

# Redrawing The Economic Landscape



Technology-Based Economic Development (TBED)  
in Pittsburgh, 1978-2005

Senior History & Policy Project Course:  
Fall 2005

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**Carnegie Mellon University**

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Technology-Based Economic Development (TBED)  
in Pittsburgh, 1978-2005

**History and Policy Project Course  
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**Department of History  
Carnegie Mellon University**

**Authors:**

Richard Bangs  
Stephanie Busi  
Paul Buyanovsky  
Margaret Cartaya  
Kyle Dominguez  
Christine Filiciotto  
Sean Friday  
Sara Lewis  
Nathaniel Maurer  
Erica Nurnberg  
Joseph Phillips  
Eugene Shiu  
Jimmy Song  
Emily Soong  
Eddie Szeto  
Joseph Trevithick

**Course Instructors:**

Professor Jay Aronson  
Alex Bennett, TA  
Mathew Hamilton, TA

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## **Chapter 1: Introduction and Methodology**

This project is the product of the Fall 2005 Senior History and Policy Project Course. The initial goal of the project was to look into the effects of biotechnology on the Pittsburgh economy, and was later expanded to look at the effects of technology-based economic development, or TBED, on the social, economic, and political fabric of the city. We sought to understand the efforts being taken to revive the city's economy in the wake of the collapse of the steel industry in the 1980s.

In this chapter, we will summarize the contents of the report and describe the methodology that we used. In Chapter 2, we will provide a brief overview of Pittsburgh's rise and fall as an industrial city, paying particular attention to those factors that led to its initial success and those factors that led to its drastic demise. We will also examine early research and development efforts that laid the foundation for Pittsburgh's recent venture into a technological economy, as well as the emergence of public private partnerships aimed at revitalizing the city.

In Chapter 3, we examine how state-wide policies have helped or hurt the economic development of Pittsburgh since the 1980s. After briefly reviewing competing economic development theories and the role of government in economic development, we take a closer look at former Governor Dick Thornburgh's efforts to revitalize Pennsylvania's economy in the early 1980s. His administration's policies have served as the starting point for all subsequent local efforts to bring Pittsburgh back to life. Especially important was Thornburgh's creation of the Ben Franklin Partnership, which was later renamed Innovation Works after a financial scandal. This organization seeks to

encourage the growth of technology-based companies through grants and early-stage funding.

In Chapter 4, we discuss some of the basic factors that are necessary for Pittsburgh to develop a strong technology-based economy. These include: venture capital; support from the local foundation community during the period of economic transition; a supportive business environment (especially a fair tax structure); and a strong academic community and universities committed to technology transfer. At the end of the chapter, we will present profiles of a few companies in order to better understand how all of these factors play out in practice.

In Chapter 5, we focus on the various organizations that have been created in Pittsburgh over the past 15 years that seek to provide guidance and funding for newly emerging technology companies. These organizations include the Pittsburgh Technology Council, Innovation Works, Pittsburgh Life Sciences Greenhouse, and the Pittsburgh Digital Greenhouse.

In the course of researching the above topics, we decided it was necessary to take a brief look at socio-economic and neighborhood indicators of the health of the city. In Chapter 6, we address the issues of how TBED impacts regional job growth and the demographic changes that have taken place in the city over the past three decades. The report includes a significant amount of research on how such economic development impacts pre-existing ethnic and racial disparities. We examine how successful Pittsburgh is when it comes to retaining and attracting skilled workers in general and whether TBED provides additional jobs for people with a less well-developed set of skills. This involved an examination on what has been done to integrate residents of Pittsburgh into the new

tech-based economy, the average education of residents, and retention of university graduates. Along these lines, we also examined how all of this economic development was affecting the overall gentrification of Pittsburgh.

## **Methodology**

The History and Policy Project Course used a number of different types of sources when researching the topic, both primary and secondary. Initially, we conducted extensive secondary source research, working through scholarly literature on regional economic development and the history of Pittsburgh. We then examined readily accessible primary sources, such as newspaper and magazine articles that chronicled the city's ups and downs over the past three decades. We also read and analyzed numerous technical reports focusing on the health of Pittsburgh's economy, as well as reports that provided blueprints for the city's revitalization at various points during this time period.

Once this preliminary research was complete, we examined various collections at University of Pittsburgh's Archives of Industrial Society. Most notably, we made extensive use of the papers of former Pennsylvania Governor Dick Thornburgh (1979-1986). In gauging the health of Pittsburgh's economy, and the effectiveness of the various policies we describe, we also examined statistics provided by government agencies such as the U.S. Department of Labor, Bureau of Labor Statistics and the U.S. Census Bureau.

Finally, and perhaps most importantly, we conducted interviews with local politicians, entrepreneurs, CEOs, university officials, academics, activists, economic development specialists, and many more. Before conducting these interviews, we

decided as a class what issues to focus on, and what questions to ask. We then tailored these questions to specific individuals, and went out in teams of two to conduct interviews. All tapes are currently in the possession of Professor Aronson, and many of the interviews have been fully transcribed. We hope to eventually place many of these tapes and transcripts into a local archive so that they can be used in the future.

### **Note from the Project Course Students**

The students felt it was important to stress the scope of the project. The issues tackled on the following pages have been examined at state and local levels for decades and have still not been resolved. Through a semester long, in depth study the students attempted to unearth useful information, which has been lacking in previous studies (i.e. addressing gentrification, and city legal structure). The students also merged information from several different studies linking the ideas of TBED with those of EDO's, looking into how the city's image (both of Pittsburgher's and of outsiders) affects the growth of the city, as well as seeing how a shrinking population affects the growth of businesses. Unfortunately, as this project was limited to one semester it became impossible to research everything of interest (i.e. looking into what EDO funded companies have done with their funding, or looking into the reasons why companies have failed or moved out of Pittsburgh). Nevertheless the students feel that this report will contribute to further research.



## Chapter 2: A Brief History of Pittsburgh

### Big Steel and its Decline

Pittsburgh has undergone great changes since the end of the Second World War. The city has transitioned from being one of the most important industrial cities in the world to a struggling city looking for new hope in high technology. Although the city has made great strides to move beyond its machine-age past, Pittsburgh has retained its image to many outside of the area as a smoky and industrial town rich in pollution. In reality, very few steel mills still exist in the area and the city has been able to clean up tremendously. In this chapter we will provide a brief overview of Pittsburgh's rise and fall as an industrial city, paying particular attention to those factors that led to its initial success and those factors that led to its drastic demise. This chapter also looks at the early R & D efforts that were the beginnings of Pittsburgh's venture into a technological economy and the emergence of public-private partnerships aimed at revitalizing the city.

During the mid to late 1800's, the steel industry began to boom in the city.<sup>1</sup> The reasons for this tremendous success included: its location (including geography and weather), availability of natural resources, development of technology and the area's growing work force. Pittsburgh's many years of success ultimately did not last, and the steel industry suffered a sharp decline in the mid 20<sup>th</sup> century. This decline can be attributed to a variety of factors including the end of WWII, pollution created by the industry, sprawl of the city, technology, the creation of labor unions and outsourcing.

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<sup>1</sup> 1999. *Pittsburgh in the 1850's* [online]. Pittsburgh: University of Pittsburgh. Available from World Wide Web: (<http://www.pitt.edu/~press/goldentrianglebooks/1850s.html>)

Steel production, like other heavy industries, was very dependent on fuel and Pittsburgh provided this in abundance by having rich resources of both coal and natural gas. Coal was critical to industrial growth and was used primarily for producing the power necessary for the operation of the steel mills. These resources were also used for heating homes and since many Pittsburghers were already dependent on coal burning furnaces, they continued using this source of energy even after cleaner-burning natural gas became available. The widespread use of the dirty burning coal contributed to Pittsburgh's environmental problems and its status as the "smoky city."<sup>2</sup>

Figure 1

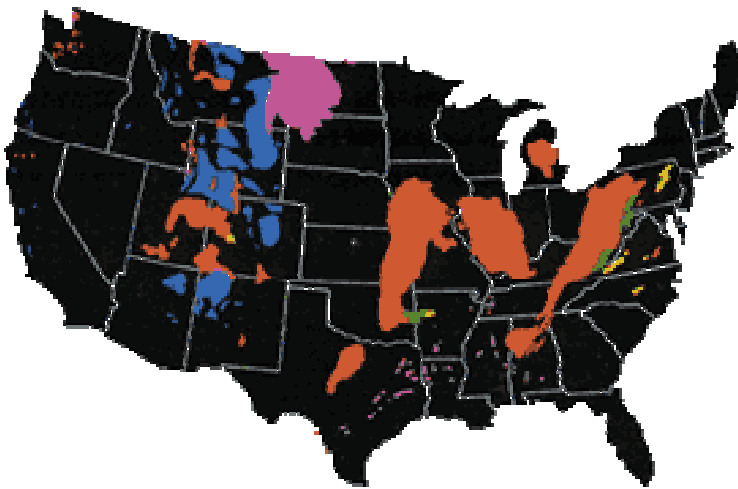


Figure 1 shows the location of medium & high volatile bituminous coal identified in orange, clearly indicating its concentration in Western Pennsylvania.

Coal also played a vital role in another important aspect in the success of the steel industry and was a primary source of fuel for the railroad. The railroad was introduced in

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<sup>2</sup> Joel Tarr, *Devastation and Renewal: An Environmental History of Pittsburgh and Its Region*, (Pittsburgh: University of Pittsburgh Press, 2003).

Pittsburgh in the mid-19<sup>th</sup> century and vastly expanded Pittsburgh's market for its products, thus increasing the output and wealth of the city dramatically. George Westinghouse's invention of the air brake in Pittsburgh in 1869 also helped the city tremendously.<sup>3</sup> This significant invention allowed trains to run faster and heavier with little safety risk thus allowing the supplies needed in the production of steel and the finished product to be shipped more efficiently.

Directly used in the manufacturing of steel, advances in the efficiency of furnaces was also common.<sup>4</sup> More efficient furnaces allowed steel to be produced at the same quality or better in a shorter amount of time and with the use of fewer resources. Throughout the United States the introduction of the process of basic oxygen steelmaking proved to be a "pivotal process in the transformation of the U.S. steel industry since World War II."<sup>5</sup> This method increased the quality of the steel while also reducing the quantity of raw materials needed in the manufacture of the product. This process originated in London in 1879 when Sidney Thomas developed the necessary metallurgical functions. When Thomas presented his findings on this process in London, Andrew Carnegie was present and took great interest in it. He became friends with Thomas and acquired the U.S. license on the process. His securing of this license served to be a great benefit to the area which "squashed any steelmaking developments in the South where high phosphorus ores (an important element in the process) are located."<sup>6</sup>

The development of inclines along Mount Washington was also important to the

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<sup>3</sup> *The Westinghouse Air Brake Company* [online]. Available from World Wide Web: (<http://memory.loc.gov/ammem/papr/west/westair.html>)

<sup>4</sup> *Crucible Steel* [online]. Available from World Wide Web: ([http://en.wikipedia.org/wiki/Crucible\\_steel](http://en.wikipedia.org/wiki/Crucible_steel))

<sup>5</sup> *The Basic Oxygen Steelmaking Process* [online]. Available from World Wide Web: ([http://www.energymanagertraining.com/iron\\_steel/BOS\\_steel.htm](http://www.energymanagertraining.com/iron_steel/BOS_steel.htm))

<sup>6</sup> *The Basic Oxygen Steelmaking Process* [online]. Available from World Wide Web: ([http://www.energymanagertraining.com/iron\\_steel/BOS\\_steel.htm](http://www.energymanagertraining.com/iron_steel/BOS_steel.htm))

success of the steel industry. The Monongahela incline opened in 1870 and the Duquesne incline in 1877. These both served to transport resources such as coal, and people involved in steel production, up and down the hill.<sup>7</sup> The significant role that such innovations played in the success of Pittsburgh was recognized throughout the history of the city, particularly in its attempts to revitalize the region. This is best seen in the extensive R & D efforts that took place and which will be discussed in depth later in the chapter

As Pittsburgh's industrial economy expanded, its population grew dramatically. Immigrants from Europe, particularly Ireland, Germany, Italy and Poland, came to Pittsburgh looking for work. Once established, their large contributions to the steel industry created more success, thus creating a demand for even more labor. African-Americans also made up a sizable portion of the growing population. After World War I and the Red Scare, Americans grew frightened of immigrants. In 1924, Congress passed the Immigration Act which, for the first time, limited migration from Europe using a quota system. This cut off the supply of labor for Northern factories and plant owners, from steel and automobile manufacturing to meatpacking. This forced these industries to open their doors to African-American migrants from the South who were attracted to the North by the desire for steady work and a decent wage and the desire to escape Jim Crow Laws in the South.<sup>8</sup> People coming to the Pittsburgh region at this time was very successful finding work in the steel mills. Steel production became a vital piece to the city and efforts of the city and its people went to improving this industry.

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<sup>7</sup> Joel Tar, "Transportation Innovation and Changing Spatial Patterns in Pennsylvania," (Illinois: Public Works Historical Society, 1978).

<sup>8</sup> Laurence Glasco, "Double burden: the Black experience in Pittsburgh," in City at the point: essays on the social history of Pittsburgh, ed. Samuel P. Hays (Pittsburgh: University of Pittsburgh Press, 1989), p. 75.

From the late 19<sup>th</sup> through the mid 20<sup>th</sup> centuries the prosperous city was almost solely reliant on its production of steel. Little or no attention was paid to other industries and the city failed to diversify. It was argued that “Pittsburgh’s elites would not bring about the economic diversification needed...because they were doing well enough as things were.”<sup>9</sup> At the time, it is accurate that the city was booming on this extremely successful industry, however, if this industry were to ever collapse (which is very well did) the city would have no other industry to fall back on. This proved to be a very significant factor in explaining why Pittsburgh’s economy fell so drastically after the collapse of steel.

