Pittsburgh: America’s Steel City is Reborn as a Knowledge City

Thank you for that warm welcome. It is an honor to address this distinguished audience and to do so in the company of such an illustrious panel of speakers.

I am particularly grateful to our very accomplished host, Vice Chancellor McMillen and pleased to be on the campus of the special university that she leads. I was dazzled by the photos and videos of the city and university that the Vice Chancellor has provided to me over the years. However, as she promised, both are even more impressive when seen in person.
The conventional wisdom is that it takes centuries to build a university of real impact. The University of Newcastle clearly has proven that is not the case. In a comparatively short, 50-year life, it has earned respect for its well-developed strengths, accelerating momentum, and ambitious plans for the future.

Strong links have been built, across a range of disciplines, by faculty members in our two universities. In fact, one of my close colleagues, the smiling George Klinzing, who served as our Vice Provost for Research, delivered a commencement address here just one year ago. I am privileged to be following in his footsteps by speaking with you today.
The University of Pittsburgh is among America’s oldest universities. It was founded in 1787, a few months before a new constitution created a new nation, the United States of America. Today, we enroll 35,000 students on five modern campuses. Those students regularly claim the highest forms of national and international recognition, including Rhodes and Marshall Scholarships.

We also have a rich research tradition, spanning many areas, but may be best known for biomedical advances. To give just two historic examples, the vaccine that conquered polio and most of the surgical techniques and drug therapies that made human organ transplantation possible were developed at Pitt.
In 1995, my first year as Chancellor, our National Science Foundation ranked Pitt 24th among American universities in terms of the federal research support competitively attracted by members of its faculty. Because America has so many strong research universities, that already was a position of strength.

But just fifteen years later in 2010, we climbed into the top five in that ranking. I am unaware of any other American university that, at any time, has moved up, so far and so fast, within the ranks of our country’s top research universities. I make that point because university-based research strength – at Pitt and also at Carnegie Mellon, has been one key to the economic transformation of Pittsburgh.
Though my focus will be on more recent years, let me quickly provide some historic context.

*Frontier Pittsburgh: The Gateway to the American West.* From the time that early American settlers began moving inward from the Atlantic Coast, there were battles for control of the strategic site that would become Pittsburgh – where two other rivers join to form the Ohio, the major river flowing west into the heart of the continent.

After the British won control in 1758, Pittsburgh did become America’s first “Gateway to the West.” Descriptions of this wilderness outpost often were less-than-flattering. A leading citizen said that
it was a place where “there was no morality or regular order.” One visitor concluded simply that the town was an “excellent [place] to do penance in.”

Far more positive impressions were held by at least one prominent resident – Hugh Henry Brackenridge. Over the course of his career, he served both as a legislator and as a justice of the state Supreme Court. He also was the founder of the frontier academy that would become the University of Pittsburgh.

When he viewed the modest settlement that had become his home, Mr. Brackenridge said, “This town must in future time become a place of great manufactory. Indeed, the greatest on the
continent or perhaps in the world.” He further asserted that “[t]he situation of the town of Pittsburgh is greatly to be chosen for a seat of learning.” He also saw the link between education and economic development that would emerge even more clearly over time and that is so central to this forum, stating, “[W]e well know the strength of a state greatly consists in the superior mental powers of the inhabitants.

More than two centuries of history has taught us this about the ideas of Mr. Brackenridge. Even though he was speaking at a time when America was a country of farmers and hunters and trappers, he was right about Pittsburgh becoming a center of manufacturing
might many decades later. He also was right about Pittsburgh becoming a center of higher learning. And he was right when he anticipated that educational institutions would serve as engines of economic growth.

**Classic Pittsburgh: A Center of Manufacturing Might.** My favorite description of the industrial city that Pittsburgh became was written by my Pitt faculty colleague Franklin Toker:

Pittsburgh stands for industry and production . . . It was a dominant force in world industry for a hundred years . . . It was Pittsburgh that gave, or rather sold, the world its first mass-produced oil, steel, aluminum, and
glass, and it perfected two other techniques that were even more critical to modern life. In Pittsburgh, Heinz created the world’s first hygienically packaged food and Westinghouse supplied AC electricity to supplement Edison’s DC in every corner of the globe.

As a world center of manufacturing might for more than a century, the many benefits that Pittsburgh enjoyed were disproportionate to its size. Great wealth came to a sizeable number of residents, and good-paying jobs were plentiful. And though there were prices to be paid – environmental harms being an obvious example – there also were community benefits that came with industrial
prosperity, including beautiful parks, good schools, a vibrant cultural community and very well-funded philanthropic foundations with a clear commitment to the region’s greater good.

