holders will improve Arizona's economy, and they mean everyone. The growing Latino population. They mean everyone. Everyone. There's demand for innovation because right now, we don't have the means or the mechanisms to operate at the scale necessary to achieve what we're trying to achieve.

I see President Coor is here, and President Coor facilitated, created the environment, and enabled me to be on this stage with the team that we have to be able to advance this university to this point. He is the one person in the room that knows how much of what I'm saying is really accurate [laughter] and how much of it is hopeful. Typically, when you get to ASU's stage—and Lattie knows this—so when you become a research university, which for us was in President Coor's tenure, let's call that A. Immediately, they say, the way for you to advance is, forget about innovation. Throw it to the wind. You don't need to innovate.

Here's what you need to do to go from A to B. You need to raise your admissions standards to control the weak students in your class, to drive up your standing so that you can graduate almost everyone and tell everyone that it was really hard because you only admitted A students. You need to build a medical school as rapidly as possible. You need to make that happen. You need to do this and this and this. You just need to replicate everything everyone else did. It turns out that that replication model isn't any good anymore.

Our model was to go from A to B. We were positioned by President Coor and his team and the faculty at ASU at B, once we became a research university, to now say that when we go on to C, we're not done with B. B is not good enough for us. Innovation is not a process which is started and then stopped. It is a continuous
process. We're not going to B and stopping—that's the normal route—and then raising our flag and saying, yes, we're now about the same as Ohio State at Columbus and UCLA because that's all we ever aspired to be was a latecomer replicant of some other school that got built somewhere else.

We get to B. We become a research university about 20 years ago officially. Then we say, to C for us, nobody else is going on to C in quite the way that we see it, and we don't see C as a single target. C is a target that allows us to educate across the spectrum of the population. C is the process that allows us to do all kinds of things. Now we're, in a sense, flowering out and innovating on a number of fronts as we move the institution forward. Our outcomes that we produce are people, ideas, and—what is that thing there? That is the Enterprise.

Now, here's my buddy. That thing, the top thing is not attached to the bottom thing except through magnetism. That's a cheap form of that thing in the Star Wars movie that just came out, which is, in some civilization—I don't even know what planet they're on, what species they are, what year it is—it's a lot like a western. I don't know. You tell me how that got done there, that little robot going by there. That's an example of a thing. We innovate. We innovate to enhance the production of these three outcomes.

Now, this is a really important slide. You're not gonna absorb it all at once. People are gonna send me e-mails on this forever and ever and ever. Because we've been able to innovate in four realms—realm one, upper left. Full immersion on-campus technology-enhanced learning. That's what you think of as going to college. We have 71,000 students in that realm, completely representative of the entire socioeconomic diversity of our society. Realm two. Digital immersion, online technology-enhanced. We have 20,000 full degree-seeking students in that realm. They're older than realm one. Many have been to college and didn't finish. They need to finish. They want to finish.

Realm three, digital immersion massive scale. One of the videos that was running was the Global Freshman Academy. I'm gonna go through these innovations in a second like lightning. In that realm, it basically says, I got 3,000 faculty members at ASU. If I give them every technological gizmo known to the human race, if I integrate those together, can they reach out and communicate and educate anyone anywhere on any subject that is worthy of human attention? The answer is in realm three because we're now doing it.
We already have 50,000 students in that realm from 163 countries. Yes. Then realm four, we're only in development on.

In realm four, we believe that we can find ways using this device for something other than sending pictures of your faces all scrunched up, like girls commonly do, back and forth to each other. That with that device, you can go through an educational learning experience built around the idea of exploration that will allow you, for instance, with projects that we already have funded at ASU, to explore the solar system—not the solar system, but the galaxy, for habitable planets, find them in physical reality, investigate them, use tools to investigate them. By the time you're done with this really exciting cool kind of game, you've mastered freshman biology, freshman chemistry, and freshman physics.

There's an infinite number of students that can learn in that platform. Kids that never thought about being able to go to college can learn that platform. People without access to anything can learn on that platform. That's the realm we're presently working in. The ASU teaching and learning realms. We're operating in these four realms simultaneously. Now, I'm gonna fly through these, and then I've already—ten of you are gonna have a litte vibration on your rears here in a second cuz you're being selected to recitate it back. Do you feel it? [Laughter] Innovation.

