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40 Years After Moon Landing, Time to Launch the Next 'Giant Leap for Mankind'

The Apollo program was a booster rocket for American science. That innovation must be rekindled.

By France A. Córdova and Shirley Ann Jackson

Presidents France A. Córdova of Purdue University and Shirley Ann Jackson of Rensselaer Polytechnic Institute are physicists. Jackson was chairman of the U.S. Nuclear Regulatory Commission from 1995 to 1999 and Cordova was the chief scientist at NASA from 1993 to 1996.

Forty years ago this month, the nation and the world were spellbound, watching Neil Armstrong's amazing first steps onto the moon. It had taken eight years—from President Kennedy's 1961 speech calling for a "man on the moon" until July 20, 1969—to accomplish that goal. That stirring call to action was a response to the launch of the Sputnik satellite by the Soviet Union in 1957—a competitor nation had beaten the United States into space.

We both were profoundly inspired by the nation's response to Sputnik; the race to put a man on the moon. One of us switched career paths, earned a doctorate in physics, spent the next decade at Los Alamos National Laboratory, became the first female chief scientist at NASA, and eventually, president of Purdue University. The other also became a physicist, conducted research at the renowned AT&T Bell Laboratories, was the first woman to lead the U.S. Nuclear Regulatory Commission, and is now the president of Rensselaer Polytechnic Institute.

And we were not alone. An entire generation of young scientists, engineers, and innovators was deeply inspired by the excitement, activities, and achievements that brought our nation to that day in 1969. We all saw how we could, through science and exploration, contribute to the nation—and to the future. It was our good fortune that the United States responded to the challenge by the Soviets with a massive investment in science and engineering education and research. The space race was, in actuality, a defense-based science race.

The United States put in place policies like the National Defense Education Act to encourage young people to pursue careers in science and engineering, and to enable their participation through new loan programs. The post-Sputnik space race fueled research and technological partnerships between the federal government, research universities, and the private sector—which remain the envy of the world. The new focus on science and engineering spurred astonishing technological progress, which has been driving economic growth ever since.

Just as in 1961, we face a major opportunity in science and public policy today. Our challenges now are perhaps bigger and certainly more diffuse. The challenges of energy and climate change, healthcare, food and water—all require solutions designed by people educated in science.

The question is whether our nation will, once again, rise to the challenge and succeed. We believe we can—if we remember the lessons we learned 40 years ago to inspire and enable the next generation of scientists.

To spark a new generation of innovation we need intense national focus on a common set of goals, with sustained financial support, and strong public engagement. We need to value our scientists and engineers, and celebrate their successes.

What roadblocks stand in the way?

Three things: a lack of sustained funding for scientific research and technological innovation; a failure to spark the interest of young people in science, mathematics, and engineering; and a failure to engage the public imagination in the glories and value of science.

First, federal investment in scientific research, as a percentage of GDP, had been shrinking for much of the last 30 years. The tide has turned in the last year, with renewed support provided by the American Recovery and Reinvestment Act. However, to be truly effective, this funding must be sustained.

Second, our science and engineering workforce, those who came of age in the era of the "space race," are beginning to retire and we are not producing sufficient replacements. It takes decades to educate a nuclear engineer or a biomolecular researcher. We must invest now and invest more in teaching young people math and science.

Third, there is enormous untapped opportunity to spark the imagination of our young people to take on the great global challenges of our time. For example, there truly is a "new frontier" in today's global energy and environmental challenges. Students across the country are being inspired to pursue related fields of study. This group stands to discover new and alternative energy sources and to develop technologies that will conserve energy and protect the environment. We must do everything possible to ignite and sustain their motivation and enable their scientific pursuits.

Because we educate and prepare the scientific and technological workforce of the future, universities are key components of the innovation infrastructure. Innovation requires not only investment in research and development, but also investment in people. The question is, are we as a nation equipped with the human capital for the robust innovation that our energy, environmental, and other challenges demand of us?

We will be equipped if our education system is strong—from grade schools through universities—and if we, as a nation, continue to believe that investing in science and science education is essential to our global competitiveness, economic prosperity, and the wellbeing of society.

If the current generation can be inspired and enabled to take up the innovation challenge, just as we were inspired 40 years ago, there are no boundaries to what can be achieved.