

University of Michigan President Mary Sue Coleman
“Not Your Father’s Space Race”
Address to the National Press Club
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One hundred and thirty years ago today, the U.S. Patent Office here in Washington issued Patent No. 1-7-4-4-6-5. It went to an inventor, a Scotsman who was developing a technology that would allow him to communicate with his deaf mother and the deaf woman he was courting.

Three days after Alexander Graham Bell received his patent for the telephone and returned to his Boston laboratory, he shouted those now-famous words to his assistant after spilling battery acid on himself. “Mr. Watson, come here – I need you.”

Nothing speaks louder to our current crisis in innovation. As a nation, we are the best in the world at invention and scientific exploration. We are the very icons of risk-taking, social progress and economic success. At the University of Michigan alone, our scientists have discovered the genes for cystic fibrosis and Huntington’s disease, and our alumni are responsible for the iPod and Google.

But we have a problem. Many of you here have seen the latest studies and publicized their ominous findings. The best minds in our country – business leaders like Norm Augustine of Lockheed Martin and Rick Wagoner of GM, university presidents like Shirley Tilghman of Princeton and John Hennessy of Stanford – are profoundly concerned that we are at risk as a nation if we do not commit to more innovation, more math and science, and more basic research.

As a contributor to these reports, I can only echo the alarms being rung by the National Academies, the Council on Competitiveness, and the country’s leading manufacturers, and strongly reinforce their recommendations for deeper research funding, stronger high school curricula, and greater investment in financial support for our students.

Yet my concern is tempered by the resolve of America’s research universities. We prepare the people who solve the problems of the world. And as leaders in engineering, medicine and science, it’s time that we turned to one another and, like Bell to Watson, said, “I need you.”

We excel at creating solutions for our future, and I believe that by drawing upon our vast and unique strengths, and reaching outside our traditional academic comfort zones, our universities will continue to be the backbone of American innovation.

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I want to talk with you today from three vantage points that allow me to really see the challenges we face, and the solutions that I believe are out there.

First, I am a scientist with more than 20 years' experience in the laboratory. Second, I am a resident of a manufacturing state enveloped by a deep economic crisis. And third, I am the president of one of the world's great public research universities.

Like many of my peers who lead research institutions, I came of age with Sputnik and the space race. I sometimes find it hard to believe it's been 45 years since President Kennedy issued his call to put a man on the moon, because the enthusiasm and energy it produced in me and so many others is still so distinct.

Getting into space and to the moon was an obsession. An absolute obsession. There was the science, of course, but more importantly there was the Soviet Union. Americans love competition, and here was our Number One enemy – communists – already sending men into orbit. JFK was going to beat them and so was every aspiring scientist in America, young people like me who became enthralled with the power and promise of science.

Win we did. And now the generation that couldn't get enough engineering and medicine and math is at the helm of leadership and saying, "We need another Sputnik!"

But today's crisis cannot be compared to Sputnik, because this is not your father's space race.

We have no enemy, except perhaps ourselves. Our national priorities are not necessarily shared priorities, as any observer of Congress – or American culture, for that matter – knows. There's not a whole lot that we rally behind together as a society, except perhaps who should be the next "American Idol."

You know, I think it's pretty telling when coverage of the Grammy Awards beats out a cover story on America's tenuous position as a leader in science and technology.

As a nation, we absolutely must put more emphasis on brains than we do Bruce and Beyonce'. And not just brains, but brain power. Putting a man on the moon was, frankly, easier than finding a cure for AIDS or a solution to global warming. Today's challenges are incredibly complex, and require the creativity and expertise of many great minds. That's how we have to approach science today, because the problems we need to solve are too complicated to be explained by a lone scientist in a solitary lab.

This is not to say that the desire to be innovative – indeed, the very need – comes without complications. If the space race was a battle cry, today's push to be innovative can just plain be a battle.

Let me give you an example. The state of Michigan is, of course, home to the auto industry. Our heritage is in manufacturing, and we are proud of our contributions to the

American and world economies because of the vehicles and spin-off technologies we design and build.

But we are undergoing a dramatic transformation in our state. No longer can children grow up knowing that a well-paying job, with benefits, awaits them at the local assembly plant. No longer do mid-level managers plan careers with, and devote loyalties to, one company. And no longer do executives fret only about next year's models, but also the next decade's health care and pension costs.

The state of Michigan is being forced to reinvent an economy built on innovation.

Balance this against what is happening on our campus at the University of Michigan. Over the past six years, we have invested \$1 billion and nearly a million square feet of new space devoted to life sciences research, education, and – we hope – economic development.

That investment includes stem cell research. I am a strong believer in the scientific importance of stem cells and the great promise they hold for developing lifesaving medical treatments of Alzheimer's, Parkinson's disease and other debilitating ailments. And our scientists – experts in such wide-ranging fields as genetics, cellular biology, cancer research, and biomedical engineering – are working together to explore this new science.

But our efforts are being choked because of incredibly tight state restrictions on embryonic stem cell research. Our investments – in science, in technology, in a re-tooled Michigan economy – our investments are at risk if scientists in our state cannot pursue the most promising avenues of research. We are going to lose our best scientists to other states where the research climate is more favorable, and there is no good in that for Michigan – the university or the state.

That's what I mean about this not being the same kind of brain race as Sputnik. Even with new discoveries before us – new discoveries that mean new technologies and new jobs – we sometimes face a resistance and skepticism that the Mercury Seven never encountered.