Now, here's the deal. This is the other thing about innovation. People always think—they think half the time, half the people that I work with, I think they finally realize he's not gonna die yet. He's not gonna move somewhere else. He gets fat. He getting skinny. He gets fat. He gets skinny. [Laughter] There seems to be something going on in there. The thing about innovation is continuous and ubiquitous. Oh, we're gonna innovate on a few things over here on the side of the university and see if that makes a difference. It won't make any difference. Continuous and ubiquitous. Let's talk about the ubiquity of innovation and how we've been moving it forward.

First, innovation across all disciplines and all platforms. There are some Stanford faculty members and others here. Who's here from Stanford? The spies are here. Where are they? Over there. Studying innovation. Number one. Who's at number two? Now, we didn't come up with that ranking. It just means that other people are observing that there's some kind of strange innovation going on at a few schools. Stanford's an unbelievable school. MIT's an unbelievable school. Lots of innovation, lots of innovation, lots of innovation. We may have gotten ranked really, really high because
it's like, man, if they're doing that—I never even heard of them before. [Laughter]

We're innovating across transdisciplinary research, changing how we organize departments, organize—so we're changing the organization. Let me put it to you this way. We're changing how we structure knowledge, how we advance knowledge, how we teach, how we move forward, how we do things. It's not just changing some little way you're structured or organize. It's how you think. When you're innovating inside an organization, it's how you think. We're changing teaching and learning by building—this is a weird kind of chart, but at the bottom, we have partners with over 150 private sector and other university type technology providers that have built us collaboration tools, assessment tools, interaction tools, content tools which then allow us to partner with all those people up there. Newton, edX, others.

We have partnerships, dozens and dozens and dozens of partnerships, alliances, relationships, ways in which we think because you cannot innovate by yourself. It's a group process, and it's built around teaching and learning. Now, this is a cool one. We formed a unit called EdPlus. All those companies on the side of the wheel, that little thing—what were those things called? Spirographs? On this spirograph, these are the companies that we're working with, and this is what they're linked into. This in and of itself, you see any table of organization there? You see any normal way about thinking about ideas? You see any kind of structure of a college or anything in there? This is a unit that serves all units, operates in a particular way.

We built a new school for the future of innovation in society, that last question. Can nanotechnology, synthetic biology—that means life that we create as humans—so in case you missed it, we're already past that, so if you were hoping that wouldn't happen, too late. Geoengineering. I spoke to a group of scientists yesterday who had flown in from all over the world who said, "Maybe the climate's warming. Maybe it's not warming. Let's just change the whole atmosphere." Everybody's like, "What does that mean?" "I mean change the atmosphere. We'll take all these chemicals out of the atmosphere, and we'll store them somewhere else, like deep in the ocean and hopefully, it won't bother anybody."

Artificial intelligence. Should they be developed and governed responsibly? We now have two billionaires standing up—one billionaire and one unbelievably famous physicist, Stephen Hawking, who are now campaigning to make sure that artificial
intelligence is never funded again because they're afraid that it will move so fast that we can't innovate fast enough that it will innovate so fast that we can't keep up with it. We built a school to look at that.

You've all seen this guy, right? This is three years old. This is an autonomous walking vehicle developed by—that little thing on the bottom is the Defense Advance Research Projects Agency. Everybody's seen this, right? You should see what it looks like now with the head. You see those lizards in there on the bottom? They're trying to make it afraid. This was before the head.

I'll show you one other thing just to make sure that—can it walk? Can I go into buildings? Can it fight? Can it take instructions? You've seen all that, right? School For the Future of Innovation's made up of great new faculty. Bringing in new faculty. Faculty who think differently. Faculty who organize differently. The point again is not so much what the school's focused on. It's a whole new way of thinking and will produce a whole new way of ideas and innovations. Our Center For Science and the Imagination. We just brought in that person as a professor of practice on the right, Brian David Johnson, who was the futurist in the Intel Corporation, is now our futurist in residence. Another important point about innovations. You must attempt to understand the future, which is impossible to understand, but you must attempt to understand it to focus your thinking and discipline your thinking about your innovations.