Until faced with the devastating effect of a collapse in the steel industry, the city’s focus did not change and steel production continued at an astounding rate. Throughout the history of the United States, domestic production has increased greatly in times of war. This was true during World War II, when the United States could no longer purchase products such as steel overseas, leaving cities like Pittsburgh with the task of supplying the country’s war machine. This demand greatly benefited the area, increasing its success and gave the region a widespread, if temporary, economic boom. With the end of the war in 1945, this demand dropped significantly. Unlike the Civil War, there was no new expansion in demand after the war ended. In fact, the United States implemented various economic outreach programs and rebuilding efforts to the countries devastated by the war whether they were friend or foe. Part of these programs included the outsourcing

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<sup>9</sup> Angela Gugliotta, “*The “Smoky City Between Wars”* (Illinois: The University of Chicago).

of many products, technologies and resources. Steel, for example, went primarily to Japan.<sup>10</sup>

The strong steel industry that led to the success of Pittsburgh also had a part in its downfall. In steel production a large amount of waste is produced over time and Pittsburgh became very badly polluted. As one witness reported, “rivers ran brown from toxic chemicals, sewage and refuse that filled them. Coal mines, coke ovens and their huge piles of debris and ash waste littered the bald, muddy hills.”<sup>11</sup> Most workers in the city learned to bring two shirts with them to work as one would become so filthy with soot and ash that they would have to change them halfway through the day. The pollution that was created was also known to cause many health problems, and the city was very undesirable to live in. Additionally, after years of use, the natural resources that the steel industry relied so heavily on became drastically depleted and very hard to access.<sup>12</sup>

The heavy pollution created by the steel mills in the city was also a factor in the “sprawl” of Pittsburgh. Pittsburghers found it highly undesirable to live in such a polluted inner city and moved outward in all directions. The most significant example of this sprawl is evident in the annexation of Allegheny City in 1907, against their desire not to become part of the city. Mill towns also began popping up outside of the city and many people and jobs followed. During this time, it was also the common desire among Americans to pursue the “American Dream” and own land. This contributed greatly to the sprawl as people purchased property outside of the city, many in the suburbs. The

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<sup>10</sup> 2003. *Evolution of Outsourcing* [online]. Innovation & Business Architectures, Inc. Available from World Wide Web: ([http://www.biz-architect.com/evolution\\_of\\_outsourcing.htm](http://www.biz-architect.com/evolution_of_outsourcing.htm)).

<sup>11</sup> Tarr, “*Devastation and Renewal: An Environmental History of Pittsburgh and Its Region*”

<sup>12</sup> *Clearing the Air* [online]. Pittsburgh Green Story. Available from World Wide Web: ([http://www.pittsburghgreenstory.org/html/clearing\\_story\\_ideas.html](http://www.pittsburghgreenstory.org/html/clearing_story_ideas.html))

increased availability of automobiles also aided in the sprawl as individuals were more mobile and able to travel from the city. Urban sprawl is still a problem that Pittsburgh faces today. Between 1982 and 1997 the population of the city decreased 7% while the use of land increased by 43%.<sup>13</sup>

Individuals working in the steel mills wished to escape the polluted city as much as they could by moving their homes. Despite this, these workers continued to be forced to endure the effects of pollution while they were at work. At this time, the severe effects that pollution has on one's health were not entirely known, as they are today. Despite this, workers' concern for their health was an issue that they took very seriously and they faced it in the lack of safe working conditions provided by the steel mills.

A common way to fight for the implementation of safer conditions was by the formation of labor unions. During the late 19<sup>th</sup> century, labor unions became very popular in steel mills throughout Pittsburgh. Workers rallied together to fight for higher wages, better benefits and safer working conditions. These organizations forced companies to pay out more money towards the workers in wages and safer equipment. If the company did not give in to the union's demands, workers often orchestrated general strikes. These work stoppages proved very costly to the employer in lost profits. Ultimately, many companies would meet many of the demands of the unions and would be forced to pay out more money to appease them.<sup>14</sup>

The loss of money by companies through these unions, as well as through other sources, played a direct role in the problem mentioned previously of outsourcing. This

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<sup>13</sup> Dan Fitzpatrick, "Brooking Say Pittsburgh Plagued by Sprawl," Pittsburgh Post-Gazette, September 9, 2001.

<sup>14</sup> Philip Foner, The Great Labor Uprising of 1877 (New York: Monad Press, 1977).

proved to be a crucial factor in the decline of Pittsburgh. Other countries did not have labor unions, could pay their workers very low wages, and did not provide safe working conditions. In addition to lower labor costs, these countries had also developed more efficient technology in the production of steel and products necessary to its production. Overall, it proved much cheaper for Americans to buy these products overseas. It also proved cheaper for U.S. companies to send the work overseas and pay for it to be brought back to America. Overall, demand for American products dropped drastically, with steel being one of the hardest hit.

As Pittsburgh's industrial base became less competitive, the city's economy began to suffer. Unemployment forced citizens to leave the city and has led to a significant outmigration rate. Between 1970 and 1978 total net outmigration was a whopping 354,200. In 1976, for the first time in a decade, Pennsylvania's unemployment rate was slightly higher than the national average and in 1978, soared to 17%. In 1967, Pennsylvania had 8.4% of the total manufacturing employment in the U.S. By 1976 this number fell to 7.4% and has fallen further since. Between 1967 and 1976, Pennsylvania's share of the country's manufacturing output fell from 7.4% to 6.3%.<sup>15</sup>

### **The Rise of Research and Development in Pittsburgh**

Since the late nineteenth century, Pittsburgh has long been known as a center for heavy manufacturing and industry. It is no surprise then that many companies in the region also used scientific and engineering research to develop new products and processes, to improve existing ones, and to solve manufacturing problems. Research and

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<sup>15</sup> Director Dr. Walter H. Plosila, "*Choices for Pennsylvania's: Toward a Strategy for the Future: Interim Report*," The Governor's Office of Policy and Planning, 1980.



development was seen not only as a way to get a leg up on the competition but also as a means to increase market share. Not only did local companies create in-house R&D operations, they also funded university-based laboratories to do both contract research and basic science.

During the 1920s and 1930s, the importance of R&D grew in Pittsburgh as it did throughout the rest of the country, particularly after World War II. The R&D programs of Dupont, General Electric, Kodak and AT&T served as models for firms interested in starting or expanding their own internal research capacities during this period.<sup>16</sup> Local companies such as U.S. Steel, Westinghouse, Alcoa, and Gulf Oil all had thriving R&D facilities at mid-century. Scientists and engineers worked hard to create innovative new products and improve levels of efficiency and economies of scale in manufacturing processes.<sup>17</sup>

As the Cold War progressed, the government gave increasing levels of funds to companies to conduct research for it. Companies that previously conducted little to no R&D were building new facilities in order to garner the growing number of government contracts. The Office of Naval Research became the primary source of governmental research funding, much of it in basic science. Companies began to observe that many of the products that were created through government contracts turned out to have viable commercial uses, the growth of R&D in the U.S., and particularly in Pittsburgh, exploded.<sup>18</sup>

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<sup>16</sup> "From Heavy Industry to High-Tech: A Retrospective Analysis of Research and Development in the Pittsburgh Region, 1920-1995," p. 7. Senior History and Policy Project Report, Carnegie Mellon University, Fall 1996, available through the Carnegie Mellon University Department of History.

<sup>17</sup> "From Heavy Industry to High-Tech: A Retrospective Analysis of Research and Development in the Pittsburgh Region, 1920-1995," p. 8

<sup>18</sup> "From Heavy Industry to High-Tech: A Retrospective Analysis of Research and Development in the Pittsburgh Region, 1920-1995," p. 8

Beginning in the late 1960s and 1970s, however, local companies weakened by the decline of the American steel industry and other industries could no longer afford to support huge R&D facilities. As a result, the companies began to close these research centers, leaving large numbers of scientists and engineers unemployed. After the Pittsburgh region reached a peak of almost 15,000 industrial research staff in 1965, this number bottomed out at around 7500 in 1975<sup>19</sup>. While this situation was not good for Pittsburgh, not all of these skilled workers for left without a job. Some of them transitioned to one of the many university-based labs that were engaged in industrial R&D.

## **University Research in the Pittsburgh Region**

### *Carnegie Institute of Technology*

Around the turn of the century, philanthropist and steel mogul Andrew Carnegie realized the need to offer the working class of the city an opportunity for higher education. Through a generous \$2 million<sup>20</sup> donation by Carnegie, the Carnegie Technical Schools was founded in 1900 as a trade school in order to train and supply skilled workers for the region's growing industries. After the city's acceptance of the offer and the state's permission to acquire the land, ground was broke in 1905 and the first class entered the school on October 16, 1905.<sup>21</sup> A name change in 1912 to the

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<sup>19</sup> "From Heavy Industry to High-Tech: A Retrospective Analysis of Research and Development in the Pittsburgh Region, 1920-1995," p. 27

<sup>20</sup> *Andrew Carnegie* [online]. Available from World Wide Web: ([http://en.wikipedia.org/wiki/Andrew\\_Carnegie](http://en.wikipedia.org/wiki/Andrew_Carnegie))

<sup>21</sup> Arthur Wilson Tarbell, "*The Story of Carnegie Tech*," (Pittsburgh: Carnegie Institute of Technology, 1937), p. 24, 30.

Carnegie Institute of Technology also reflected a change in purpose from a trade school to four-year degree granting institution.<sup>22</sup>

The first research conducted at the Carnegie Institute of Technology was through the Division of Applied Psychology in 1916. The study looked at the relationship between levels of education and problems faced within commercial and manufacturing companies. They collected data using intelligence tests, personal rating scales, and observing employee behavior. The application of such research was found to be very useful to area companies and the division soon established ties with a large number of companies, including Carnegie Steel and HJ Heinz.<sup>23</sup>

Between 1916 and 1922, under the guidance of President Arthur Hamerschlag, Carnegie Tech began to establish a technically-based research program. In May of 1919, President Hamerschlag created the Mining Advisory Board to sponsor research in the field of mining to develop other uses for coal. A Metallurgical Advisory Board was created in 1923 under the guidance of President Thomas S. Baker. By 1935, its name had been changed to the Metals Research Lab. It secured several fellowships funded by companies such as Alcoa and Molybdenum Company of America. In June 1930, the Coal Research Lab began operations after receiving \$492,000 in funds from companies and foundations such as the Buhl Foundation of Pittsburgh, Koppers Company, and the Westinghouse Electric and Manufacturing Company.<sup>24</sup> By the 1950s, these labs were

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<sup>22</sup> *About Carnegie Mellon: History* [online]. Pittsburgh: Carnegie Mellon University. Available from World Wide Web: ([http://www.cmu.edu/home/about/about\\_history.html](http://www.cmu.edu/home/about/about_history.html))

<sup>23</sup> "From Heavy Industry to High-Tech: A Retrospective Analysis of Research and Development in the Pittsburgh Region, 1920-1995," p. 65

<sup>24</sup> "From Heavy Industry to High-Tech: A Retrospective Analysis of Research and Development in the Pittsburgh Region, 1920-1995," p. 65

integrated into the related departments at Carnegie Tech. The school was able to build extensive graduate research programs based on these labs.<sup>25</sup>

In 1939, Carnegie Tech received contracts and funds from a broader range of sources, including the federal government. By 1945, several companies had donated money to create professorships at the school, including Alcoa, which gave \$225,000.<sup>26</sup> In 1950, the school received \$1.8 million from the Buhl Foundation and various federal agencies, including the Atomic Energy Commission and the Office of Naval Research, to expand the Nuclear Research Center in Saxonburg, PA. At the time, it was considered one of the nation's top nuclear research centers. During the initial years of research at Carnegie Tech, the research budget grew from \$156,000 in 1936 to \$1 million in 1950.<sup>27</sup>

Funding and research continued to grow at Carnegie Tech throughout the 1950s and 1960s. The federal government increased its funding for research in the fields of engineering and science. In 1954, research contracts, most of which came from the federal government, totaled \$5.7 million. By 1964 that number had more than tripled to \$19.5 million.<sup>28</sup>

Due to federal cutbacks, research programs at the school suffered and several research programs were phased out or restructured. The Applied Space Sciences program was eventually phased out in the 1970s due to a lack of funding. The Biotechnology Program became the Program in Biomedical Engineering. The Program in Nuclear Science, which was created as a response to the launch of Sputnik, lost its

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<sup>25</sup> "From Heavy Industry to High-Tech: A Retrospective Analysis of Research and Development in the Pittsburgh Region, 1920-1995," p. 66

<sup>26</sup> "From Heavy Industry to High-Tech: A Retrospective Analysis of Research and Development in the Pittsburgh Region, 1920-1995," p. 66

<sup>27</sup> "From Heavy Industry to High-Tech: A Retrospective Analysis of Research and Development in the Pittsburgh Region, 1920-1995," p. 66

<sup>28</sup> "From Heavy Industry to High-Tech: A Retrospective Analysis of Research and Development in the Pittsburgh Region, 1920-1995," p. 67

relevance in an era when Cold War tensions were easing; it was eventually dissolved in 1983. After 1965, Carnegie Tech was already in the process of making the transition to a more computer and information-based technology school, moving away from its roots in basic engineering and industry.<sup>29</sup>

### *Mellon Institute*

When it was created in 1911 the Mellon Institute was originally affiliated with the University of Pittsburgh. However, after the institute began to avoid its obligations to the school, which included paying rent, sharing its revenues, and supplying instructors to the Chemistry Department, the university decided to cut its ties in 1928. Despite its inauspicious beginnings, the Mellon Institute prospered as it conducted most of the R&D for industrial companies throughout the region. However, after World War II, it found its services not as needed as many firms began to invest in and develop their own R&D programs. The Mellon Institute tried to make the transition to conducting basic scientific research in the hopes that it could attract some of the large federal contracts that were going to universities for this purpose, but failed. In the meantime, it lost some credibility with its traditional industrial clients.

### *Carnegie Mellon University*

By the mid-1960s, the Mellon Institute was having severe financial problems, so it chose to pursue a merger with the Carnegie Institute of Technology. The merger was completed in 1967 and the school became known as Carnegie Mellon University. In the

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<sup>29</sup> "From Heavy Industry to High-Tech: A Retrospective Analysis of Research and Development in the Pittsburgh Region, 1920-1995," p. 67

decades that followed, Carnegie Mellon continued to receive increasing amounts of federal funding and contracts. Today, the university receives over \$280 million in research funds, mostly from the federal government.<sup>30</sup>

### *The University of Pittsburgh*

Since its founding in 1787, the University of Pittsburgh (then the Pittsburgh Academy) was a leader in the training of scientists and engineers. As early as 1800, the school offered courses in fields such as basic engineering.<sup>31</sup> In 1819, in response to Pittsburgh's growing population and need for higher education, the Academy expanded and changed its name to the Western University of Pennsylvania.