Things changed dramatically in the early 1980's with the steep decline of the steel industry. The regional economy hit “rock bottom,” with unemployment topping 18%. But over the course of the past three decades, that economy has been transformed and a city considered by many to be “down and out” was reborn. This stands in sharp contrast to the experiences in many other cities in America’s “rust belt,” which have enjoyed far more limited recoveries from their periods of decline.
Reimagining Pittsburgh: Building on Knowledge. The Pittsburgh Regional Alliance – a group affiliated with our Allegheny Conference, a CEO-driven economic development organization whose work has been central to Pittsburgh’s progress – described the transformation of the Pittsburgh economy as follows:

Thirty years ago, Pittsburgh created a recipe for regional prosperity. We baked innovation, technology and knowledge into five industry sectors . . . creating a diverse and balanced economy. Today, innovation, technology and knowledge flavor pretty much everything we do.
The economy of today’s Pittsburgh is diverse, and several sectors made key contributions to its rebirth. However, when manufacturing declined, the one sector that really filled the void was the so-called “eds and meds.” Our education and health services “super-sector,” as it has been labeled by the U.S. Department of Labor, now accounts for more than 20% of all regional jobs in an economy that has more jobs than it did before the steel industry’s collapse.

One key aspect of the contribution made by the “eds and meds” is the growth of our own employment base and revenue streams. The University of Pittsburgh doubled its revenues and added about 3,500 employees – growing
roughly from 10,000 to 13,500 – in the last twenty years. The growth of the legally distinct, but closely related, University of Pittsburgh Medical Center has been even more dramatic. The UPMC grew from fewer than 10,000 employees to more than 60,000 and increased its annual revenues from $1 billion to more than $12 billion. UPMC is the largest academic medical center in the U.S., and UPMC and Pitt are the two largest employers in the Pittsburgh region.

For some, then, the transformation of the Pittsburgh economy is most visibly symbolized by the region’s two principal “towers.” One is the Cathedral of Learning, Pitt’s academic skyscraper.
The other is the U.S. Steel Building which now bears the initials of the University of Pittsburgh Medical Center at its very top, where UPMC’s executive offices are located.

Pittsburgh also is blessed to be home to Carnegie Mellon, another very strong research university with global reach and distinctive strengths. It, too, is a top-ten regional employer. The campuses of Pitt and Carnegie Mellon adjoin each other, and the two universities have developed a cultural commitment to partnering that surpasses anything found anywhere else in the world of higher education.

Pitt’s annual research expenditures peaked at more than $800 million. Taken
together, Pitt and Carnegie Mellon have consistently imported more than $1 billion of annual research support into the local economy. Those expenditures alone support thousands of local jobs.

But there also have been other benefits. Pitt and Carnegie Mellon have joined forces with government and the business and foundation communities to create such technology-based economic development initiatives as Pittsburgh’s Digital Greenhouse, Life Sciences Greenhouse, Robotics Foundry and Tissue Engineering Initiative. Each seeks to use the power of university research as a platform to develop or strengthen industry clusters that can be a source of new companies and new jobs.
In addition to the creation of new companies, the two universities also have been a powerful force in retaining existing businesses and attracting new ones. For example, when Westinghouse, a global leader in nuclear power, needed to move to a larger campus and was being heavily recruited by other regions, its strong nuclear engineering partnership with Pitt was one important factor in its decision to stay in Pittsburgh. When Google was looking for a new product-development location, its relationships with computer scientists at Carnegie Mellon helped drive the choice of Pittsburgh – which has become the company’s second-most-popular employment location in the U.S. And when the “think tank” RAND was
looking for a third U.S. “headquarters city” to supplement Santa Monica, California and Washington, DC, it chose Pittsburgh, largely because of the two universities, and located in a building on the border between our two campuses.

21st Century Pittsburgh: A Knowledge City. Six months after the attacks on the World Trade Center of September 11, 2001, President George W. Bush came to the University of Pittsburgh to announce his program to protect the United States against the threat of bio-terrorism. He talked about the related work being done at Pitt and UPMC and stated that, while Pittsburgh used to be known as the Steel City, it now should be known as the Knowledge City. And though they have
been at odds on almost everything else, President Obama agreed, bringing “his” G-20 summit to Pittsburgh to showcase an inspiring example of 21st century economic transformation.

These two Presidents are not the only ones who have recognized the re-birth of Pittsburgh. A front-page article in The New York Times described Pittsburgh’s positive passage to an economy grounded in university-based research. A Miami Herald column enviously identified research as the foundation for Pittsburgh’s transformation into a “Knowledge City.” And the Cleveland Plain Dealer analyzed lessons from the “Pittsburgh renaissance” that might be applied there.
Maintaining our Momentum. Today, we are focused on maintaining our momentum, and you may be considering what lessons from our experience could be useful in your own region. It might be helpful if I returned to the “Pittsburgh recipe” – baking innovation, technology and knowledge into five industry sectors – to offer some additional thoughts.