This is a silly idea. I won't spend much time on it. We did design completely, from a reality perspective, a tower that would go 20 kilometers into space. That's Mount Everest on the right. The base of the tower would be 25 kilometers square. The top of the tower is three kilometers square. It's all doable, buildable. We built it in the computer. We now fly it in the earth's atmosphere through the winds and so forth and so on. Then this becomes a tool, whole new ways to innovate with ideas for kids. Here's your tower. It exists in reality. Innovate on that. That's our science and imagination program.

A new School For Human Evolution and Social Change. Now, this Sarah Mathew, a young assistant professor, so she just won a major grant from the Carnegie Corporation. What she's trying to understand—because she's in our new school, our new way of thinking. Again, innovations are not just about, can we bring in so many students, and can we educate so many students, and can we make so much money, and can we make this work and so forth?
It's also about what we're doing. She's looking at whether or not war is an evolutionary characteristic of human beings as a species. If that turns out to be true, that might be nice to know because it might be then something that we understand in a different way.

School of Earth and Space Exploration. This person on the side who was a postdoc won a prize—not a prize. He won a grant to build that satellite that's in his hand, fly it to the moon, and take pictures there so we can find out where hydrogen is located. Again, innovation, in this case, is the School of Earth and Space Exploration. Whole new ways of thinking. Our new space initiative. Another innovation of us is not to pretend that industry doesn't exist. To work with industry from the outset. We're working with the Commercial Space Federation and the Commercial Space Association. Innovations in teaching and learning. I already talked about exploration-based learning. That was the device that we talked about.

Innovation in teaching and learning. Our Global Freshman Academy. 40,000 students from 163 countries just since August of 2015. We'll have 500,000 students probably by the end of the second year all learning from our faculty who are not—they're not breaking a sweat figuring out how to communicate learning to these kids in a new innovative way. We've changed the entire scale of the institution. Global Freshman Academy. Our partner is Anant Agarwal, the CEO of edX, our Harvard MIT spinout partner. That's who we're working with. That's who we're hooked up with. He's an MIT computer science faculty member. We've been able to innovate again with others. Innovation with others, ubiquitous innovation, innovation across all things.

K through 12 education. People say we need innovation in K through 12. Anybody agree with that, that we have some problems? We decided to build some schools. ASU Preparatory Academy. 2,500 students, 76 percent low-income. 330 percent enrollment increase in three years. We outperform other schools by those percentages. Income is not the predictor of success. Family shape is not the predictor of success. Family environment is not the predictor of success. The predictor of success is the leadership, the analytics, the teachers, the teachers, the teachers, the teachers. Innovation. We built a tool to allow people to plot their way from middle school to the university and to careers.

Interactive. Innovating in human capital. How many of you have heard about the Starbucks project that we have? We've got some Starbucks partners in the room if they could stand up. These are all
local Starbucks partners who are also students at ASU. Thank you all for being here. They're all students at ASU, working at Starbucks, and when they complete their degree—some are completing degrees that they started earlier. Some are coming in as freshmen. They'll complete their degree with no debt and no cost to them when they finish. It's an unbelievable innovation to rethink the entire model.

Starbucks is our partner to innovate with because they are concerned about human capital and its success, as are we. There are a million people in Arizona that started college and never finished. Low-hanging fruit. If only we had started innovating more quickly and earlier. If only we'd been ready before the recession hit. We're ready now. These are the ways that you innovate.

Now just really quickly, we're innovating by hooking up with Mayo Clinic rather than building our own medical school. We're attracting a medical school here to be with us from a fantastic institution, the Mayo Clinic Medical School. We're innovating with them across all of these areas, dozens of projects, hundreds of programs. Many things. Schools, programs, initiatives, all innovations.

We have a conference that we run, which is the most attended conference in the country, probably in the world, on educational innovation. GSV is our partner in Silicon Valley. What's a university working with a partner, an investment partner in Silicon Valley with 3,000 people coming to meetings to talk about educational innovation? Because that's how innovation works. We're holding the meeting this year in, as you can see, San Diego. Can't find any rooms big enough here for a while. Innovating.

Culture of innovation and entrepreneurship. I'm not gonna walk through this other than it's about changing culture. Programs inside the university at all levels. Undergraduate students, graduate students, all disciplines, all subjects. Not just engineering and business, as is typically the case. Culture of innovation and entrepreneurship again. Working through programs and initiatives to take your ideas in and making that a part of our culture, a part of what we do.

