POLITICOMAGAZINE

WHAT WORKS

The Robots That Saved Pittsburgh

How the Steel City avoided Detroit's fate.

By **GLENN THRUSH** | February 04, 2014

It's hard to pinpoint the moment Pittsburgh began its three-decade climb back from the dead, but Red Whittaker marks the comeback from the instant he heard the ominous clack of a door closing behind him when he entered a secured building near the melted heart of Three Mile Island back in 1983.

Whittaker—then a ferociously ambitious former marine building a nascent robotics program at Pittsburgh's Carnegie Mellon University that would become the world's best—was about to test out the ungainly, joy-stick-guided contraption he had designed with a $1.5 million grant to plumb the deadly *terra incognita* of the basement in Unit 2, the reactor that had partially melted down four years earlier, nearly setting off a nuclear disaster. He'd built the device over six months with a group of 20-something grad students, dispatching their metal-and-wire erector set on wheels to the reactor building, which was filled with radioactive water and debris and bounded by concrete suffused with enough killer gamma radiation to fry any human.

Whittaker, whose mother had steeled his nerves as a kid by taking him up for hair-raising flights in a small plane, was plenty nervous, worried that somehow his team's invention would end up

banging into the wrong thing and sparking a fresh nuclear crisis. Peering at the CCTV feed as the radio-controlled "Remote Reconnaissance Vehicle" slowly descended into the reactor building on a cable, he watched as his baby landed—plop—into the nuclear soup. "The thing I'll never forget is seeing how it made the water ripple. When I saw those ripples and we started creeping along, and everything was working, I knew we were in business," says Whittaker, whose current endeavor is no less ambitious if a lot more romantic: landing an unmanned rover on the moon and capturing the $40 million Google Lunar X Prize.

That same year, 1983, Pittsburgh's unemployment rate reached 17.1 percent and the city was losing more than 4,000 people a month. The steel industry that had built modern Pittsburgh, funded its museums and mansions, its football team and its aspiring middle class, was cratering, never to return. But the success of Carnegie Mellon's Three Mile Island robotics team—it produced a ground-breaking assessment of the extent of the radiation from sensor readings, photographic inspections and core samples taken from the concrete, none of which would have been possible with human hands alone—would set into motion a spectacular, three-decade cycle of innovation, investment and expansion that put Whittaker and his protégés on the leading edge of their new field and created a cool cottage industry that has come to define a city's resurgence.

"Roboburgh," the boosterish moniker conferred on the city by the *Wall Street Journal* in 1999 and cited endlessly in Pittsburgh's marketing materials ever since, may have been premature back then, but it isn't now: Pittsburgh, after decades of trying to remake itself, today really does have a new economy, rooted in the city's rapidly growing robotic, artificial intelligence, health technology, advanced manufacturing and software industries. It's growing in population for the first time since the 1950s, and now features regularly in lists like "the Hottest Cities of the Future" and "Best Cities for Working Mothers." "The city is sort of in a sweet spot," says Sanjiv Singh, a Whittaker acolyte at Carnegie Mellon who is working on the first-of-its-kind pilotless medical evacuation helicopter for the Marines. "It has the critical mass of talent you need, it's still pretty affordable and it has corporate memory—the people here still remember when the place was an industrial powerhouse."

> "The rise of the robots is the storyline the city itself embraces because it represents the reassertion of Pittsburgh's irrepressible identity, its industrial DNA.

Improbably for a blue-collar town that seemed headed for the scrap heap when its steel industry collapsed, Pittsburgh has developed into one of the country's most vibrant tech centers, a hotbed of innovation that can no longer be ignored by the industry's titans. Carnegie Mellon is Google's biggest rival in the race to build a driverless car, partnering with GM to build a robot Cadillac that

has been humanlessly tooling around Route 19, just outside city limits. In 2011, Google opened a posh, 40,000-square-foot office in an old Nabisco factory in the city's East Liberty neighborhood, ramping up last year to 350 people, with more on the way. Bill Gates and other Silicon Valley moguls have invested millions of dollars in Aquion Energy, a start-up spun out of CMU that is developing next-generation batteries and producing them in nearby Westermoreland County, not China. Apple, RAND and Intel also have outposts in town and Disney, which has tapped the university's computer and robotics talent for years, is partnering with the school to improve cinematic graphics and to develop hominid robots that can gently hand objects to people by predicting the movement around them. All told, Pittsburgh's tech and education sectors now account for some 80 percent of the high-wage jobs in the city, and robots are just the most visible piece of this miraculous turnaround of a city on the brink.

But is it a recipe for urban reinvention, proof that Silicon Valleys can flourish anywhere, as a million city managers the world over dream? Why did Pittsburgh make it when so many other industrial-era powerhouses have not—why, in short, is it Roboburgh today and not Detroit?

For all the high-tech whiz-bang—CMU's labs are an electronic menagerie with robots that slither like snakes, buzz overhead like hummingbirds and furrow into mines like hedgehogs—Red Whittaker, and the people who have worked on the Pittsburgh comeback, will tell you there is no magical formula for post-industrial cities to claw back from the grave. It's inevitably an all-of-the-above enterprise that in this case included a major environmental clean-up, public-sector incentives to attract businesses, billions of dollars in federal funding and collaborative rule-bending to do things like turn abandoned brownfield sites into gleaming tech headquarters. But perhaps the most critical factor was recognizing that, beneath the collapse, stagnation and misery, the city's core assets remained largely intact, in the form of human capital housed in the city's cultural institutions, foundations, an overlooked industrial research sector and above all its great universities—Carnegie Mellon, Pitt, Duquesne—built and endowed by the 19th century robber barons who gave the city its first golden age. Pittsburgh wasn't dead; it was just sleeping.

Glenn Thrush is a senior writer at Politico Magazine.

Additional credits:

Lead image by Mark Peterson/Redux.