(1) Sector Selection. The five sectors included areas of traditional strength – advanced manufacturing, energy, and financial and business services – and areas of high potential – health care and life sciences and information technology. In all of these sectors, innovation, technology and knowledge would be critical to future success.
(2) *A Rich Reservoir of Research Strength*. It is unusual for a community to have two strong, rapidly improving, and highly complementary research universities literally located next-door to each other, as Pittsburgh does. It also is a big plus to have a premiere academic medical center with a business model that is grounded in cutting-edge research and high-quality education. It may be less obvious, but Pittsburgh also has a rich tradition of industrial research. The name “Westinghouse” was synonymous with technological innovation, but other companies like Alcoa, Heinz, PPG and US Steel also have major research facilities in Pittsburgh. In fact, we are home to 100 corporate research centers, many with ties to university faculty.
(3) *A Culture of Cooperation*. The Allegheny Conference, to which I earlier referred, was created 75 years ago, largely to forge a partnership between the corporate community and government to address serious air pollution problems. Since then, it has driven many other positive initiatives, and also has become more inclusive in its approaches to problem-solving. As I noted earlier, the Pitt-UPMC relationship is distinctive, and the commitment to partnering between Pitt and Carnegie Mellon is unique in the world of higher education.

(4) *Generous Foundation Support*. Pittsburgh does have foundation wealth that is disproportionate to its size. Those foundations always had been supportive
of Pitt and Carnegie Mellon but we became partners in different ways when we began to focus on regional economic development. It would have been difficult to launch such initiatives as our Digital and Life Sciences Greenhouses, Tissue Engineering Initiative and our Robotics Foundry without their support.

(5) *Enlightened State Support.* The creation of those initiatives also would not have been possible without state support for technology-based economic development. The state investments that were made were well-leveraged because our foundations were co-investors and Pitt and CMU contributed by realigning resources. The state’s investments largely disappeared in the aftermath of
the recession of 2008, but we are hopeful that the region had made lasting progress in developing industry clusters by then.

(6) Robust Federal Research Support. The foundation for much of our progress was support from our federal government for basic research. A big problem now, then, is a sustained decline in the real value of those investments. Most elected officials, regardless of political party, believe that investments in university research should be a high national priority. Until the more partisan differences that have contributed to budgetary gridlock are resolved, though, it seems unlikely that even shared priorities will be advanced.

A report requested by Congress and released by the National Research
Council three years ago was written by a distinguished panel chaired by the former CEO of du Pont. It began by stating:

America is driven by innovation – advances in ideas, products and processes that create new industries and jobs, contribute to our nation’s health and security, and support a high standard of living. In the past half-century, innovation itself has been increasingly driven by educated people and the knowledge they produce. Our nation’s primary source of both new knowledge and graduates with advance skills continues to be our research universities.
The report specifically cites lasers, radar, synthetic insulin, blood thinners, magnetic resonance imaging, computers and rocket fuel as inspiring examples of innovations in which university research has played an essential role. That list is a source of particular pride at Pitt, because insulin was first synthesized by one of our faculty members and a Pitt alumnus received the Nobel Prize in Medicine for his work in developing the science of magnetic resonance imaging, work that he began as our graduate student.

However, the report then chronicles the “array of challenges” now being faced by American research universities. Chief among them is diminished federal support for university research. In
addressing that serious problem, the report stated:

[T]he federal government should adopt stable and effective policies, practices, and funding for university performed R&D and graduate education so that the nation will have a stream of new knowledge and educated people to power our future, helping us meet national goals and ensure prosperity and security.

Some twenty years ago, one of my mentors – the person who really brought world-class medicine to Pittsburgh and who had spent much of his early career at Yale – gave me a then-recently published article entitled “The Last Boola-Boola.”
That article’s main theme was that the aspirations of Yale always would be limited by the grim realities of New Haven, its home. That city was in steep decline at that time – though it has seen great improvements since then, largely because of the efforts of Yale.

Still, the basic point is compelling. Though we may be affected in somewhat different ways, all of our prospects are elevated or undercut by the economic strength and social vitality of the communities that we call home. So, in each region, leaders need to recognize that we all really are in it together.

In Pittsburgh, our work is far from done, but we are pleased with what has
been achieved to date. Among many forms of recognition, Pittsburgh has been cited as America’s Most Liveable City and Smartest City and Most Affordable City. It also has been named a top U.S. city for achieving the American dream and for brain gain, business relocations, low business costs, commercial real estate, economic strength, social mobility, quality of living and as a best city for recent graduates.

Amazingly, we did all of that without beaches. When you add the appeal of Newcastle’s seaside location to all of the other assets that exist here – including, of course, university strength – the future looks very bright. So, as dazzled as I have been, both by the photos sent by the Vice Chancellor and by my first-hand
observations, I expect everyone to be even more impressed by the time of the program marking this university’s 60th anniversary.