In the latter part of the nineteenth century, there was a growing demand for trained scientists and researchers in the area, so the school expanded into fields such as civil and mine engineering. In 1864, programs were established in chemistry, geology and mineralogy and in military science and civil engineering in 1865. In 1867, the University acquired the Allegheny Observatory to improve its research capacities in astronomy and similar fields.<sup>32</sup>

In 1908, the school began to receive state funding and was renamed the University of Pittsburgh. In the 1920s, the university, in particular its medical school, experienced immense growth with the addition of two local hospitals. In 1921 the university formed a partnership with Magee Women's Hospital, allowing for greater

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<sup>30</sup> *About Carnegie Mellon: History* [online]. Pittsburgh: Carnegie Mellon University. Available from World Wide Web: ([http://www.cmu.edu/home/about/about\\_history.html](http://www.cmu.edu/home/about/about_history.html))

<sup>31</sup> "From Heavy Industry to High-Tech: A Retrospective Analysis of Research and Development in the Pittsburgh Region, 1920-1995," p. 73

<sup>32</sup> "From Heavy Industry to High-Tech: A Retrospective Analysis of Research and Development in the Pittsburgh Region, 1920-1995," p. 74

research into women's health. The university reached an agreement with the Children's Hospital in 1922, and the hospital made its clinical facilities available to the school for teaching and research purposes.<sup>33</sup> In the 1940s and 1950s, the school opened the Falk Clinic, the School of Nursing, and the Graduate School of Public Health. In 1951, the university engaged in an important three-year research program to find a way to prevent paralytic polio.<sup>34</sup>

In 1955, the school was trying to achieve national recognition as being a top-tier university. To fulfill this mission, the school focused heavily on securing funds for research, conducting research and developing several research centers, including the Space Research Coordination Center, the Knowledge Availability Systems Center, the Learning Research and Development Center and the Van de Graaf Accelerator Laboratory.<sup>35</sup> In 1962, the university attempted to capitalize on the growing aerospace industry by securing funds from NASA. The Physics Department benefited greatly from the donation of an 18-million volt Van de Graaf nuclear accelerator by the National Science Foundation. In 1976, the \$3 million Surface Science Center was established to conduct both physical and analytical chemical research in surface science.<sup>36</sup> In 1985, the Department of Chemistry's research program was doing quite well, conducting over \$5 million in research through contracts, making it one of the country's leaders in external

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<sup>33</sup> "From Heavy Industry to High-Tech: A Retrospective Analysis of Research and Development in the Pittsburgh Region, 1920-1995," p. 74

<sup>34</sup> "From Heavy Industry to High-Tech: A Retrospective Analysis of Research and Development in the Pittsburgh Region, 1920-1995," p. 74

<sup>35</sup> "From Heavy Industry to High-Tech: A Retrospective Analysis of Research and Development in the Pittsburgh Region, 1920-1995," p. 75

<sup>36</sup> "From Heavy Industry to High-Tech: A Retrospective Analysis of Research and Development in the Pittsburgh Region, 1920-1995," p. 75

research. At the medical school, both basic and clinical research was being conducted, including important research on Alzheimer's disease.<sup>37</sup>

After Gulf Oil was bought out by Chevron, it donated its R&D center in Harmarville to the university. The university took over the facility in 1986 and renamed it the Pittsburgh Applied Research Center. It then signed a \$13 million contract with General Motors Company to conduct research for the company.<sup>38</sup> In 2001, the university received over \$383 million to conduct research, most of which came from the federal government and the National Institute of Health.<sup>39</sup>

### **Efforts to Revitalize**

Steel, aluminum, heavy industry, and the presence of excellent universities made Pittsburgh a truly world class city. Despite this, it was obvious to many business leaders, politicians, and social elites that, even during the boom times of World War II, the region would not be able to rely upon heavy industry forever. It was becoming clear that without federal contracts and funding, the industry would struggle. The city had also long been showing signs of wear from decades of extremely heavy industry. By the interwar period, smoke blocked out the sun, the rivers were polluted, and downtown was nothing more than an eyesore. On top of environmental problems, the city suffered from

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<sup>37</sup> "From Heavy Industry to High-Tech: A Retrospective Analysis of Research and Development in the Pittsburgh Region, 1920-1995," p. 75

<sup>38</sup> "From Heavy Industry to High-Tech: A Retrospective Analysis of Research and Development in the Pittsburgh Region, 1920-1995," p. 75

<sup>39</sup> *Fiscal Year 2001 Summary* [online]. Pittsburgh: University of Pittsburgh, Office of Research. Available from World Wide Web: (<http://www.pitt.edu/~offres/highlights/AnnualReports/FY01.pdf>)



urban blight, decaying housing and a poor mass transit system. The city was becoming unlivable.<sup>40</sup>

Leaders in the region began to understand that drastic change was necessary if the city was going to survive into the next century. Leading members of the community convinced the city's civic leaders to create a postwar planning committee which became known as the Allegheny Conference on Community Development. The goal of the Conference was to restore strength to the economy, to clean up the environment, and to transform Pittsburgh into a desirable place to locate for both businesses and workers.<sup>41</sup>

Over the past six decades, the ACCD has been central to revitalization efforts in the city. The organization has enjoyed high levels of cooperation between elected officials, the city's social elite, and the business community. Important figures such as business elite Richard Mellon, and Carnegie Institute of Technology President Robert Doherty, were just a few of the high powered members which constituted the groups membership at the time of its founding. Today the Conference's membership includes the likes of Carnegie Mellon President Jared Cohen, Medrad President John Friel, and US Steel President and CEO John Surma, Jr.<sup>42</sup>

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<sup>40</sup> Collection of the Allegheny Conference on Community Development 1944-1993, Archival Collection of Dick Thornburgh, 1932-(ongoing), AIS 98:30. Series 7, Sub-Series 08. This archival collection containing this text is located at the Archives Service Center, University of Pittsburgh. Available from World Wide Web: (<http://digital.library.pitt.edu/cgi-bin/t/text/text-idx?idno=AIS9830.11.26.0029;view=toc;c=thornreports>)

<sup>41</sup> Collection of the Allegheny Conference on Community Development 1944-1993, Archival Collection of Dick Thornburgh, 1932-(ongoing), AIS 98:30. Series 7, Sub-Series 08. This archival collection containing this text is located at the Archives Service Center, University of Pittsburgh. Available from World Wide Web: (<http://digital.library.pitt.edu/cgi-bin/t/text/text-idx?idno=AIS9830.11.26.0029;view=toc;c=thornreports>)

<sup>42</sup> 2005. *Board of Directors* [online]. Pittsburgh: Allegheny Conference on Community Development. Available from World Wide Web: (<http://www.alleghenyconference.org/public/cfm/accd%5Fabout/index.cfm?FUSEACTION=ACCDAboutBoard>)

The Allegheny Conference on Community Development constituted the high point of public-private partnership in the history of Pittsburgh. The social elites, business owners, and government officials used the system with a type of proficiency that is still the benchmark in public-private partnerships today. The means employed were direct and effective, and the people involved had the clout to accomplish even the most daunting tasks. The Conference had a profound and lasting impact on Pittsburgh and the region as a whole.

While gaining federal and state funding was not one of the early successes of the Conference, efforts to publicize their message in the media certainly were fruitful and garnered a good deal of public support. In the late 1940's the Conference purposely chose three initial projects that would garner popular support from the community: the development of Point State Park, the construction of limited access highways such as the Penn-Lincoln Highway, and smoke control.

This initial attempt to revitalize the city, known as Renaissance I, began after WWII and continued until 1970. Renaissance I was completely committed to the principle of civic partnership, coalition building, and consensus as the basis for community development and progress. Mainly, it focused upon making the city a better place to live, work, and raise a family.<sup>43</sup> Initiatives included the development of air travel, the creation of new recreational opportunities, construction of the Civic Arena,

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<sup>43</sup> Kit Needham, interview with Joseph Phillips, October 27, 2005.

improvements in education, creation of the Pittsburgh parking authority, and most importantly improvements in flood control and air quality.<sup>44</sup>

Before Renaissance I, air quality was a debilitating problem continually plaguing the city. In addition to health problems, Pittsburgh had developed a reputation as a “smoky city.” The ACCD and the United Smoke Council united to bring regulations to the city. Initially, factories and private homes were required to use low-volatile fuel or clean burning processes. Later, the regulations were extended to the railroads following a bitter battle between the ACCD/United Smoke Council and the Pennsylvania railroad in the state legislature.<sup>45</sup>

A great deal of redevelopment also occurred in the Central Business District (CBD). Sixty-two new buildings were constructed between 1945 and 1957, including the new Mellon-US Steel building standing at 39 stories and costing an estimated \$15.8 million. The redevelopment of the Central Business District was one of the landmark accomplishments of the ACCD during this period. Pittsburgh was slowly becoming a more hospitable place to live.<sup>46</sup>

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<sup>44</sup> Collection of the Allegheny Conference on Community Development 1944-1993, Archival Collection of Dick Thornburgh, 1932-(ongoing), AIS 98:30. Series 7, Sub-Series 86. This archival collection containing this text is located at the Archives Service Center, University of Pittsburgh. Available from World Wide Web: (<http://digital.library.pitt.edu/cgi-bin/t/text/text-idx?idno=AIS9830.11.26.0029;view=toc;c=thornreports>);

Shelby Stewman and Joel Tarr, “Four Decades of Public-Private Partnerships in Pittsburgh,” in Public-Private Partnerships in American Cities, ed. R. Scott Fosler and Renee A. Berger, (Lanham, MD: Lexington Books, 1982), p. 71-73.

<sup>45</sup> Stewman and Tarr, p. 67-71.

<sup>46</sup> Collection of the Allegheny Conference on Community Development 1944-1993, Archival Collection of Dick Thornburgh, 1932-(ongoing), AIS 98:30. Series 6, Sub-Series 02. This archival collection containing this text is located at the Archives Service Center, University of Pittsburgh. Available from World Wide Web: (<http://digital.library.pitt.edu/cgi-bin/t/text/text-idx?idno=AIS9830.11.26.0029;view=toc;c=thornreports>); Stewman and Tarr.

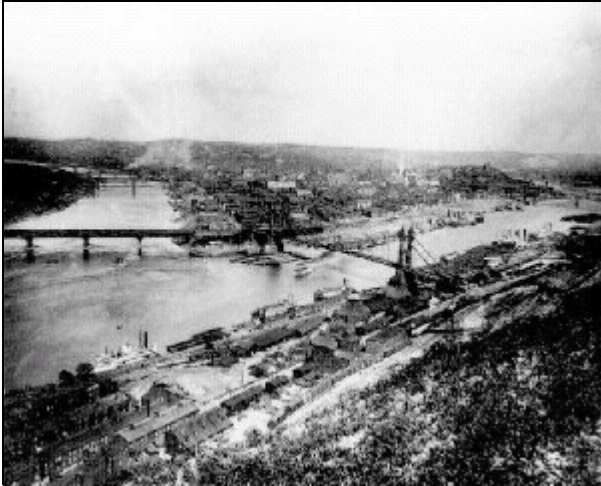


Figure 2  
The Point and CBD in the 1890's



Figure 3  
The Point and CBD today

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In addition to smoke control and rebuilding the CBD, legislation originally produced in 1936 to prevent devastating floods was finally carried out through a concerted effort of the ACCD and the Flood Control Committee. Flooding had always plagued the city but recent events such as the disastrous St. Patrick's Day Flood reinforced the need for thorough flood control. During Renaissance I, flood control advocates achieved a major milestone through the completion of the Allegheny Reservoir in 1960.<sup>48</sup>

After the end of Renaissance I, Pittsburgh entered a turbulent period where there were no longer strong ties between the government and the ACCD. Mayor Peter Flaherty (1970-1977) was often at odds with the ACCD concerning their plans to continue revitalization in the city. While the ACCD wished to move forward with projects such as the Skybus people mover, a new convention center, and further Golden Triangle

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<sup>47</sup> Jeffery H. Shack. 1992. *Blueprints: National Building Museum* [online]. Available from World Wide Web: (<http://www.nbm.org/blueprints/90s/winter92/contents/contents.htm>)

*Point State Park* [online]. Pennsylvania Department of Conservation and Natural Resources. Available from World Wide Web: (<http://www.dcnr.state.pa.us/stateparks/parks/point.aspx>)

<sup>48</sup> Stewman and Tarr, p. 67

development, Flaherty often stalled or outright prohibited these projects from advancing. The seriousness of the rift is captured by former ACCD executive director Edward J. Magee: “a few months after Mayor Flaherty took office in 1970, everything was over; all [ACCD initiated] programs came to a standstill.”<sup>49</sup>

But after the election of Richard Caliguiri (1977-1988), Pittsburgh now had a mayor whom could function well with the ACCD and thus the city entered a second renaissance period. Renaissance II emerged from the ashes of the steel mills and was committed to transforming the city’s economy from one of manufacturing to one that was primarily service-based. Its main push involved allocating more funds to the nonprofit sector, expanding the role of the state and focusing more on advanced technology research at the University of Pittsburgh and Carnegie Mellon University. There was also an emphasis on improving the quality of life which it addressed through cultural development, neighborhood revitalization and the development of the Golden Triangle downtown.<sup>50</sup>

Some achievements of Renaissance II included the construction of the mass transit system known as the “T” and 6.6 million square feet of office space which eventually housed the buildings at One Oxford Center (the Pittsburgh Plate Glass building and six gothic glass cathedrals adjacent to Market Square), One Mellon Bank Center, and numerous other buildings.<sup>51</sup> Some of the cultural projects that were initiated included the refurbishing of Heinz Hall, the creation of the Benedum Center for the Performing Arts, and the recycling of the Pennsylvania Railroad Station into an

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<sup>49</sup> Roy Lubove, “*The Post-Steel Era*,” in Volume 2 of *Twentieth Century Pittsburgh* (Pittsburgh, University of Pittsburgh Press, 1996), p. 58-61.