I've mentioned living in Michigan, and one of the many features of our great state is the Detroit Pistons basketball team. They are remarkable not because of one star – no Shaq, no LeBron – but because of talented individuals who come together to find the best way to succeed.

There is something magical about great team-building. There is a world of difference between the NBA and DNA, but the model of the Pistons is spot-on because it demonstrates the remarkable energy of collaboration. And collaboration means power. It does not mean sacrificing leadership – it means enhancing it. And universities, as leaders, must go anywhere to make it happen.

This past summer, a delegation from the University of Michigan traveled to China. It caused me to reflect on how, not so long ago, we as Americans were told we never had to worry about China or the rest of Asia because their educational systems could never match the creativity of ours.

Wrong. Two weeks in Beijing and Shanghai were plenty to show me how tremendously creative and committed the Chinese are to research and science.

As a university, we did not travel to China to check out the competition, but to find ways to work together with our colleagues at places like Beijing Normal University, Shanghai Jiao Tong University, Renmin and Fudan universities. We can learn from them, they can learn from us, and in the end our students – tomorrow’s leaders – will be better prepared because of these alliances.

There is so much potential in these partnerships. Consider this: we are going to work with the Chinese to screen the genomics of thousands of chemical compounds found in traditional Chinese herbal medicine. We want to identify their properties and their usefulness for pharmaceuticals. This is a massive undertaking involving many scientists, all working to unlock the mysteries of medicines that millions have turned to over the centuries.

Our alliances also extend to the social sciences, and this is where I think we are going to see a real test of Chinese higher education and its role in their society. And it’s where Michigan as an American research university can be a model for innovation.

Our researchers are establishing a program in quantitative social science research with Peking University. Together, our universities are going to conduct surveys of two Chinese provinces with a combined population of 150 million people. Nothing like this has *ever* before happened in China, and I think it will be telling to see how the Chinese government responds to what is on the minds of its people.

By reaching out and finding strong partners, we as a university can create some amazing work that will genuinely transform the world.

Our alliances can and should extend beyond academic and geographic borders, and Michigan is doing that with our immense research library.

In allowing Google to digitize the 7 million books of our library, we are inviting anyone with an Internet connection to seek knowledge. We are one of several universities involved in this project, and it is an educator’s dream, knowing that the vast information held in the libraries of Michigan, Stanford, Harvard, Oxford and the New York Public Library will be universally searchable and, in the case of public domain works, accessible.

At the same time, by digitizing today’s books, through our own efforts on campus and in partnership with others, we are protecting the written word for all time.

The University of Michigan could have done this project alone, but our librarians said it would take one thousand years. With Google's technology, it will happen in six.

The decision was an obvious one. It is about the social good of promoting and sharing knowledge, and we are happy to have such a strong collaborator in making it a reality.

This isn't to say we don't have critics. Disruptive technologies and new ideas can generate scary reactions and burdensome restrictions. Like the science of stem cells, the technology of digitizing books and making them searchable is generating resistance, to the point of litigation.

We cannot afford to be short-sighted about discoveries that may well provide new models for business and for scholarship. We absolutely cannot limit our vision. As with stem cell research, I believe digitizing books provides tremendous opportunities – for publishers, for authors, for libraries, and for students. It is a pioneering endeavor that is about the very ideal of a great university.

And it is the great universities of this country which will see us through this crisis in innovation and competitiveness. It is our responsibility to respond, and we are very good at creating answers to tomorrow's questions. Very good.

Universities are places of deep exploration and bold experimentation. At last count, university researchers in this country were filing invention disclosures at a rate of nearly two an hour, every day of every week.¹ Great ideas are born on our campuses: Hewlett-Packard was born at a university, as was the artificial heart, the integrated circuit chip, and, yes, Google.

We must now turn to each other, and to potential partners in the corporate world, in government, and to the start-up company down the street, and say, "Let's find a way to make this happen."

Collaboration is our future. Whether we pull together scientists from opposite ends of our campus or opposite sides of the country, we must call upon our best people to develop solutions for our future.

Academe is known for saying, "Publish or perish." I say, "Partner or perish."

Last month, engineers at Michigan announced they have developed a new cochlear implant that has the potential to provide remarkable sound for the profoundly deaf. More than a hundred thousand people have chosen this technology over the years, but earlier versions have their limitations. They can be difficult for surgeons to implant, and the sound they deliver is less than perfect. For example, patients can recognize spoken words, but not necessarily musical notes.

This new device is a dramatic development. Not only is it ribbon-thin and more adaptable to the intricate workings of the human ear, it provides greater frequency range and up to eight times better frequency resolution. If you have a hearing problem or bad eyesight, think about an eightfold improvement, and you will understand why we are so excited about this.

Michigan researchers did not do this alone. This new technology is the product of a joint research venture of the University of Michigan, Michigan State, Michigan Technological University, and the National Science Foundation.

We are bringing together the best of institutions to create the brightest of technologies.

We have gone from Alexander Graham Bell's desire to transmit sound, to the roar of Saturn rockets hurtling toward the moon. And now we have a tiny device with the potential to deliver Bruce, Beyonce' or Beethoven.

This is the sound of innovation and collaboration, and it will reverberate for generations.

¹ ACE/Solutions for our Future: Colleges and universities filed more than 15,000 invention disclosures in 2004