Technology transfer. If you read a lot of the local papers, you'd think somehow that there aren't any new companies being formed from Arizona geniuses that are attracting venture capital. We raised $500 million in external funding for our spinout companies.
last year, spinout companies from ASU. Companies that we work with, innovating our relationships with them. Wells Fargo in the middle is a company that we're talking about, how can we become a learning partner with them? These are people we're training to be faculty members in engineering in Vietnam because the plant in Chandler and the rest of Intel needs a whole new cadre of engineers in Vietnam where our entire in and out global supply chain is so complicated that the old way of doing things doesn't work. Innovating again on how we produce that.

We built a university innovation alliance made up of these schools that we lead. These schools, these 11 universities, which have between four and 500,000 students, have all agreed to do four things. Produce more graduates. Produce more graduates from lower-income families in particular, meaning more than just producing more graduates. Lower the cost to a degree for both the government and the family. Innovate together, which is an unheard-of thing, believe me. Unheard of. Those schools.

Our future. Our future is that we intend to be able to be the institution which is able to innovate at a rate of speed sufficient to sustain our outputs, people, ideas, and things, at a level necessary for Arizona to continue to evolve to be an unbelievable place economically, socially, culturally, environmentally, all the things that we can contribute to. Now, we need your ideas. We need everybody's ideas. We're open to ideas. We do not innovate alone. We have created an innovative culture. We need your ideas and ways to advance your ideas to be able to make this innovative model work. Let me leave you with this. [Music playing 00:52:09 - 00:53:21] We are your innovative university. I still have all the tomatoes.

**Christine:** We have approximately 20 minutes for a Q and A. We've been collecting the cards, and we'll try to get through at least a few of them. Those we can't finish, we'll be glad to respond if you wrote your contact information. With me is our student regent, Mark Naufel, who actually has an undergraduate degree, graduate degree, and he's working on his second master's.

**President Crow:** From where?

**Christine:** All from—

**Mark:** ASU. Go Devils.
Christine: He's a Sun Devil through and through, And I'm gonna have him begin.

Mark: Dr. Crow, I'm gonna start off with a question from two students here at ASU. The first part of the question is, what are three things that keep you awake at night as a university president, and the second part is, what is your biggest challenge in 2016?

President Crow: One of the things that definitively keeping me awake—and my wife, Sibyl, is here, so she knows this is the case—is I am obsessed with people reaching their potential. If I see people float off track, for whatever reason, inside the institution, or if I see people that, for whatever reason, are making choices that could maybe have been a little bit better about their life, it really, really, really bothers me. That's one.

Second, I think one of the things that's bothering these days about our country is, I don't think that people really know what we have inherited. What we have inherited is literally beyond belief, and something's happened. I don't know what it is. It's weird. We've inherited this unbelievable place with jets you want to fly anywhere, machines attached to your body that are connected to anyone, freeways that are this, and airbags that protect you when you run into another car, and food that's this and this and this and this, and all these things, and educational opportunities and artistic expression, and musical expression, and access to everything, and all the things that we've got, and literally, it drives me insane. It keeps me up at night.

Everybody's talking about how we're collapsing and the country's not going ahead. When you look at what we've been through historically from the founding of the republic through the Civil War and the opening of the west and all the things that we've been doing, it's just not the case. I'm worried about something happened. Some kind of a social earwig or a virus got into people's heads. I don't know what it is. It's just weird. That keeps me up. Also, and I keep saying, what else can we do? What else can we do at the university?

Now, when I talk to our kids at the university, I don't get that sense from them. You know it, having been a student leader, that I feel—in fact, it maybe is my elixir is being with them. They're filled with this desire to make a difference. They're filled with this desire to have a meaningful life. They're filled with this desire to take head on these problems. Every once in a while, you can see them muttering under their breath to each other like, how much longer
are these other people gonna be around here? They need to move on out to the retirement home that doesn't actually have a bridge once you're out there. The third thing that I think about is this notion of fairness and equity. What I mean by that, we still live in a society that frustratingly still has a lot of outcomes determined by your parents' income.

Mark: The biggest challenge in 2016?