<sup>50</sup> Lubove, p. 26

<sup>51</sup> Lubove, p. 62

apartment and condominium complex called the “Pennsylvanian.”<sup>52</sup> Broadly, Renaissance II “provided the office space, infrastructure, and quality of life improvements that...would facilitate Pittsburgh’s transition from a paleotechnic nineteenth-century economy of coal and steel to a post-steel economy rooted in advanced technology, information processing, professional services, and cultural vitality.”<sup>53</sup>

But some critics contend that the Conference is no longer the harbinger of good fortune that it claims to be. In a recent editorial in the Pittsburgh Post-Gazette, Michael Madison, a law professor at the University of Pittsburgh, claims that the Conference, while having a well rounded resume of prior accomplishments, does not continue to be a worthwhile civic organization. Madison contends: “A new technology economy grows from the bottom, not from the top. Right now, Pittsburgh is trying to grow from the top. That's why you're having this meeting. It's growth from the top. So change has to come from the top.” Madison continues: “And with all due respect to the history of the Allegheny Conference, that's why I'm telling you to go home... Private sector CEOs and top management at the universities need to join forces and -- let it go. They need to turn their technology loose.”<sup>54</sup>

## **Conclusion**

Pittsburgh has a rich tradition of bustling industrialism, and has reaped the benefits of heavy industry. Steel and other manufacturing were at the heart of the region for most of the 20<sup>th</sup> Century and were the basis for one of the soundest economies in the

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<sup>52</sup> Lubove, p. 64-65

<sup>53</sup> Lubove, p. 61

<sup>54</sup> Michael Madison, “*Puts & Calls: Note to the Allegheny Conference -- Get out of the way,*” Pittsburgh Post-Gazette, November 6, 2005.

nation. Along with the legacy of steel, Pittsburgh boasts achievements accompanying the industry such as technological advances, a diverse immigration record, and strong unions. Unfortunately, outsourcing and increased competition has reduced the steel industry to a fraction of what it once was. Although economic disparity followed the decline in steel, it did not result in a decline of self perceived dignity in the city.

In conjunction with the steel industry, research and development became a key aspect of the local economy. Corporate, private, government, and academic communities founded centers in the city in order to support industrial R&D and related fields in the region. As steel began to decline, more of the R&D focus was shifted towards technological development thus setting the stage for the present high-tech push.

But Pittsburgh did not meet the downfall of steel with idleness. Through the concentrated efforts of business elites in conjunction with local and state government, public private partnerships, especially but not limited to the ACCD, have been a backbone to economic, social, and cultural renewal in the city. In addition to dealing with urban blight caused by heavy industry, improvements in the economy and a renewed appreciation for the arts and culture have been key focuses of the movement.

These three factors set the stage for the current debate covered in this project course presentation. The decline of steel created the need for a new centerpiece of the regional economy. Early research and development planted the seed for further efforts towards a technological base. Public private partnerships, such as the ACCD, broke ground on a rich tradition of foundations working with the government and community to improve conditions in the region. These three aspects form the historical base for the current situation in Pittsburgh and the surrounding region.

## **Chapter 3: Economic Development in Theory and Practice**

The economic well-being of a region is of extreme importance to all the individuals and organizations that have a stake in the region, but the question remains; how can economic well-being of a region be quantified? Should a region look to increase its tax base without worrying about the distribution of wealth or should it seek to raise all of its citizens' financial status? The problem of defining and creating an economically successful region is at the crux of our analysis. Within the United States, there have been many attempts by local public and private stakeholders to kick-start their regional economies. Over the course of the past few decades, new models for economic development have swept across the country. The analysis of these models will help in developing an understanding of the models available to and implemented by Pittsburgh policymakers after the momentous decline of the steel industry and transitioning economic base of the late 1970s and 1980s

### **Economic Goals of a Region**

The metrics chosen to measure success, though they are inconsistent and subjective, determine whether a region is economically successful in the eyes of the public as well as the electorate. One of the simplest ways to measure the success of a region is by monitoring job growth. However, this simplistic approach does not take into account the quality of jobs. Is the region creating and attracting jobs that require high human capital, thus leading to high wages? To answer this question, consideration of the metric of job quality as an active variable is necessary. A reasonable goal could be to



measure the “prevailing wealth in the geographic area.”<sup>55</sup> The premise behind this metric, put forth by Maryann Feldman and Roger Martin, asserts that increasing relative wages leads to increasing housing prices, which in turn raises real estate taxes. They argue that this confluence of events will help to create “virtuous cycles of economic growth”<sup>56</sup> If we accept this as a good measure of success, a region’s stated economic goal should be to increase wages at a faster rate than the national average and to increase job growth.

### **Breadth vs. Depth**

After policymakers, institutions, and individuals determine a preference between a diverse or focused economy, they are able to pursue their ultimate goal of increasing wages. A collaborative decision of what method they will use to develop the region’s economy is necessary in achieving that goal. While the breadth model provides protection from downturns in individual industries, it does not allow a region to reach “critical mass” in any specific industry. Feldman and Francis argue, “...certain locations enhance productivity through externalities...”<sup>57</sup> Here, the externalities that he mentions create a positive feedback loop where a region will, “become the place associated with this industrial activity, further enhancing its ability to attract venture capital and sustain large investment projects.”<sup>58</sup> The positive cycles that occur after reaching critical mass could be the catalyst that produces the wage increase a region needs to build a successful economy.

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<sup>55</sup> Martin Feldman and Roger Martin, “Constructing jurisdictional advantage,” in Vol. 34 of Research Policy (2005), p. 1238.

<sup>56</sup> Feldman and Martin, p. 1238

<sup>57</sup> Martin Feldman, Maryann and Johanna Francis, “*Homegrown Solutions: Fostering Cluster Formation*,” in Economic Development Quarterly Volume 18, No.2 (May 2004): p. 128.

<sup>58</sup> Feldman and Francis, p. 128

## **Promoting Clustering: Importing Large Firms vs. Growing Small Local Firms**

Throughout the last few decades, there have been different methods of attracting companies to locate to a particular region. Feldman and Francis point to one such method: "...providing economic incentives [leads to]... small differences in input prices."<sup>59</sup> According to economic theory, firms would prefer locations that provide the lowest prices for inputs that go into making a product or service (i.e. taxes, real estate, labor, etc.). However, this theory's foundation is a bricks and mortar model in which most inputs are physical and tangible. While this was the prevailing model in the United States through the early 1970s, the country has been shifting towards a knowledge-based economy since the late-1970s. Regions such Pittsburgh, whose economy has been historically based on the harboring of natural resources and the manufacturing of goods, must change the way they think about attracting new businesses in order to affectively adapt to the "new" technology driven economy. These knowledge-based activities, such as high-technology product development, require "...skilled labor services and proximity to sources of knowledge and expertise..."<sup>60</sup> Thus, knowledge-based economies require other types of incentives, such as a reservoir of skilled workers, lower taxes for small firms, and sources of knowledge and training, especially major research universities.

There are different ways to achieve the cluster model as well. Regional leaders can decide that a specific industry is attractive and try to lure firms from that industry to relocate there. In theory, if successful, the synthetically produced cluster will create a snowball effect causing the region to become known as a major player and enable it to

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<sup>59</sup> Feldman and Francis, p. 128

<sup>60</sup> Feldman and Francis, p. 128

attract more companies. As we shall see in chapter 5, Pittsburgh Life Sciences Greenhouse has adopted this model as it attempts to build a pharmaceutical industry in the region. While this model of importing a few “anchor” firms appears valid, the question remains whether regional leaders can create a systematic and effective method to identify which industries will be successful in the future. Furthermore, even if the industry is successful, how can leaders ascertain that the local population has the skills required to staff the industry? These two issues make it difficult for regional leaders to decide with certainty which path they want to follow in trying to develop their economy.

Allowing local firms and individuals to decide collectively what path to take is another approach to solving this cluster problem. As stated by Feldman, “the cluster and its characteristics therefore emerge over time from the individual activities of the entrepreneurs and the organizations and institutions that evolve to support them.”<sup>61</sup> Here, Feldman argues that local players will have the most influence in determining on which clusters the region will gravitate towards. This model emphasizes the superior ability of the entrepreneur to develop and commercialize technology, and is the prevailing logic behind several of the economic development organizations in Pittsburgh. Based on this idea, a cluster would form around the core competencies of the citizens and firms in the region. Feldman echoes this argument when he states that “technological change is path dependent.”<sup>62</sup> He believes that regional leaders are poor predictors of the future. Instead of looking for the next big thing, they should encourage economic growth in sectors where the region has been historically strong.

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<sup>61</sup> Feldman and Francis, p. 129

<sup>62</sup> Feldman and Francis, p. 132

It is through the activities of the numerous small entrepreneurs in a region that a cluster will form. Developing many small local breakthroughs could have an “equivalent or larger impact” on economic development than hiring one or two large anchors. Feldman cleverly uses a baseball analogy to illustrate the point: “Although a homerun generates excitement, a string of singles and good pitching will win the game.”<sup>63</sup> Given this position, the route to economic success may lie in developing homegrown talent and providing the tools and environment for local entrepreneurs to thrive.

### **The Role of Government**

One possible alternative for the government’s role in economic development is complete *laissez faire*, a theory that rests on the idea that government should keep its hands out of trying to control the economy. This model of economic development emerged from the notion that market forces do the best job of steering the economy. Those who would use this argument generally believe the government is not responsible for the economic welfare or job prospects of residents or can spend resources on more beneficial areas.

It is arguable that government has the best idea of which direction the economy should be going. This centralized model would place the responsibility of economic development solely on the government. This is probably the farthest one can move from *laissez faire*. Given this idea, if there is a problem with the economy, the government should have unmitigated power to direct it in anyway officials deem proper.

These two theories illustrate the opposite poles of the spectrum of government intervention in economic affairs. The question of how the government should engage

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<sup>63</sup> Feldman and Francis, p. 133

economic problems has been an issue in Pennsylvania for many years. Dick Thornburgh faced this dilemma when he assumed the role as governor in 1979. The economic theory most relevant to the subject of this research suggests government should take an active role only when 'required.' The situations requiring government intervention arise when the chosen metric of 'economic success' suggests that needs have been left unfulfilled by relying solely on the market. Feldman echoes this when he states, "resources which are associated with market failure take on new importance in the emerging knowledge-based economy and suggest that there is a role for collective action and government participation."<sup>64</sup> Feldman recognizes that there is a place for government intervention when there is market failure. In addition, Feldman observes that the direction of the national economy, with its knowledge orientation, makes government intervention even more important. According to Feldman, the justification for using public funds for the development of private sector businesses is the same as the argument for why the government should provide national defense. According to this economic theory, there is little direct incentive for individuals or private organizations to invest in products and services that are indivisible and non-exclusive. It also suggests that a good, such as national defense or education, cannot be divided into smaller pieces and assigned to individual agents in the private sector. As stated by Feldman and Martin, "...this is one of the classic reasons for government provision of infrastructure, funding of basic research and promotion of public goods such as education."<sup>65</sup> Many spillover effects and externalities lead to underinvestment from the private sector. The government, with its ability to tax citizens, should intervene in these situations.

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<sup>64</sup> Feldman and Martin:, p. 1246

<sup>65</sup> Feldman and Martin, p. 1246

## **Economic Theories in Practice**

The economic theories presented above have been tested extensively in the United States over the last few decades. The 1970s saw an acute focus on the bricks and mortar model where regions emphasized infrastructure, tax codes and cost based incentives. However, with the demise of the nation's manufacturing base, regional economies needed to rethink this model. As stated by Walter Plosila in, *State Science- and Technology-Based Economic Development Policy: History, Trends and Developments and Future Directions*, "...the 1980s began the close integration of state science and technology efforts with new directions in economic development practice and planning..."<sup>66</sup> Regional governments began to realize that their future rested in developing science and technology economies; Pittsburgh was no exception.

The Pennsylvania elections of 1978 brought Dick Thornburgh to office as a governor with a focus on helping to revitalize Pittsburgh's economy. He tried to set the state's economy on a course of technology and science through the policies he enacted and organizations he helped create. Some of the theories of economic development set forth above acted as the groundwork on which he and his administrations operated.

## **Governor Dick Thornburgh's Economic Development and Policy**

The people of Pennsylvania elected Thornburgh because of his platform, because they wanted to eradicate corruption from the state government, and because of his major economic policy proposals. Having been a United States attorney in Pittsburgh and the Assistant U.S. Attorney General in charge of the criminal division, Thornburgh had

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<sup>66</sup> Walter Plosila, "*State Science- and Technology-Based Economic Development: History, Trends and Developments, and Future Directions*," in *Economic Development Quarterly* Volume 18, No. 2 (May 2004): p. 113.

earned a reputation for prosecuting politicians who took advantage of their positions of power. A major problem Thornburgh faced was a corrupt state government, but in comparison to the stalling economy, this problem was only minor. As described in the previous chapter, the state and all of its regions were on the verge of economic collapse.

The main vehicle through which Thornburgh and his team of economic policy advisers evaluated their policy options was the planning process called *Choices for Pennsylvanians: Toward an Economic Development and Community Conservation Strategy*. As part of this process, Governor Thornburgh and his economic policy team prepared a preliminary report in July 1979 outlining the challenges and opportunities that they believed Pennsylvania faced. Thornburgh's administration used this document as justification to travel around the state to small steel mill towns, large industrialized urban centers and rural areas. They spoke to local politicians, business owners, mill and plant managers, workers and other ordinary citizens. The final report of the *Choices* process was issued in September 1981 and became the foundation for the administration's subsequent economic development work.<sup>67</sup> *Choices* concluded that the economic base that sustained the state for much of the 20<sup>th</sup> century would not carry it into the 21<sup>st</sup> century. Something drastic had to be done to prevent the state's economy from imploding. Additionally, neither the government nor the private sector could single-handedly turn the state around." Over the course of the next two years, the Thornburgh

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<sup>67</sup> Walt Plosila. The Office of State Planning and Development. *Choices for Pennsylvanians: Final Report*. (Harrisburg, PA, 1981). Archival Collection of Dick Thornburgh, 1932-(ongoing), AIS 98:30. Series 11, Sub-Series 26. This archival collection containing this text is located at the Archives Service Center, University of Pittsburgh. Available from World Wide Web: (<http://digital.library.pitt.edu/cgi-bin/t/text/text-idx?idno=AIS9830.11.26.0029;view=toc;c=thornreports>)

administration came to realize that Pennsylvania's future was dependent on close collaboration between the public and private sectors.<sup>68</sup>

### **Solutions for Economic Problems**

As stated above, the main goal of the *Choices* team was to identify the major policy dilemmas that faced the state, and to provide possible solutions. According to Walt Plosila, the Director of the Office of State Planning and Development and the mastermind behind *Choices*, the state's situation could be blamed on two related factors:

“Decentralization of manufacturing activity away from the older industrialized areas of the Northeast to new locations outside of the cities and outside of the region,” and, “a corresponding decentralization of population.”<sup>69</sup> Because Pittsburgh's problems in the late-1970s mirrored the rest of the state's, we will begin our analysis of technology-based economic development with the *Choices* report.

