

## Era 7: A Smug Era, 1900-1940

<i>Entrepreneurship</i>	<b>For good or for bad, leadership played a strong role in this era, from leading the way in wireless technologies to missing technological trends in the automotive industry.</b>
<i>Cluster/Collaboration</i>	<b>Networking was very important to the medical and technological breakthroughs of this era.</b>
<i>Research University/ Teaching Hospitals</i>	<b>The research universities and teaching hospitals were important during this era of technological and medical breakthroughs.</b>
<i>Inter-Regional Rivalry/ Competition</i>	<b>Driving scientific and medical research and the development of city infrastructure was rivalry with other cities.</b>
<i>National/ Global Market Demand</i>	<b>In an increasingly globalized world, local demands were often in line with national and global demands.</b>

***The conservative investments made by those who had profited from Boston's manufacturing industry soon became financial pitfalls as investors failed to take risks with their local funding. As the financial engine that had fueled the innovative motor earlier in the 19th century slowed up, Boston was able to develop some cutting edge technology and research.***

...Financial smugness... Loss of manufacturing ...Economic 'near hits' ...Social conflicts - Irish vs. Brahmin ... Advances in medicine and technology... Competition without investment...

### **Boston in its World**

Coming out of an era of rapid economic expansion in manufactured goods, Boston's elite was financially stable and wanted to consolidate their gains, establishing trusts and protectorates to safeguard their companies. However, serious financial challenges lay ahead. The rise of nation-states brought a new era in international relations, characterized by protectionism, isolationism, and internationalism, ushering in new schisms on the world scene. It was a new, worldwide epoch, which would become defined by technology and rising uncertainty.

Conservatism and isolationism were met head-on by a proliferation of new science-based technologies. Electricity continued to spread out to transform the lives of millions, leading to round the clock factories, new rail systems, and household lighting. The automobile opened new avenues of work and increased mobility to millions, and telephone technologies linked the nation coast-to-coast. Advances in physics and chemistry allowed new corporations such as Dow, Du Pont, and Eastman Kodak to team with research institutions such as MIT to encourage scientific research. The shoe and textile industry slowly slipped away from Greater Boston, as manufacturers turned to the cheap labor of the south; these losses were not offset by companies such as Gillette and USM, which made their homes in Boston. Locally, Boston's auto manufacturing plants failed to spark a growing industry, but the hospitals grew in importance, as the Harvard Medical School led them to new green pastures in Longwood, on what had been the Francis farm.

Culturally, Boston began to lose its claim as the Athens of America as Manhattan and later Los Angeles continued to become the center of high and popular culture. Politically, immigrants, especially the Irish, reached the tipping point, exemplified by James Michael Curley, a colorful populist who took on what he called the "Codfish Aristocracy" from his mansion with shamrock shutters in Jamaica Plain. With one exception, every mayor of Boston from 1905 to 1993 was of Irish-Catholic heritage. The economy was not expanding, although Boston's population was, and conflicts over jobs and social welfare legislation ensued. Boston was a hotbed of support for the anti-Semitic demagoguery of Father Coughlin, but Jews in the city also made strides, notably Filenes, Brandeis, and through the opening of Beth Israel Hospital. Throughout these changes, a closed Boston 'upper crust' seemed to strengthen their hold on wealth and became reclusive in their investments. Italian immigrant Charles Ponzi, from his School Street office, was the radical financial leader of this era in Boston, until the collapse of his 'pyramid' led to his deportation. Two other famous Italian immigrants met their demise in Boston: Sacco and Vanzetti, who brought anarchistic ideals to Boston and were controversially tried and executed (1921 and 1927, respectively) for allegedly killing a shoe factory paymaster and

his guard in Braintree. The issue divided the nation, and brought attention to Boston's cultural, political and social divisions.

### **Era 7 Drivers – the Cocktail**

The opening decades of the 20<sup>th</sup> century were challenging years to the nation and to Boston, with the coming of World War I, the 1918 Influenza Pandemic, the stock market crash, the collapse of a number of Boston financial institutions, and the Great Depression. Keys to keeping the city afloat were the *research universities* and the economies that they supported, and the *teaching hospitals* and the many medical breakthroughs that came from their ever-expanding inquiries into science and medicine. A group of *entrepreneurial leaders* worked both together within Boston in *local collaboration*, and outside the city in *inter-regional collaboration*.