President Crow: The biggest challenge in 2016 is—right now, it's dealing with with this unbelievable negative rhetoric of the political process. It's unfortunate. We have thousands of veterans on campus. We have projects involved in defending the United States all across the world. We're developing technologies and tools to thwart our enemies, to understand our enemies, to defeat our enemies. All these kinds of things are going on. It's really unbelievable to see all this, and there needs to be—from the leadership at the political level, there needs to be this recognition that we have done anything and everything necessary to make this country great, and please carry that on. Do it quickly. That's my worry.

Christine: What can Arizonans who are higher education advocates tangibly do to ensure university funding, education funding in general, and that it's prioritized and protected from future cuts at the state level? Ensure it.

President Crow: I think the thing that is hard— one of the things that's hurt us a little bit, because we have been so innovative, people say, "You don't need any resources from the state. You seem to have worked it all out. Good luck there, big guy." There's some validity to that, and there's even some value in that, but having said that, we only need a simple thing. We've innovated to the extent now that we only need a simple thing from the state. It's very simple. A few of the regents are here, and they have approved this model. What we need is, we need the state to invest in Arizona kids only going to the public universities to secure their education. We'll agree to keep the costs as low as possible.

We think the state should pay for about half of that cost, which is about $7,500.00 a year per kid. That's it. That's all that we need. We're way below that number now. We used to be way above that number. For decades, we were way above that number here in Arizona, and now we're way below that number. That's all we need, and we've said we can make that work. We can make that model work. We can make that model work into the foreseeable
future. What we need are people that are saying, we want the universities to be successful. That's what we need.

Now, we have that, but we don't have enough of that because one of the things in Arizona is that a lot of people come from different places, and so believe it or not, they have alliances to university of wherever, Saskatchewan or Nebraska or Iowa State or wherever. We need people that want these universities to work for this state in a very simple funding model with highly innovative universities like ASU as the way to move forward. What's what we need, and we do not have sufficient levels of advocacy for that.

Mark: President Crow, you briefly mentioned this in your presentation, but maybe this is a chance to go in more detail. A member of the audience wanted to know how the collaboration with Mayo is going and where you see that partnership in seven to ten years.

President Crow: The Mayo collaboration is going well. We have two new schools that we've built that work with them, the School of Biomedical Informatics and the School For the Science of Health Delivery. We have a College of Health Solutions led by the former dean of the Mayo Medical School. I thought I saw Teri Pipe, the dean of our College of Nursing and Health Innovations, who used to be a senior nursing executive and executive in the Mayo Clinic herself. That college is working heavily with the Mayo Clinic.

What I see happening is us finding a way to take our science and technology, social science, behavioral science, engineering, medical science, health solutions science, all these things, and work with the Mayo Clinic in a new way where we can change the health solutions outcomes at scale. I see us doing more, working more, advancing more, helping the medical school to work, taking on more projects. ASU has acquired—what is it, Rich—20 or 30 acres. 27 acres out near the Mayo hospital, so we're gonna be digging in out there right south of the 101. We're gonna be building things related to innovation and health solutions, making things work. You're gonna see us dig in.

Now, Mayo's not the only healthcare organization that we work with. We see ourselves as the hub and spokesmodel. We have thousands of faculty members and tens of thousands of students and unbelievable technology and unbelievable ways to do things. We're working with Mayo. We're working with Banner right now. We're now their science and technology partner in the whole area of Alzheimer's and advanced neurological disorders. We're in discussions with Dignity Health. We're in discussions with other
groups. Our partnership with Mayo is a comprehensive partnership. Our partnership with the others is a project-specific, center-specific project, a partnership that we're working at that scale, trying to be the center hub with teachers, scientists, engineers, behavioralists, all those things that we have at ASU.

Christine: We have a group here for a conference, and they have a question about how to get their campus leaderships excited about growing campus innovation and entrepreneurship.

President Crow: I don't know. Did you ask that before I talked? Who are those people?

Christine: There's a whole—about 65 people.

President Crow: Wow.

Christine: Raise your hands.