With these two problems identified, Thornburgh and his economic policy advisors, especially Walt Plosila, Bob Wilburn, Secretary of Budget and Administration, and Richard Stafford, Secretary for Legislative Affairs and in the second term the Governor's chief of staff, sought to achieve three goals essential to restoring the economy: 1) “The stimulation of substantial new economic growth through emphasis on the growth needs of our existing industries especially of small and medium-sized firms

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<sup>68</sup> *Choices for Pennsylvanians: Final Report*, p. 3

<sup>69</sup> Walt Plosila. The Office of State Planning and Development. *Choices for Pennsylvanians: Toward an Economic Development and Community Conservation Strategy* (Harrisburg, PA, 1979) p. 1. Archival Collection of Dick Thornburgh, 1932-(ongoing), AIS 98:30. Series 11, Sub-Series 26. This archival collection containing this text is located at the Archives Service Center, University of Pittsburgh. Available from World Wide Web: (<http://digital.library.pitt.edu/cgi-bin/t/text/text-idx?idno=AIS9830.11.26.0029;view=toc;c=thornreports>)



showing strong comparative advantage,” 2) “Minimizing the costs of economic transition and the equitable and efficient distribution of new opportunities through the direction of economic growth to our urban and rural centers,” 3) “The need for complementary resource management policies which promote the development of key resources while meeting the fundamental needs of environmental protection,” was incredibly essential to restoring the state’s economy.<sup>70</sup> Because the first goal focuses on economic development through funding to private firms, it will be at the center of this report.<sup>71</sup>

### **Sub-goal 1: Creating a Better Business Climate**

One of the biggest problems that Thornburgh’s team discovered during the *Choices* process was that it was incredibly costly to do business in the state. This both discouraged new businesses from opening up in Pennsylvania and encouraged existing businesses to look for new homes in other states with friendlier tax environments. His administration believed that fixing this problem was the key to rebuilding the state’s economy. Given the unfavorable business climate in the area, the *Choices* team created the first sub-goal of choices to create a better business climate throughout the entire commonwealth. The *Choices* team determined the most crucial elements of a better business climate were: eliminating taxes that were a nuisance to businesses, which would create easily accessible and understandable licensing and permitting areas; educating regulatory officials on the economic needs of their areas; fully capitalizing on available

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<sup>70</sup> Choices for Pennsylvanians: Toward an Economic Development and Community Conservation Strategy, p. 6

<sup>71</sup> There were also 6 sub-goals, although the four mentioned in the following sections are the only ones relevant to economic development.

federal and private funds; and finally, decreasing energy costs.<sup>72</sup> The Thornburgh administration created three initiatives to help achieve these goals:

#### *The Pennsylvania Capital Loan Fund*

The Pennsylvania Capital Loan Fund (PCLF) provided financial loans to businesses and projects in the commonwealth. This allowed companies to capitalize on available federal funds, which is viewed as crucial to creating a better business climate. The Federal Appalachian Regional Commission along with the Economic Development Administration initiated the PCLF in 1982. The Pennsylvania Economic Redevelopment Fund (PERF) appropriated funds to the PCLF. The PCLF provided funding to a wide range of firms exploring expansion options. The PCLF provided businesses the opportunities to pursue private funding. The PERF contributed \$15 million to the PCLF, which created nearly 900 new jobs in the commonwealth.<sup>73</sup>

#### *Challenge Grant for Seed Capital Funds*

The purpose of these grants was to pursue private capital investments into small businesses during the early stages of creation. As a result, companies were able to capitalize on the benefits of the availability of federal funds, which is fundamental to creating a better business environment. The grants totaled \$3 million from 1984-1985, and it was separated into four groups. The Western Pennsylvania portion was the Pittsburgh Seed Fund. The Pittsburgh Seed Fund's portion of the \$3 million state

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<sup>72</sup> Choices for Pennsylvanians: Toward an Economic Development and Community Conservation Strategy, p. 15-16

<sup>73</sup> Commonwealth of Pennsylvania, Governor's Office. Report to PA House Of Representatives and the PA Senate on Progress of Programs Funded by PA Economic Revitalization Fund and Administered by the Department of Commerce. (Harrisburg, PA, 1986) p. 52-55. Archival Collection of Dick Thornburgh, 1932-(ongoing), AIS 98:30. Series 11, Sub-Series 26. This archival collection containing this text is located at the Archives Service Center, University of Pittsburgh. Available from World Wide Web: (<http://digital.library.pitt.edu/cgi-bin/t/text/text-idx?idno=AIS9830.11.26.0029;view=toc;c=thornreports>)

investment resulted in nearly \$8 million of investment by the beginning of 1986; all of which were allocated to small businesses in the area.<sup>74</sup> The challenge grant was only implemented during Thornburgh's administration.

### *Pennsylvania Economic Revitalization Fund*

The Pennsylvania Economic Revitalization Fund (PERF) was established in 1984 as a source for funding for Pennsylvania businesses. The fund was created to encourage companies to stay in the commonwealth through providing funds to encourage their growth, which would enable them to achieve the first sub-goal of Choices. The PERF was created in the same mentality as the Ben Franklin Partnership, PIDA, and the Customized Job Training Fund. The focus of PERF was two pronged: 1) provide funding for small businesses and 2) retain the small businesses after creation. The Pennsylvania Department of Commerce was charged with allocating \$190 million in funds in 11 statewide programs, over a three-year period. The funding for PERF came from state bonds.<sup>75</sup> The Pennsylvania Economic Revitalization Fund still provides funding to Pennsylvania businesses today, yet it is now a minor element of the Pennsylvania Economic Revitalization Act. This policy achieved the second sub-goal of Choices, which will be mentioned in the following section.

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<sup>74</sup> Report to PA House Of Representatives and the PA Senate on Progress of Programs Funded by PA Economic Revitalization Fund and Administered by the Department of Commerce, p. 6-12

<sup>75</sup> Report to PA House Of Representatives and the PA Senate on Progress of Programs Funded by PA Economic Revitalization Fund and Administered by the Department of Commerce, p. 1

### *Business Infrastructure Development*

As a part of PERF that was proposed by the House Democratic Caucus, the Business Infrastructure Development (BID) was aimed at providing private companies that were expanding or moving to Pennsylvania with funds to solve infrastructure problems. This provided stability for firms moving to or expanding within the area. BID was implemented to achieve the first and fourth sub-goals of *Choices* (see below), to provide a favorable business climate and to improve the infrastructure. This made the state more hospitable for these companies. In 1985 alone over \$2 million was invested in grants and loans to maintain and improve Pennsylvania's infrastructure. In addition, more than half of the funds were allocated to Western Pennsylvania companies, creating more than 250 new jobs in the area.<sup>76</sup> Though the Business Infrastructure Development policy no longer exists, there is now a similar program called Pennsylvania Infrastructure Investment Authority or PennVest.<sup>77</sup>

### **Sub-goal 2: Small Business Growth and Expansion**

The next sub-goal of *Choices* was to promote small business growth and expansion, which was becoming a very popular theory of economic development in the late 1970s and early 1980s. The objectives for this sub-goal included encouraging the birth, expansion, development, efficiency, and competitiveness of new, small businesses through state funding and the restoration of public facilities and services. *Choices* recommended the following: make venture capital readily available to small businesses,

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<sup>76</sup> Report to PA House Of Representatives and the PA Senate on Progress of Programs Funded by PA Economic Revitalization Fund and Administered by the Department of Commerce, p. 25-31

<sup>77</sup> *About PENNVEST* [online]. Pennsylvania Infrastructure Investment Authority. Available from World Wide Web: (<http://www.pennvest.state.pa.us/pennvest/cwp/browse.asp?A=2>)

increase efficiency of business advisory services, encourage small business birth and growth in minority owned firms, create a favorable business climate for small businesses in urban centers, and ensure land and rental space is available for small businesses.<sup>78</sup> The goal was to diversify the state's economy and create a situation in which Pennsylvania's regions did not rely on a single, large employer for survival. Additionally, they hoped that many small and medium sized firms would create more better paying, long-term jobs than would a single large employer that controlled all the jobs in a geographic area. In order to accomplish these goals they created the following organizations:

*Pennsylvania Minority Business Development Authority*

The PMBDA helped achieve the second sub-goal of Choices by encouraging small business birth and growth in minority owned firms. The Pennsylvania Minority Business Development Authority (PMBDA) contributed bonds, grants, and loans to minority-owned businesses statewide. Through the PERF, PMBDA awarded \$5 million to minority-owned businesses to provide financial and technical capital. Of this \$5 million, \$270,000 was contributed to Western Pennsylvania minority-owned businesses in the form of bonds, grants and loans in the three year-span of PERF.<sup>79</sup>

*Small Business Incubator Loan Program*

Another policy implemented to achieve the second sub-goal of Choices, through making venture capital readily available to small businesses, was the Pennsylvania Small Business Incubator Loan Program (PSBILP). The PSBILP provided small businesses funding for financial and technical assistance on a statewide level. The PSBILP was

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<sup>78</sup> Choices for Pennsylvanians: Toward an Economic Development and Community Conservation Strategy, p. 9-12

<sup>79</sup> Report to PA House Of Representatives and the PA Senate on Progress of Programs Funded by PA Economic Revitalization Fund and Administered by the Department of Commerce, p. 32-36

divided into regional sections. The PSBILP worked through the Ben Franklin Partnership, which allocated funds to Western Pennsylvania through its own division. The Ben Franklin Partnership received nearly half a million dollars from PSBLIP in Western Pennsylvania. Nearly 25 incubator programs existed in Pennsylvania and much of the funding received was for maintenance of these programs.

### **Sub-Goal 3: Matching People with Jobs**

The final sub-goal was the matching of people with jobs. Through their travels around the state, the *Choices* team realized that Pennsylvania had a severe labor problem. Although there were thousands of people looking for work, they did not possess the skills necessary to staff companies involved in the new economy (e.g., electronics, robotics, medical device manufacturing and biotechnology).<sup>80</sup> As a result, entrepreneurs that were thinking of starting businesses in the state, or companies thinking of relocating their operations to the area, had little reassurance that once they were up and running they could find people to do the work that was crucial to their success. Thus, the *Choices* team argued that the government should play a role in regulating the state's labor market. The most important policy to emerge from this sub-goal was the creation of the Customized Job Training Program.

#### *Customized Job Training Program*

Established in February of 1982, the Customized Job Training Program (CJT) was aimed at providing formerly employed steel workers with vocational training in other fields. The CJT achieved the third sub-goal of *Choices* by providing labor skills and

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<sup>80</sup> Choices for Pennsylvanians: Toward an Economic Development and Community Conservation Strategy, p. 17-19

creating a stable labor force. Governor Thornburgh instituted the CJT so that the specific hiring needs of specific companies interested in locating or expanding in Pennsylvania were met. This achieved the first and third sub-goals of Choices by implementing the economic development policy of creating a favorable business climate and matching people with jobs. The goal of the CJT was to cover 100 percent of a company's training costs if it met the requirements. The theory behind the CJT was that if jobs were created, the state would cover the cost of training these individuals. In the three-year stretch between 1982 and 1985, more than 11,000 Pennsylvanians had been trained by the CJT. The cost of training these Pennsylvanians was almost \$12 million. Almost 5,000 new jobs were created in this three-year span.<sup>81</sup> The Customized Job Training exists today and it continues to provide millions of dollars in grants to in-state companies to encourage the development of an effective workforce.

#### **Sub-goal 4: Strengthen the Industrial Base**

Although the Thornburgh administration saw hope in smaller high technology firms and research and development, they believed that the state would continue to depend on traditional manufacturing well into the future. However, the *Choices* team believed that the government could do quite a bit to improve the efficiency, profitability, and stability of this sector. The objectives of this sub-goal was to assist industrial expansion in existing firms, capitalize on the universities of the areas to promote growth

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<sup>81</sup> Commonwealth of Pennsylvania, Governor's Office. Customized Job Training in Pennsylvania: A Progress Report July 1, 1982- June 30, 1985. (Harrisburg, PA, 1986) p. 3. Archival Collection of Dick Thornburgh, 1932-(ongoing), AIS 98:30. Series 11, Sub-Series 26. This archival collection containing this text is located at the Archives Service Center, University of Pittsburgh. Available from World Wide Web: (<http://digital.library.pitt.edu/cgi-bin/t/text/text-idx?idno=AIS9830.11.26.0045;view=toc;c=thornreports>)

in the technology manufacturing field, expand employment specifically in high-tech fields, attract international investors/firms and finally, to improve the general business climate of the area to attract foreign investors/firms both internationally and domestically<sup>82</sup>.

### *Engineering School Equipment Program*

The Engineering School Equipment Program was thought to be a major component for the stimulation of technological industry. The ESEP was a statewide program, which provided individual institutions with funding to engineering schools totaling \$1.9 million and over \$6.5 million in private sector matching through 1985. Through PERF, in 1985 alone this program contributed over \$500,000 to the University of Pittsburgh and Carnegie Mellon University for equipment maintenance and improvements. Accepted beliefs and practices of promoting growth in the technology-manufacturing field, as stated in the fourth sub-goal of Choices, included maximizing utilization of the area universities. Thus, the Choices team recognized the value of moving toward the technology-based economic development that Pittsburgh and Carnegie Mellon could provide, and maintained and enhanced their abilities to create innovations in technology.<sup>83</sup>

### **Notable Accomplishments of Choices for Pennsylvanians**

Although much of *Choices for Pennsylvanians* was the compilation of minor economic problem solvers grouped together to promote economic prosperity and overcome the recession, one major policy innovation came out of the report: the Ben

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<sup>82</sup> Choices for Pennsylvanians: Toward an Economic Development and Community Conservation Strategy, p. 9

<sup>83</sup> Report to PA House Of Representatives and the PA Senate on Progress of Programs Funded by PA Economic Revitalization Fund and Administered by the Department of Commerce, p. 13-24



Franklin Partnership. Though the concept for the Ben Franklin Partnership first emerged during Governor Thornburgh's campaign for Governor in 1978, they established the partnership a full two years after his election. Later, in 1982, the Pennsylvania General Assembly approved the creation of The Ben Franklin Partnership hoping it would promote technological innovation that would spur economic growth and prosperity in the Commonwealth.