The Boston elite's rapid accumulation of wealth in the manufacturing boom allowed a smug comfort and conservatism to permeate the city. A transitional period, juxtaposed by financial conservatism and technological advances, supported a unique innovation cocktail. Political and private *entrepreneurship* coupled with *national demand* and *collaboration* with the national government led to the birth of the *research university*. Boston was challenged during the first part of the 20<sup>th</sup> century, but the city reinvigorated itself through new industries based in the technological and scientific fields.

### ***The Drivers of Boston's Turn of the Century Economy***

#### ***Boston's Entrepreneurship: For Better or for Worse***

In the automotive industry, leaders like Albert Pope and the Stanley brothers improved electric and steam automobile technologies, making the **Pope Electric** and **Stanley Steamer** the top automobiles in their class. Unfortunately, that same innovative leadership drove into the future with blinders on as Ford's engines rapidly passed the Boston carmakers because of American demand for the utility of utility of internal combustion, leaving Boston in the dust.

With the exception of Boston's immigrant Charles Ponzi's scheme, in the financial world the leadership of the Brahmins led to "conservative" money pooling and investments. They looked to preserve their money rather than to invest it in risky new innovations. This all came tumbling down upon them with the stock market crash of 1929.

Not all stories of Boston's leadership at the time are negative. In the medical field, noteworthy physicians such as **Dr. Robert Gross**, the first doctor to perform vascular surgery, **Dr. Albert Bosworth**, the Tuft's Floating Hospital for Children doctor who engineered baby formula to have similar qualities to breast milk, and many other researchers worked towards advancing medical technologies and practices.

In technology, **Reginald Fessenden** became the first to transmit radio frequencies wirelessly across the sea. Companies tied to **MIT** and **Harvard**, such as **Raytheon** (originally the **American Appliance Company**) and **Polaroid** (then known as the **Land-Wheelwright Laboratories**) got their starts in this turbulent era and saw their way

through to prosperity by innovating basic technology, making radio and polarized lenses available to the public.

***Bostonians Working Together- Collaboration and the Research Institute***

The scientific, medical, and academic fields had been slowly merging themselves in previous eras to form the powerhouse research universities and teaching hospitals that have so defined Boston's 20<sup>th</sup> century. Advances such as Gross's surgery were made possible by his work at **Harvard Medical School** and his building on the work performed by other doctors at the school.

Fessenden's wireless radio was made possible through collaboration with researchers at **MIT** and related companies in the area. In all, collaboration seems to be tied closely to the research institute in Boston, whether it is a spin-off or directly related.

***Collaboration: Boston, the Region, and Beyond***

Finding ways to work beyond the Boston area allowed for the new research universities to attract the best minds the country had to offer. Boston became the Mecca of academia, training the best minds in more than the previous eras liberal arts- Boston became the home to the nations- and the worlds best scientists, engineers, and thinkers.

***National/ Global Market Demand***

What was produced in the research universities and the teaching hospitals of the Boston area was something more than what could be packaged and sold as previous eras innovations could be. What was in demand was intellectual property produced in the hallowed, revered, and innovative corridors of the institutions of Boston. These advancements were sold and spread throughout the world.

***Moving Ahead***

Into the Second World War the importance of Bush's research university became readily apparent. Developing weapons systems, RADAR, and a host of other new technologies allowed for America's entrance into the war to be a successful effort. Truly national and global in scope, the following eras will make cement Boston as an international research capital.

