ROLL CALL

Leaders Ignore Science Shortfalls to the Peril of America's Future

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Back in April 2005, I wrote a column decrying our failure to invest adequately in basic research, in science and science education. I noted that basic research was our crown jewel, one in which our overwhelming lead and our position as home to the best scientists in the world was the key to our edge in the international economy. More than three years later, it is worth revisiting whether we have done anything meaningful to address the problems I raised.

Here is the quick answer: No. Indeed, it is even worse than it was back then. I was not alone in questioning our policies toward science and basic research; six months after my column, the National Academies published a report titled "Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future," with the great business leaders Norman Augustine and Roy Vagelos as principal authors. It laid out in compelling and clear detail the danger: "The scientific and technological building blocks that are critical to our economic leadership are eroding at a time when many other nations are gathering strength."

Scientists of different interests and stripes have contacted me recently to decry the trends, and they have noted the following realities:

• We now have a significant advanced technology trade deficit, a turnaround from the surpluses we ran in earlier decades. In 1980, the U.S. share of world advanced technology exports was a robust 29 percent; in 2005, the most recent data show, that was down to an anemic 12 percent.

• As we shrink in our science and tech role in the world and at home, the Chinese are growing rapidly. The Chinese are moving ahead of us in the newest generation of superconductors, originally developed in Japan; the number of Chinese undergraduates with degrees in the natural sciences and engineering has gone from half that of the United States 20 years ago to more than twice that of the U.S. now.

• The world-renowned Fermilab in Illinois is planning layoffs for 7 percent of its staff and has moved to mandatory two-day-a-month unpaid "holidays" for the remaining researchers.

• Funding promised by President Bush as part of his American Competitiveness Initiative, for programs to expand and encourage math and science education and teachers, not to

mention to double the budgets for basic scientific research, has not been there — and not simply because Congress did not provide funding the president requested.

The president ended up opposing most of the funding increases he had originally called for in his initiative.

Not that Congress has done much better. Speaker Nancy Pelosi's (D-Calif.) Innovation Agenda has not exactly caught on or received the support and funding it calls for either.

In April of this year, the National Academies held a symposium to bring their "Gathering Storm" report up to date. Here is what Norm Augustine said: "A new research university is scheduled to launch soon with a day-one endowment of $10 billion, equal to what it took MIT 142 years to accumulate. Next year, over 200,000 students will study abroad, mostly in the fields of science and engineering, often under government-provided scholarships. Government investment in nondefense R&D is set to increase by 25 percent over the next few years. A multi-year initiative is underway to make the country a global nanotechnology hub. The world's most powerful particle accelerator will begin operation this year. And a high-level commission will conduct a follow-up to the Gathering Storm study with the objective of creating more jobs at home. The problem is that these actions were taken by Saudi Arabia, China, the U.K., India, Switzerland and Australia, respectively."

In Singapore, a major multibillion-dollar effort to make the country the cutting-edge leader in stem-cell and other health and biological science research is attracting some of the best American scientists who fought funding and other restraints at home. Nearly all American high-tech firms are placing their new research labs outside the country.

One might think that the oil debacle would create an avenue to change some of these dynamics. Not so. Augustine noted that the U.S. portion of the international program to develop plentiful energy through nuclear fusion is being reduced to "survival mode."

And Sen. Lamar Alexander's (R-Tenn.) call for a new Manhattan Project to develop energy independence was met with indifference, at best, from the presidential candidates, the White House and Congress. The same is true for changes in our immigration policy that would allow an adequate number of trained scientists to fill job needs here in the U.S., and to keep us in a position to attract the best students abroad, who otherwise are going to European and Australian universities.

To be sure, we have serious economic and budget problems at home. But the course we are pursuing nearly ensures that we will have even more severe economic woes over the long term.

I am baffled as to why neither Sen. Barack Obama (D-Ill.) nor Sen. John McCain (R-Ariz.) has made this issue a core part of the campaign and policy agenda, including not just a crash program in energy but in green technology, and a real commitment to have big funding increases for health, basic science and engineering research, along with science education.

This is not a difficult issue to explain to voters, and the amounts of money involved are not large in the context of a $3 trillion budget.

New York Times columnist Tom Friedman had a wonderful column a few months back comparing the Singapore airport to the JFK airport in New York, and the Berlin train station to Penn Station, saying that an ignorant observer would think that we were the ones who lost World War II. If we do not get our science and tech act together, we will be losers in another big way.

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