### **Benjamin Franklin Partnership**

The Benjamin Franklin Partnership was a unique attempt in the state's history to revitalize the economy. The program was proposed in February of 1982 by Governor Thornburgh and was approved a year later by the Pennsylvania General Assembly.<sup>84</sup> This was a unique step in the evolution of economic practices in the state, as it would attempt to bridge the gap between public and private efforts to revitalize the region. This section of the report will focus on the BFP during its formative years, the years through which it underwent a shift in focus, the goals it had set for itself, and its activities throughout. Unfortunately, the unavailability of empirical data makes it difficult to determine the effectiveness of the BFP. It is likely that programs like the BFP have a role in state sponsored economic development, but the selectorate has yet to decide how prominent that role will be.

As mentioned above, the BFP was a unique endeavor by the state of Pennsylvania to revamp its economy. In this instance, the state was directly stepping in to provide

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<sup>84</sup> Summary Report: Challenge grant program for technological innovation progress reports, First Year Progress Report March 1, 1983- February 29, 1984, p. 2. Archival Collection of Dick Thornburgh, 1932- (ongoing), AIS 98:30. Series 11, Sub-Series 26. This archival collection containing this text is located at the Archives Service Center, University of Pittsburgh. Available from World Wide Web: (<http://digital.library.pitt.edu/cgi-bin/t/text/text-idx?idno=AIS9830.11.26.0006;view=toc;c=thornreports>)

funding and guidance for the region's economy. The state assembly provided a starting fund of \$1 million with the stipulation that it must raise three times as much in private funds to spend the public funds.<sup>85</sup> From its very founding the goal of the BFP was to promote a new attempt at economic development through public and private funding. The previously mentioned examples are indicative of this attempt to promote technological adaptation in existing business. The overarching goals of the BFP were to promote the adaptation of new technology by older businesses that needed an influx of modern methods, help train and retain employees in new skills to help facilitate the adaptation of new technology or to do research, and to provide a bridge between venture capital and the companies and entrepreneurs seeking funding.<sup>86</sup> The BFP charged ahead with these objectives and was able to gain responsibility early in its existence. For instance, the program was involved in 1) assisting existing corporations in training both current and former employees to work in modernized plants<sup>87</sup> and 2) assisting in the training of railroad company employees in the use of computer-aided design.<sup>88</sup> While the BFP participated in activities designed to train workers on how to adapt to new technology, this is not to say that this was its sole or primary focus. It is ill-advised to claim that the

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<sup>85</sup> Summary Report: Challenge grant program for technological innovation progress reports, First Year Progress Report March 1, 1983- February 29, 1984, p. 2

<sup>86</sup> Jurgen Schmandt and Robert Wilson, Promoting High Technology (London: Wesview Press, 1987).

<sup>87</sup> Wheeling-Pittsburgh Steel Corporation will Train 473 Present and Former Employees with Help of \$289,733 State Grant, p.1. Archival Collection of Dick Thornburgh, 1932-(ongoing), AIS 98:30. Series 11, Sub-Series 02. This archival collection containing this text is located at the Archives Service Center, University of Pittsburgh. Available from World Wide Web: (<http://digital.library.pitt.edu/cgi-bin/t/text/text-idx?idno=AIS9830.11.02.1225;view=toc;c=thornnewsreleases>)

<sup>88</sup> Presents \$43,000 to Pittsburgh Technical Institute for job training under Customized Job Training Program, p. 1-2. Archival Collection of Dick Thornburgh, 1932-(ongoing), AIS 98:30. Series 11, Sub-Series 02. This archival collection containing this text is located at the Archives Service Center, University of Pittsburgh. Available from World Wide Web: (<http://digital.library.pitt.edu/cgi-bin/t/text/text-idx?type=boolean;c=thornnewsreleases;cc=thornnewsreleases;sid=f817efbfd93c3e0be013bea55b53a3e1;rgn=full%20text;q1=ben%20franklin%20partnership;view=toc;subview=detail;sort=occur;start=1;size=25;idno=AIS9830.11.02.1126>)

BFP was unaided in the effort to help re-educate workers in Pennsylvania regarding technology.

The BFP was placed under the control of a board of administrations comprised of many government officials and appointees. A major portion of the leadership was made up of the following officers: Secretaries of Commerce, Environmental and Agriculture Resources, Directors of the Governor's Office of Policy and Planning, and the Governor's Energy Council. Several members of the General Assembly and the leadership of the board were appointed by the governor with the restraint that either the chairman or vice-chairman would represent organized labor.<sup>89</sup> From this two things can be discerned; one is that the Thornburgh administration clearly wanted a wealth of experienced leadership in charge of the BFP, and two, the administration unmistakably wanted a diverse background of opinions to be heard on the issues the BFP was facing. With the appointment of leaders from agriculture, environment, labor and elsewhere, Thornburgh may have been attempting to ensure that the BFP would obtain both experience and diversity. The state of Pennsylvania is geographically large, so in order to more effectively govern each region the BFP created separate corporate entities in the four corners of the state.<sup>90</sup> This would allow each region to attempt what might work best for its set of circumstances and to focus on specific areas of technological promotion,

rather than having just one centralized entity that might prove unresponsive to a given regions needs.

The program made great strides in the amount of funding it received and projects it was involved in during its early years. News surrounding the program seemed positive as it attempted to promote technological development in industry throughout the region. However, the program faced some harsh realities in that retaining companies and talent in the region was tremendously difficult. The state must weather programs like the BFP or other public and private ventures to have a future in the development of a technologically based industry in Pittsburgh. Throughout its evolution, the program eventually shifted its focus from trying to integrate technology into existing companies to the creation of new technology-based startup firms. For instance, by 1991 the BFP was involved in the creation and funding of 38 business incubators in the state.<sup>91</sup> The focus for the BFP has unquestionably shifted from helping existing company's retrain the current personnel to trying to bring in new businesses. It was time that Pennsylvania realized that the mills were not coming back.<sup>92</sup> This new focus for the BFP would much more closely match the theory of small company growth discussed earlier. The region as a whole would attempt

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<sup>89</sup> *House Bill No. 1738* [online]. The General Assembly of Pennsylvania Session of 1981. Available from World Wide Web: (<http://www.legis.state.pa.us/search/bsfullhit.htm?CiWebhitsFile=/1981%5F0/hb1738p3734.htm&CiRestriction=%22ben%20franklin%20partnership%22&CiHiliteType=Full&CiUserParam1=%20%20HOUSE%20BILL%201738%20P.N.%203734%20%20&CiUserParam2=/1981%5F0&CiUserParam3=N-1b254a0-1b7-1&CiUserParam4=/search/billsearch.htx#CiTag2>)

<sup>90</sup> Summary Report: Challenge grant program for technological innovation progress reports, First Year Progress Report March 1, 1983- February 29,1984, p. 2

<sup>91</sup> 1991. *Another Incubator First for Pennsylvania Announced* [online]. University Park, PA: Financial News. Available from World Wide Web: ([http://web.lexis-nexis.com/universe/document?\\_m=25f101d82a0c2d3a709ee73d0ff35e14&\\_docnum=1&wchp=dGLbVlz-zSkVA&\\_md5=000d88f603428515ab2527ee1ae14726](http://web.lexis-nexis.com/universe/document?_m=25f101d82a0c2d3a709ee73d0ff35e14&_docnum=1&wchp=dGLbVlz-zSkVA&_md5=000d88f603428515ab2527ee1ae14726))

<sup>92</sup> Governor Richard Thornburgh, History and Policy Project Class Discussion, December 1, 2005.

to promote the growth of small companies and to encourage the talented people it was developing to create new startups in the region.

Throughout its early years, the BFP had a clear mission: to promote the use of high technology and to encourage the transition of the area's economy into one based on technical industries. The state assembly gave the BFP \$1 million dollars to spend. It in turn chose four areas in which to distribute those funds, including a joint effort by Carnegie-Mellon University and The University of Pittsburgh called the Mellon-Pitt-Carnegie Corporation that formed the Western Pennsylvania Advanced Technology Center.<sup>93</sup> The BFP, through its various local branches, was able to put together impressive funding numbers in its early years. By its third year of existence it had managed to match, and nearly triple, its public funding with private funding from sources such as Pennsylvania corporations<sup>94</sup> and even the city of Pittsburgh and Allegheny County.<sup>95</sup> The success it had in obtaining funding led to a flurry of activity in this initial period. In its first few quarters, it was involved in over twenty-nine projects.<sup>96</sup> Within its first few years, the BFP received an increase in funding of \$10 million from the state government.<sup>97</sup> The state government saw promise in the BFP and subsequently increased

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<sup>93</sup> \$500,000 in grants for establishment of 2 Advanced Technology Centers under Ben Franklin Partnership p. 2. Archival Collection of Dick Thornburgh, 1932-(ongoing), AIS 98:30. Series 11, Sub-Series 02. This archival collection containing this text is located at the Archives Service Center, University of Pittsburgh. Available from World Wide Web: (<http://digital.library.pitt.edu/cgi-bin/t/text/text-idx?idno=AIS9830.11.02.1024;view=toc;c=thornnewsreleases>)

<sup>94</sup> Summary Report: Challenge grant program for technological innovation progress reports, First Year Progress Report March 1, 1983- February 29,1984, p. 2

<sup>95</sup> \$500,000 in grants for establishment of 2 Advanced Technology Centers under Ben Franklin Partnership, p. 2

<sup>96</sup> Summary Report: Challenge grant program for technological innovation progress reports, First Year Progress Report March 1, 1983- February 29,1984, p. 6

<sup>97</sup> Additional \$10 million in Ben Franklin Partnership Grants (1983) p. 1. Archival Collection of Dick Thornburgh, 1932-(ongoing), AIS 98:30. Series 11, Sub-Series 02. This archival collection containing this text is located at the Archives Service Center, University of Pittsburgh. p. 1. Available from World Wide Web: (<http://digital.library.pitt.edu/cgi-bin/t/text/text-idx?idno=AIS9830.11.02.1150;view=toc;c=thornnewsreleases>)

its funding about ten fold. The program was undoubtedly very active in the state and with other firms, and it was involved with 25 patent applicants in its first three years.

Technological development became a viable alternative to the smokestack economy of previous periods. This is not to say that there was no focus on more specific areas of interest or that there was no master strategy in place. There were several well-defined areas of interest for the Thornburgh administration including specialized material industry, robotics, biotechnology, and medical devices.<sup>98</sup>

### **Activities**

As stated earlier, the BFP was involved in a large number of different activities in its first few years. The BFP for Western Pennsylvania, with assistance from Carnegie-Mellon and The University of Pittsburgh, was involved in helping the region obtain status as a Federal Center for Advanced Computing in Engineering.<sup>99</sup> This would serve as a technological foundation for the region. Being a federal center helped create needed recognition for Pittsburgh at a national level. The BFP also helped many companies and individuals make contacts with venture capital firms such as the Enterprise Corporation, which provided startups with over one million dollars in funding.<sup>100</sup> The BFP was clearly active in attempting to help stabilize the economy by promoting the region and helping firms establish themselves. However, it was recognized early on that new firms and regional promotion would not suffice if people still chose to leave the area. To this end,

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<sup>98</sup> Pennsylvania Department of Commerce. Advanced Technology – Progress Report p. 2-3. Archival Collection of Dick Thornburgh, 1932-(ongoing) AIS 98:30. Series 233, Sub-Series 05. This archival collection containing this text is located at the Archives Service Center, University of Pittsburgh. Available from World Wide Web: (<http://digital.library.pitt.edu/cgi-bin/t/text/text-idx?idno=AIS9830.11.02.1150;view=toc;c=thornnewsreleases>)

<sup>99</sup> Ben Franklin Partnership Challenge Grant Program For Technological Innovation (November 1985) p. 13

<sup>100</sup> Ben Franklin Partnership Challenge Grant Program For Technological Innovation, (June 1985) p. 14

the BFP joined in efforts by universities to attempt to encourage students and faculty to remain in Pennsylvania. For instance, the BFP participated in job fairs and seminars held at local universities and firms.<sup>101</sup> As earlier noted, the loss of talented workers to other regions continues to be a serious problem for Pennsylvania in general and Pittsburgh in particular. Although efforts such as those made by the BFP both in the past to train current workers and in the present to train businesspeople are necessary to attempt to stem the outward tide, it is still debatable whether BFP has been effective in achieving this goal.

### **Effectiveness**

Today many leaders and scholars call into question the effectiveness of the BFP and with good reason. It is arguable that the government should take a less active role in the economic development of the state and should limit itself to issues like promoting the region or trying to refine the tax structure. This point is hard to refute based on performance; Pittsburgh has yet to throw off the shackles of a sluggish economy and has yet to generate a wealth of new companies that will opt to remain in the region. This is not to say that there have been no companies being created or jobs for that matter — indeed unemployment numbers for the region are relatively low. As stated above, the BFP has become involved with a number of business incubators throughout the state. The problem is that the BFP was trying to use synthetic means to provoke economic growth in Pennsylvania similar to the progress of Silicon Valley.<sup>102</sup> Leaders in the technology-based economy view the economic growth that Pittsburgh has experienced and aspires to

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<sup>101</sup> Ben Franklin Partnership Challenge Grant Program For Technological Innovation, (June 1985) p. 14

<sup>102</sup> Tim McNulty, interview with Eddie Szeto and Eugene Shiu, November 7, 2005.

have as fundamentally different from growth that has already occurred in other regions. Silicon Valley may have had equal government interference when establishing their economy, but the government in Pittsburgh plays a prominent role in guiding revitalization efforts,<sup>103</sup> This in turn created a system where the people of the state were turning control of their money over to a semi-private entity and thus it was no longer responding directly to their demands.<sup>104</sup> One can test the BFP's effectiveness by identifying significant positive changes. A number of individuals close to the issues of company and human resource retention have noted that the city is still suffering from strong losses. According to Dr. Leon Haley, "the economy doesn't appear to be growing and somehow that is a drag on Pittsburgh and on its inability to attract and retain good people."<sup>105</sup> If Pittsburgh wants to continue the current trend of growth, started by organizations like the BFP, it has to find a method to market itself to the talented Americans of today. Pittsburgh should be looking to attract individuals with technical backgrounds who might be looking elsewhere for employment. One major problem with the BFP was that its purpose is to turn the economy around in this region, without focusing on ensuring that the prevailing perception of the region changes as well. This is a rhetorical debate similar to the "chicken and the egg dilemma;" will jobs and meaningful industry bring in new talent or will talent bring in new jobs and growth? In the case of Pittsburgh, because the method of bringing in new jobs first has not created immediate and much needed results, it may be time to change the climate in which these jobs are located.