***Why Not Boston: The Loss of the Automotive Industry, 1890's and on.***

Boston was one of the most innovative hotbeds of early automotive technology. Why did Boston lose this lucrative and rapidly growing industry at the turn of the century? While providing the corporate and industrial structure as an example for many early manufacturers, the Pope Manufacturing Company invested in the wrong technology, the electric car, in a quickly changing period. Also in the Boston area, the Stanley brothers' Steamer automobiles were also outpaced by rapidly developing internal-combustion technology. The loss of the transportation market shifted industrial centers and populations away from the seaboards and changed the American landscape. Road building quickly outpaced rails, as Americans took to the roads. In 1900, 4,894 miles of rails were built, while factories sold but 4,100 passenger cars. By 1920, a scant 314 miles of rails were built and Americans purchased 1,905,500 cars.<sup>1</sup> Americans were demanding increased speed, distance, and ease of use.

### **Pope's Electrics**

Colonel Albert Pope was the area's premier bicycle manufacturer. Headquartered in Boston and produced in Hartford, his Columbia bicycle was known throughout the world. Pope rejected automobile technology as being too ungainly, expensive, and maintenance-ridden to be marketable. While saying this, he also invested in the new technology. In the late 19<sup>th</sup> century, the Pope Manufacturing Company was the nation's largest producer of automobiles. Doubting that anyone would want to sit on an explosion, and finding steam power to be equally disadvantaged as internal combustion, Pope placed his company's automotive future in electric cars. Electricity, through rapidly transforming every facet of American life, proved to produce cars too slow and short-run to ever gain a toehold in the rapidly expanding American heartland. By 1907, Pope Manufacturing was placed into receivership and soon all production ceased.

### **Stanley Steamers**

Taking a different approach, the Stanley brothers of Maine opened their Stanley Steamer Company in Watertown, Massachusetts. The Steamer had grunt and torque, but it required 15-20 minutes to build a sufficient head of steam. Additionally, it could only operate in areas where abundant sources of water were available and burned as much petroleum in its boilers as an internal-combustion automobile. By 1903, the steamer was no longer profitable; in 1907, Francis and Freeland Stanley tuned production down to 1,000 cars per year, and with the motoring death of Francis, Freeland sold the company.

### **Why Not Reorient?**

As Henry Ford's internal-combustion automobiles spread throughout America, allowing farmers to perform jobs more efficiently and rural Americans to have access to towns and cities, the Boston industry that had provided the model of manufacturing became a relic, a missed opportunity. Why didn't Boston manufacturers reorient? Although Pope produced some internal-combustion automobiles, his company didn't foresee the full range of possibilities that the automobile opened for Americans. The Stanley brothers marketed their cars as toys for playboys, not as tools to enhance farmers' livelihoods. Sentiments in America were changing, and the country was looking for new tools for the workingman, not new toys for Boston Brahmins.

<sup>1</sup> Alexander Keyssar, Daniel J. Kevles, Pauline Maier, and Merritt Roe Smith, *Inventing America: A History of the United States*. New York: W.W. Norton & Company, 2003. P. 694.

### **Vascular Surgery-1938**

Robert Gross came to Boston at 22 to attend Harvard Medical School. After graduation, Gross studied pediatrics, pathology, and vascular procedures. Gross' background prepared him to attempt a new type of surgery, one that would correct a common congenital heart defect. On August 26, 1938, Dr. Gross ligated the ductus arteriosus of a seven-year-old girl at Children's Hospital, in the first successful open heart surgery. A similar operation was performed just a year earlier by Dr. John Strieder at MGH, but the patient died soon afterwards from a pre-existing infection. Gross' subsequent success was the culmination of years of research into vascular surgery, but it also prompted other doctors to attempt similar surgeries.

Boston was a fertile setting for Dr. Gross' work. Research universities, specifically Harvard Medical School, gave ample opportunities for Gross to develop as a surgeon. Gross was also aided by the *cluster collaboration* of Boston research physicians. Gross worked under a number of doctors who provided him with a rich surgical background. Gross was not butting heads with the system when he chose to perform his surgery for the first time; in fact, he was strongly encouraged by other doctors

Gross' surgery also demonstrates the role of *social-scientific* interplay. Gross and the pediatric researchers who preceded him worked to treat relatively common heart defects. They believed their research could ultimately save lives. Gross went on to perform over 1,600 procedures on the ductus arteriosus during his career.

ERA SEVEN

Innovate Boston! Shaping the Future from Our Past: Four Amazing Centuries of Innovation  
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