President Crow: It's all about basically determining and first identifying what you actually are. I don't know which universities you're from, but are you a basically publically-supported bureaucracy charged with somehow delivering some kind of a service because if you are, it's gonna be really, really, really hard to innovate. Have you brought your students to the center of your innovation model, made them your sole reason for existence, outlined your own unique objective, which many universities can. Again, it's about this process that I've been talking about. That's really what's important. If leaders won't do that, I don't even know why they're leaders cuz then I don't even know what they're doing. Maybe they're checking their lunch schedule or something, but that's not what you want.

I'm not even being facetious. You might think that I am. I'm being actually serious. I think the most important thing is that you have to decide whether or not you adore tradition or innovation. Tradition or innovation. Now, there's nothing wrong with adoring tradition. Nothing wrong with that. It doesn't mean that you'll be all that adaptive, but in a society as big as ours and as complex as ours and an economy as big as ours, there's lots of room for places that do not need to or want to innovate. Institutions that want to be on the front line of helping the country to be successful in its new manifested way that it's evolving, they are going to have to innovate.

Mark: President Crow, an alumni of ASU and a very active member of the community would like to know what it means for ASU's
surrounding communities and businesses to be in the presence of the number one most innovative school in the country.

*President Crow:* That means you have to hear that for a while. You'll see it on some billboards if you travel on the 202 or the 101 or the 17. It'll be on some buses, some light rail trains, the Palo Alto newspaper. I think what it means is that if you're here in this community, we are prepared to innovate to be helpful to you, to your family, to your business, to your enterprise, to your social enterprise, to your hope for your community. I saw some folks coming in that we're working with on the Desert Discovery Center in Scottsdale. That's an area where our innovative models can work. We're working in Chandler. We're working in various communities throughout the valley. We're working with various groups. I think what it means is that you now have this fantastic university which has become fantastically innovative, and it's prepared to work with you.

We got a text a while ago from the leadership of Starbucks, the chairman and one of the senior vice presidents who are traveling in India. We figured they were asleep, so I sent them back a note saying, "Yes, we could work with this group in India," and so forth. They're not sleeping. They're just interacting all night. Then they want to be in calls all night. These are people that are awake all the time because they have figured out that we are this high-speed, highly adaptive institution which is capable of responding in real time to the challenges of what we do.

I don't know if Jim O'Brien is here—I don't think he is—the senior vice president. I know one of the phone calls he had today was with the ambassador of Turkey to the United States. The ambassador to Turkey. Jim and I met at a meeting in Washington a few weeks ago when we met with major Islamic country ambassadors to the United States. Turkey, Egypt, Morocco, Algeria, Tunisia, Indonesia, Jordan, Oman. You get the gist here.

The Turkish ambassador calls back and he says, "I heard you talk about that thing you have, EdPlus, at ASU, and ASU online." He says, "I've got a real problem in Turkey. I got seven million refugees not in their home." Basically, in plain American English, "What do you got that you can help me with? Because I need to get these people educated. I need to get these children on track." He's got three and a half million children, four million children not in school. What do you got? We're not ghostbusters, but we can respond. We can reasonably respond. That's what your university can do now, and that's really hard stuff.
Christine: From a community member, how can Phoenix become the next Austin, Texas, in terms of entrepreneurship, technology, education, and tourism? [Laughter]

President Crow: Austin is a nice place, but Phoenix is way cooler than Austin. The point is, how can we grow a robust economy which can survive micro-parts of the economy, real estate upticks and downticks and so forth. How can we build a more robust economy? The way to do that—and most people don't believe me. I've talked to some politicians. They look at me and they just say, "Where do they find people like you? You should have stayed in New York City where all the other weirdoes live."

At the end of the day, the simplest answer is educational attainment. I don't mean college degrees. I mean 90 percent of everybody graduating from high school. I don't care what your family income is. I don't care what your ethnicity is. I don't care what century your family came from in their culture. 90 percent, and 55 percent of them getting some kind of a postsecondary certificate. A technical degree, a technical certificate, associate's degree, or a bachelor's degree.

Now, there's a lot of you in this room that will say, "We don't need all those people to have all those degrees, blah-blah-blah-blah-blah." You might have been the same people that said in the old days, "Everybody doesn't need to read cuz it doesn't take any reading to run that plow with that mule. Doesn't take any reading at all." Turns out that that world is long gone, and the world we're in right now requires a level of adaptive change. That requires educational attainment.