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<sup>103</sup> Tim McNulty, interview with Eddie Szeto and Eugene Shiu, November 7, 2005.

<sup>104</sup> Tim McNulty, interview with Eddie Szeto and Eugene Shiu, November 7, 2005.

<sup>105</sup> Leon Haley, interview with Jimmy Song and Joe Trevithick, November 4, 2005.



The BFP and other programs have had a positive impact on the region in the creation of new jobs and new companies. However, the city of Pittsburgh has had trouble retaining companies and individuals that these programs have created. Past efforts have not yielded their full potential due to retention problems. According to Professor Robe Lowe, an expert on entrepreneurship and regional economic development, “in spite of Pennsylvania’s success in spurring new firm creation, the most important aspect of promoting entrepreneurship for economic development eludes the state: start-up retention.”<sup>106</sup> Several people that have been interviewed during the course of this project have noted this problem. There is still no method to disprove causation of whether BFP serves a vital role in the regions economy. The region must have the ability to create jobs for people who need them and they can in turn become an integral part of the revitalization effort and further train people to fill those jobs. According to Haley, more emphasis needs to be placed on training people in the region to take “new economy jobs.”<sup>107</sup> This is where the BFP can strive to maintain and increase its effectiveness in the region. Part of BFP’s goal has always been to train employees to help with the adaptation of newer technologies into mainstream business.<sup>108</sup> However, Pittsburgh as a city must change its overall appearance and attitude if it wants to retain the people who have been trained.

### **Examining the Policies**

Governor Dick Thornburgh played an instrumental role in restoring Pennsylvania’s economy from the brink of total collapse. Although his policies were not

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<sup>106</sup> Dr. Robert A. Lowe, Technology Transfer and Economic Development in Pennsylvania (2004) p. 11.

<sup>107</sup> Leon Haley, interview with Jimmy Song and Joe Trevithick, November 4, 2005.

<sup>108</sup> Jurgen Schmandt and Robert Wilson, Promoting High Technology

uniformly successful and did not completely solve the state's problems, they did help catalyze the transition from a “brawn-based economy” to a “brain-based economy.” Through the creation of partnerships and associations aimed at providing financial and technological assistance to existing and new businesses, the Thornburgh administration helped stimulate the diversification of Western Pennsylvania’s economy. Of these initiatives, the Ben Franklin Partnership was the most well-known, effective, and long lasting. It has also served as a model for subsequent economic development initiatives in Pittsburgh and around the country. Regardless of the fact that there is no systematic way to measure the effectiveness of the BFP and related policies or to prove causation for improved conditions, it is still evident that the states' economy is better off now than it was when Thornburgh took office. The consistent question arising in subsequent chapters is whether programs similar to the BFP are the best method for the government to stimulate economic development in the private sector.<sup>109</sup>

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<sup>109</sup> Anonymous source who is familiar with Pennsylvania economic policy decisions in the 1980s.

## **Chapter 4: Components of Technology-Based Economic Development**

### **Introduction**

Pittsburgh is a city in the midst of creating a new identity that starkly contrasts the old, negative steel and soot image of the past. Despite Pittsburgh's attempts to emerge from this negative image, many people still consider Pittsburgh a town supported by heavy industry even though very little heavy industry actually remains today. Rather, Pittsburgh's economy is moving toward a reliance on high technology. This economic shift won't happen overnight and will face numerous challenges. As this chapter will describe, there are complex factors surrounding economic growth, but despite its complexities, the city already has several success stories. In this chapter we will discuss the some of the basic factors that are necessary for Pittsburgh to develop a strong technology-based economy. These include: venture capital, support from the local foundation community during the period of economic transition, a supportive business environment (and especially a fair tax structure) and a strong academic community with universities committed to technology transfer. At the end of the chapter we will present profiles of a few companies in order to better understand how all of these factors play out in practice.

### **Venture Capital**

By the late 1980s California, New York, New England, Texas, Illinois and Minnesota had become the main centers for venture capital in the United States.<sup>110</sup> During the same time period New York, California and Massachusetts accounted for 60

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<sup>110</sup> Richard L. Florida and Martin Kenney, "Venture Capital, High Technology and Regional Development," in Regional Studies (September 1986): p. 33-48.

percent of all American venture capital.<sup>111</sup> For a city such as Pittsburgh, which was not a center for either financial resources or technologically intensive companies, this meant that the 20 billion dollars spent in venture capital by 1986 within the United States scarcely touched the region.<sup>112</sup>

As Pittsburgh struggled to maintain companies within the city, the process became increasingly difficult in an economic situation that made venture capital and loans a complex process.<sup>113</sup> Venture capital is most basically defined as capital, or funds, that are given by outside investors for financing new or growing businesses.<sup>114</sup> Through hands-on involvement with the portfolio company, venture capital firms foster growth and therefore prove to build companies more successfully than pure money handouts.<sup>115</sup> This can also be attributed, in part, to venture capital firms offering stock options to employees to motivate their work.<sup>116</sup> Therefore, venture capital may be one answer for companies that need funding but do not have the reputation or assets to obtain funding from banks or markets.<sup>117</sup>

From 1970 through 2003, the venture capital industry invested \$338.5 billion in 26, 494 companies.<sup>118</sup> In just three years, between 2000 and 2003, 600,000 jobs were added to the U.S. economy due to venture backed firms.<sup>119</sup> This suggests that it is

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<sup>111</sup> Florida and Kenney, p. 33-48

<sup>112</sup> Tim McNulty, interview with Eddie Szeto and Eugene Shiu, November 7, 2005; Florida and Kenney, p. 33-48.

<sup>113</sup> Bill Catlin, "The Digital Furnace," Minnesota Public Radio, March 20, 2000.

<sup>114</sup> 2005. *Venture Capital* [online]. Wikipedia Encyclopedia. Available from World Wide Web: ([http://en.wikipedia.org/wiki/Venture\\_capital](http://en.wikipedia.org/wiki/Venture_capital))

<sup>115</sup> "Venture Impact 2004: Venture Capital Benefits to the U.S. Economy," in Global Insight (2004).

<sup>116</sup> "Venture Impact 2004: Venture Capital Benefits to the U.S. Economy," in Global Insight (2004).

<sup>117</sup> "Venture Impact 2004: Venture Capital Benefits to the U.S. Economy," in Global Insight (2004).

<sup>118</sup> "Venture Impact 2004: Venture Capital Benefits to the U.S. Economy," in Global Insight (2004).

<sup>119</sup> "Venture Impact 2004: Venture Capital Benefits to the U.S. Economy," in Global Insight (2004).

necessary to continue striving for greater private venture capital involvement in Pittsburgh, as Pennsylvania already receives the largest amount of economic assistance for technological development in the United States.<sup>120</sup>

There are five-stages in venture financing: seed, start-up, early, expansion, and later. Venture capital is primarily focused on the stages after seed. Yet, venture capitalists are not seen as the most significant source of funding for early-stage technology either. For individual technology entrepreneurs and small technology startups, “angel investors” have been established as the most significant source of early-stage technology funding.<sup>121</sup> These “angels” are seen as tech-savvy and are primarily private individuals who grant sums of money to develop a company.<sup>122</sup> Typically, venture capital comes in after “angel” investors when the company is perceived to be ready for commercialization with the help of the “angel.” Venture capital then takes the company through the next three steps, with an invested interest, to hopefully establish a successful company.

Within Pittsburgh, Venture Capital is the most commonly sought after means of funding for starting businesses as it is seen as a catalyst that encourages upcoming entrepreneurs to establish new companies. It does this by providing funding and contracts which ease the process of business formation.<sup>123</sup> However, in Pittsburgh venture capital has become an interest of the state. Early-stage funding has developed into a top state priority for economic revival of the region, even as private venture capital investment has flowed to Pittsburgh as well. Between 2000 and 2002 total venture capital investment in

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<sup>120</sup> Dr. Robert A. Lowe, interview with Sara Lewis and Sean Friday, November 1, 2005

<sup>121</sup> Philip E. Auerswald and Lewis M. Branscomb. “*Between Invention and Innovation: An Analysis of Funding for Early-Stage Technology Development*,” in Economic Assessment Office (November 2002).

<sup>122</sup> Auerswald and Branscomb, “*Between Invention and Innovation: An Analysis of Funding for Early-Stage Technology Development*.”

<sup>123</sup> Florida and Kenney, p. 33-48

the state of Pennsylvania rose 80 percent to \$500 million.<sup>124</sup> These funds have become increasingly sought after as the number of start-up companies in Pittsburgh increase.<sup>125</sup> Thus, in today's economy, Venture Capital Funds are investing smaller amounts and demanding increased control over their investments.<sup>126</sup>

In 2004, an all-time low of 67 million dollars was invested in start-up technology-based companies in Pittsburgh. At the same time, there were fifty percent more early stage technological companies seeking out venture capital funding.<sup>127</sup> Yet, this should not imply that venture capital is declining in Pittsburgh. Since 2000, Pittsburgh has been the receiver of over two billion dollars of venture capital funding. This funding is primarily directed into the "bio-technology, software and internet-related ventures" sectors.<sup>128</sup> And, Pittsburgh looks as if it will rebound from any decline that has been occurring.<sup>129</sup> This is because venture capitalist firms are investing in Pittsburgh area companies whether they are from outside Pittsburgh or are in the process of establishing themselves in Pittsburgh.<sup>130</sup> In hope of becoming a technology hub, Pittsburgh will have to accept venture capital from outside Pittsburgh.<sup>131</sup>

To gain a greater understanding of venture capital investment in Pittsburgh, and why companies are attracted to Pittsburgh, it is beneficial to examine Adams Capital Management Inc., which is the largest, and number one, venture capital firm in

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<sup>124</sup> Bill Catlin, "The Digital Furnace"

<sup>125</sup> Anthony Cerminaro, "Tech Start-Ups' Positioning Key to Landing Capital In More Risk-Adverse Investing Climate," Pittsburgh Post-Gazette, April 1, 2003.

<sup>126</sup> Cerminaro, "Tech Start-Ups' Positioning Key to Landing Capital In More Risk-Adverse Investing Climate."

<sup>127</sup> Ron DaParma, "Venture Capital Investment Dips," Pittsburgh Tribune Review, September 22, 2005.

<sup>128</sup> 2005. *Pittsburgh Regional Venture Capital Firms* [online]. Pittsburgh: Pittsburgh Regional Alliance. Available from World Wide Web: ([http://www.pittsburgh-region.org/public/cfm/d\\_and\\_d/index.cfm?FUSEACTION=VentCap](http://www.pittsburgh-region.org/public/cfm/d_and_d/index.cfm?FUSEACTION=VentCap))

<sup>129</sup> DaParma, "Venture Capital Investment Dips."

<sup>130</sup> DaParma, "Venture Capital Investment Dips."

<sup>131</sup> Dr. Robert A. Lowe, interview with Sara Lewis and Sean Friday, November 1, 2005.

Pittsburgh. Joel Adams established Adams Capital Management Incorporated in 1994. Nationally, the company has over 700 million dollars for investment, with 100 million currently available for new investment. Although small in the international community, Adams Capital remains the largest venture capital firm in Pittsburgh. For each investment the company takes, they expect to invest between ten and thirty million dollars over the course of each individual investment.<sup>132</sup> Its five general partners have a combined 125 years of expertise in optical networking, wireless communication, operating systems, realties manufacturing software in the information technology industry and semiconductors in telecommunications.<sup>133</sup> Adams Capital looks primarily for technology to invest in that is based on real-world business problem solving, ready to take over untapped markets, or uses ideas that are positioned to attain first-mover advantage.<sup>134</sup> They promise that the business plans that are excepted will be turned into large and profitable businesses through a close working environment with management teams.<sup>135</sup>

In addition to its Pittsburgh offices, Adams Capital is also located in Boston, Palo Alto and Austin. They were attracted to Pittsburgh for the technology potential they saw at Carnegie Mellon. Since Pittsburgh does not have an abundance of venture capital, Adams Capital Management saw potential in the lack of investment at Carnegie Mellon. According to Mr. William Frezza, a general partner with Adams Capital Management in Boston "It's a market that is underserved by venture firms. If you go down to MIT on any given day, you're going to find a number of folks...combing the halls looking for ideas.

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<sup>132</sup> 2004. *About Us* [online]. Adams Capital Management Inc. Available from World Wide Web: (<http://www.acm.com/about/index.html>)

<sup>133</sup> 2004. *About Us* [online]. Adams Capital Management Inc. Available from World Wide Web: (<http://www.acm.com/about/index.html>)

<sup>134</sup> 2004. *About Us* [online]. Adams Capital Management Inc. Available from World Wide Web: (<http://www.acm.com/about/index.html>)

<sup>135</sup> 2004. *About Us* [online]. Adams Capital Management Inc. Available from World Wide Web: (<http://www.acm.com/about/index.html>)

At Carnegie Mellon, it's a ripe environment.”<sup>136</sup> And, it’s a ripe environment that has millions being publicly invested for early stage technology companies.<sup>137</sup>

Yet despite all of the positive attributes of Pittsburgh, many investors stay away because of the distance for business meetings from Boston, New York or California.<sup>138</sup> This is why venture capital firms prefer to be located locally, and this is where Adams Capital Management differs from most major venture capital firms looking to conduct business in Pittsburgh. Joel Adams, founder of Adams Capital Management, is on the Board of Directors for Carnegie Mellon and therefore has a vested interest in the Pittsburgh community, and the success of Carnegie Mellon technology.<sup>139</sup> Adams Capital Management is an example of how Venture Capital can benefit Pittsburgh, adapting to Pittsburgh’s geography and community.