Now, let me tell you a data point. How many of you noticed the article about lifespan reduction for people of European descent who have only a high school diploma or less? Did anybody track that story? Anybody? A few people. It's the fastest reduction ever recorded in American history. Lifespan is being reduced by whites with a high school diploma only. You can ask yourself what the reason is. They said it's the rough equivalent of an untreated AIDS epidemic on that population. That's the death rate increase is the size of that. Look at what we did for HIV and AIDS. We launched national initiatives to attack that virus and that disease.

That is a result of the fact that since 2007, if you have only a high school diploma, there are now nearly 20 percent fewer jobs in the economy for you. Now, you might say, "That's a crime. Shouldn't be that way. I know plenty of people that have only a high school
diploma or less than a high school diploma that are plenty smart."
The answer is yes, millions of them, but do they know how to do something elsewhere it's not just about being smart? If they don't know how to learn at a very rapid rate, they will fall behind. They have fallen behind. As a result, we have a very negative socioeconomic demographic outcome going on right now right in the midst of where we are. It's really literally unbelievable.

Christine: One more question.

Mark: Many people out there would like to know how ASU plans to leverage the reputation of the Thunderbird School of Global Management, and what is ASU’s vision for the school?

President Crow: Thunderbird became a part of ASU at midnight on December 31st of last year. Not 2015, but 2014, so we've had basically a year and a couple of weeks. Thunderbird is a tremendously historically important institution. It's a globally important institution. They've produced tens of thousands of global leaders. I was signing a deal in Washington with the president of the Inter-American Development Bank for a project that we're working on in Mexico. He looks over and he says to me, "How are you taking care of my Thunderbird?" Cuz he went to Thunderbird, as did leaders all over the planet who came to Arizona, got this education, and then went back.

We're one year into it. We hired Allen Morrison from Switzerland from a competing institution who is our director general. He has a fancy international title, so every time you see him, bow down and say, "Yes, Director General." He is advancing on several fronts right now. We're doing quite well on the continued evolution of our executive education programs. We now have offices in Geneva and Moscow, and we'll be opening up a project office in Dubai, operating on a global scale, training people like Thunderbird has always done. We have asked to then have a core degree, the degree in global management, the master's of global management. We're gonna have that program.

Provost Searle's here. Mark, how many students are we gonna have in that? Two to 300? 300. Our goal is 300 students in that. Then we're gonna have some specialty master's degrees there in specialty areas of global management. Then online is a very important area for us to work in. Then we've launched a new program on our west campus that we hope will—and Marlene Tromp is here, the vice provost of the west campus, and the dean of the new college on the west campus. That's the Thunderbird Academy, which is an
undergraduate school built around the ideas of Thunderbird, but it'll be based on the west campus. We hope to grow that to several hundreds of students in that program, 500 students. All these things are underway.

I will tell you though that this is a hard slog in the sense that this is a tough, complex, globally competitive marketplace that we're operating in. Allen, the director general, has this year been to India, China, Indonesia, Brazil, Mexico, Russia, all over the world, London several times, other places, trying to rebuild these connections under the ASU flag. The ASU flag, the way that we're running this as we're evolving—maybe this will be my last point—is that Thunderbird is now branded the Thunderbird School of Global Management, a unit of the ASU Knowledge Enterprise.

As we're evolving, ASU is taking on more and more characteristics of a knowledge enterprise. That means an organization which operates as an enterprise. It's not a business, and it's not the government. It operates, when it needs to, like a business. It serves the interests of the government and the interests of the people, but it operates like an enterprise. Knowledge is what we produce. You saw those products that we produce from knowledge. You're gonna see some expansion of this as we move ahead. The university will be a part of the knowledge enterprise.

Our EdPlus at ASU, this fantastic technology platform that we have for doing education in a new way, which is headquartered in Scottsdale, that's a part of the enterprise. Arizona Technology Enterprises, which is headquartered in Scottsdale and Santa Monica, California. That does technology licensing and deals and investments, and so that's a part of the enterprise. Thunderbird School of Global Management, and it's likely to be that there will be other things and more things as we continue to evolve because we are trying to be as absolutely innovative as possible to be of greatest service to the people of Arizona. That's why we're here.

Christine: Thank you very much.

[End of Audio]