Still, Adam’s Capital Management is an atypical case. Overall, Pittsburgh is experiencing what it views as a shortage of venture capital. However, although Pittsburgh sees itself as suffering from a shortage, so does every city in the United States.<sup>140</sup> In fact, for the amount of technology that Pittsburgh has so far developed, and the size of the technology community in Pittsburgh, the amount of venture capital is overwhelming. Thus, Pittsburgh must become more comfortable with the role of a technology center that has to focus on attracting outside venture capital.<sup>141</sup> Or, on the other hand, Pittsburgh must realize that it does not need more venture capital, but more focused capital.<sup>142</sup>

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<sup>136</sup> Tom Witkowski, “*Boston VCs See Lots To Like In Pittsburgh: View Market as Ripe With Opportunity*,” *Pittsburgh Business Times*, May 3, 2004.

<sup>137</sup> Mike Vargo, “*Many Stay, Some Move Away. They All Seed The Region With Capital, Savvy, and More Startups*,” *TEQ Magazine* (July/ August 2000).

<sup>138</sup> Witkowski, “*Boston VCs See Lots To Like In Pittsburgh: View Market as Ripe With Opportunity*.”

<sup>139</sup> Witkowski, “*Boston VCs See Lots To Like In Pittsburgh: View Market as Ripe With Opportunity*.”

<sup>140</sup> Dr. Robert A. Lowe, interview with Sara Lewis and Sean Friday, November 1, 2005.

<sup>141</sup> Florida and Kenney, p. 33-48

<sup>142</sup> Don Smith, interview with Eddie Szeto and Kyle Dominquez, November 6, 2005.



Pittsburgh has more technologically based publicly funded agencies than any other city in America. Pittsburgh also benefits from immense foundation financial support.

Additionally, according to Rob Lowe, with the option of grants coming from university research to cover the costs of start-up technological companies, companies in Pittsburgh have become increasingly unimaginative by relying purely on venture capital firms alone.

Pittsburgh has the potential to become a hub for venture capital. It is an “underserved” market by venture capitalists, in comparison to other technological cities. It has two universities that lead the world in many industries and is positioned to take on more. Mr. William Frezza went so far as to state “there are no negatives in Pittsburgh. You've got a great airport. You get anywhere in one flight. There's the university, which is tremendous. You've got a handful of local VCs to provide support.”<sup>143</sup> The number of venture firms investing in Pittsburgh has been increasing, and is staged to continue.<sup>144</sup> One must go back and realize that the one main advantage of Pittsburgh is the networking opportunities available in such a small and unsaturated community.<sup>145</sup> Competition in the technologic industry has not yet become a factor in Pittsburgh, nor will it be for a long time to come. Thus, cooperation toward building up technology in Pittsburgh is essential and critical in efforts to help high-tech entrepreneurs.<sup>146</sup>

## **Foundations**

Privately funded foundations play an important role in the economic revitalization of Pittsburgh today. The Heinz Endowment is one of the primary philanthropic foundations

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<sup>143</sup> Witkowski, “*Boston VCs See Lots To Like In Pittsburgh: View Market as Ripe With Opportunity.*”

<sup>144</sup> DaParma, “*Venture Capital Investment Dips.*”

<sup>145</sup> Terri Glueck, interview with Sara Lewis and Eddie Szeto, October 25, 2005.

<sup>146</sup> Terri Glueck, interview with Sara Lewis and Eddie Szeto, October 25, 2005.

concerned with the development of Pittsburgh and the southwestern Pennsylvania region. It is actually comprised of two different endowments- the Howard Heinz Endowment, established in 1941 and Vira I. Heinz Endowment, established in 1986. The Heinz Endowments are progressive foundations that are focused on a wide range of aspects in the Pittsburgh community. Their mission is to “help our region thrive as a whole community- economically, ecologically, educationally, and culturally.”<sup>147</sup> This includes fostering the image of southwestern Pennsylvania as a desirable place to live and work. The Heinz Endowments place a large emphasis on the importance of education, primarily for young children, in the Pittsburgh region.

Supporting the growth of the economy and entrepreneurial opportunities has also been an ongoing goal of the Heinz Foundations. The sector of the foundation that is involved with this type of development in Pittsburgh is The Economic Opportunity Program. The primary goal of this program is to promote regional growth and to eventually make Pittsburgh a competitive force in the global economy. To encourage this, The Economic Opportunity Program has employed a strategy that promotes the increase of accessibility to high quality jobs to Pittsburghers. They also seek to make potential workers more prepared for these higher quality jobs by investing in “human capital” and the improvement of people’s skills.<sup>148</sup> This is something that can be achieved through improving the availability of educational opportunities in the Pittsburgh region. The Heinz Foundations support organizations that follow this kind of approach to encourage economic growth in the Pittsburgh region. This ideal of improving human capital is one

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<sup>147</sup> *The Heinz Foundations* [online]. Available from World Wide Web: (<http://www.heinz.org/index.asp?loc=E,E3,E3a>)

<sup>148</sup> *The Heinz Foundations* [online]. Available from World Wide Web: (<http://www.heinz.org/index.asp?loc=E,E3,E3a>)

that is emphasized by the former-Pittsburgh Digital Greenhouse (now known as The Technology Collaborative), an organization that is funded by the Commonwealth of Pennsylvania as well as private foundations. The Technology Collaborative (TTC) is an economic development initiative that focuses specifically on increasing Pittsburgh's influence in the realm of emergent technologies- such as system-on-a-chip technology. This is promoted mostly through involvement with the world-class educational institutions in Pittsburgh such as Carnegie Mellon University and the University of Pittsburgh. This emphasis on an economic development strategy hinged on the research and opportunities provided by the universities and make TTC an attractive organization for the Heinz Foundations to support.

In addition to the Heinz Foundations, a number of less well-known foundations are dedicated to the support of economic revitalization efforts in Pittsburgh. The Claude Worthington Benedum Foundation is an organization that is involved in public policy issues, including economic development. It was founded in 1944 with the mission to advance human development in West Virginia and southwestern Pennsylvania. This foundation encourages collaboration among public, private and non-profit sectors in order to maximize benefits for everyone. "We encourage planning projects and programs that cross geographical and political boundaries so that access to services and economic growth is maximized."<sup>149</sup> The policy of the Benedum Foundation is to allocate no less than five percent of the market value of its assets each year to philanthropic efforts. Another private foundation that can be associated with revitalization efforts in Pittsburgh is the McCune foundation. Founded rather recently (in 1979) by Charles L. McCune, the

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<sup>149</sup> *The Claude Benedum Foundation* [online]. Available from World Wide Web: (<http://www.benedum.org/swpa.html>)

organization was established to promote community vitality and economic growth.<sup>150</sup> Improving the quality of life and preparing young Pittsburghers for the workforce seems to be the overall mission of the McCune foundation. However, the foundation also specializes in the creation of economic opportunities in order to attract new people to the region. This relates to our study of the growing biotechnology sector in Pittsburgh, and the emergence of a new professional class in the city. The Richard King Mellon foundation was created in 1947 by Richard King Mellon (1899-1970), the former chairman of Mellon Bank. With funds committed almost exclusively to southwestern Pennsylvania, The Richard King Mellon Foundation supports projects that are in the “public interest.” “Priorities include regional economic development, the quality of life in southwestern Pennsylvania, land preservation, and watershed restoration and protection”<sup>151</sup> In January 2005, the foundation created a separate program specific geared toward economic development initiatives.

Larger than many are aware of, The Pittsburgh Foundation is another organization with similar goals. Established in 1945, it is the 17<sup>th</sup> largest community foundation in the country.<sup>152</sup> The Pittsburgh Foundation concentrates on evaluating the crucial needs of the Pittsburgh community and allocating the appropriate donations in a variety of fields. This often involves fostering economic growth, which includes attracting new businesses to the area as well as encouraging the growth of existing ones. One way The Pittsburgh Foundation goes about achieving this is by encouraging an “entrepreneurial spirit” in the

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<sup>150</sup> *The McCune Foundation* [online]. Available from World Wide Web: (<http://www.mccune.org:81/foundation:Website,mccune,index>)

<sup>151</sup> *The Richard King Mellon Foundation* [online]. Available from World Wide Web: (<http://fdncenter.org/grantmaker/rkmellon/history.html>)

<sup>152</sup> *The Pittsburgh Foundation* [online]. Available from World Wide Web: (<http://www.fdncenter.org/grantmaker/buhl/history.html>)

Pittsburgh region. “New business ventures will in turn lead to a greater number of jobs and greater financial independence for many members of our community.”<sup>153</sup> The foundation also supports programs that help entrepreneurs network, hopefully resulting in the growth of their businesses through increased collaborative efforts.

The Pittsburgh Foundation is similar to the Heinz Foundations in that it specifically looks to encourage upward mobility among the working-class in the region. “We are focusing on growth industries, such as the high-technology and medical fields, where employees will have the greatest opportunity for career advancement.”<sup>154</sup> This is a very progressive organization that understands the need for a change in the attitudes and goals of the Pittsburgh community as far as economic development. They also seek to improve public transportation, and in some cases, increase automobile ownership, in order to help workers get back and forth to their job more efficiently. This is a rather basic need that is sometimes overlooked. A non-profit organization that is supported by The Pittsburgh Foundation is The Re-Employment Transition Center, an organization that works to match employees and employers better and also encourage employers to reward employees that show excellent performance appropriately. It also seeks to educate employees about the incentives of job retention. “With a grant from The Pittsburgh Foundation, The Re-Employment Transition Center of Educational Data Systems has introduced a concept, the Tiered Employment System, which is new to Pittsburgh. This system is geared to help businesses lower their recruitment and training

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<sup>153</sup> *The Pittsburgh Foundation* [online]. Available from World Wide Web: (<http://www.fdncenter.org/grantmaker/buhl/history.html>)

<sup>154</sup> *The Pittsburgh Foundation* [online]. Available from World Wide Web: (<http://www.fdncenter.org/grantmaker/buhl/history.html>)

costs — and increase the ability of businesses and employees to succeed.”<sup>155</sup> Currently, The Re-Employment Center is partnered with the Allegheny County Housing Authority to ultimately make home-ownership a goal of the program.

The Roy A. Hunt Foundation, established in 1966, is the current version of the Hunt Foundation, which was officially terminated in 1994. Roy’s father, Alfred Hunt, had been one of Pittsburgh’s prominent industrialists in the 19<sup>th</sup> century. Most of his philanthropic efforts had been directed towards educational institutions and improving the region’s water purifying technology. The Community Development Special Initiative is a program created by the Roy A. Hunt Foundation with the mission of “facilitating the development of healthy and sustainable communities [primarily in Pittsburgh and Boston].”<sup>156</sup> This program focuses on two areas: neighborhood revitalization and economic development. Neighborhood revitalization is concerned mostly with creating affordable housing program and restoring abandoned properties. The economic development initiative is similar to many of the previously mentioned foundations – a desire to create new business and job opportunities as well as maintain existing Pittsburgh-based companies.

Several Pittsburgh-based corporations have formed foundations that are involved with community-outreach programs. Pittsburgh Plate Glass Company (PPG) is a Pittsburgh-based glass and adhesive company that supplies its products and services both domestically and internationally. The company was established in 1883, and the foundation was created in 1951. The main focus of the PPG Foundation has been to

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<sup>155</sup> *The Pittsburgh Foundation* [online]. Available from World Wide Web: (<http://www.fdncenter.org/grantmaker/buhl/history.html>)

<sup>156</sup> *The Roy A. Hunt Foundation* [online]. Available from World Wide Web: ([http://www.rahuntdn.org/programs\\_comm1.shtml](http://www.rahuntdn.org/programs_comm1.shtml))

improve the quality of life and maintain an active role in communities where its employees reside. Most of their funding is allocated to improving and making education more accessible, but a certain amount is dedicated to promoting economic development initiatives. In 2004, the PPG Foundation allocated \$200,253 in grants toward programs involved with civic and community affairs.<sup>157</sup> Alcoa Aluminum is another global corporation headquartered in Pittsburgh, specifically, the Northside neighborhood of the city. In addition to creating programs that work to advance the technical skills of their workforce, Alcoa Foundation (established 1952) also funds programs fostering economic development in the Pittsburgh region as well as many more locations around the world. In April 2003, Alcoa Foundation announced that it is “seeking proposals from Northside (Pittsburgh) nonprofit organizations as part of its Allegheny Works initiative, a five-year, \$1 million program to enhance literacy, workforce development and employment opportunities on the Northside.”<sup>158</sup> The Allegheny Works program was created in 1998 as a collaborative effort between Alcoa and Northside community and religious leaders. According to Kathleen W. Buechel, president of the Alcoa Foundation, “Through Allegheny Works and with the Community Panel, Alcoa Foundation has benefited from a more informed approach to our grant-making on the Northside. As we enter into the final year [2003] of Allegheny grant-making, we look forward to funding new organizations with one-year grants, and to exploring non-grant opportunities to leverage the rich

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<sup>157</sup> *PPG Industries Foundation* [online]. Available from World Wide Web: ([http://corporateportal.ppg.com/PPG/About/PPG\\_Ind\\_Fnd.htm#highlights](http://corporateportal.ppg.com/PPG/About/PPG_Ind_Fnd.htm#highlights))

<sup>158</sup> “*Alcoa Foundation Announces Request For Proposals for Literacy, Employment Programs on the Northside; Allegheny Works Initiative Enters its Fifth Year,*” Business Wire, April 16, 2003.

experience that we have gained through Allegheny Works.”<sup>159</sup> The importance of business and community partnerships is something emphasized by the Alcoa Foundation.

Foundations play an important role in the economic development and revitalization efforts that have been carried out throughout the Pittsburgh region. The appropriation of funds from organizations such as the Heinz Foundations, The Pittsburgh Foundation and other smaller foundations continue to help educate the community about important economic issues in the city today. They have also helped spur entrepreneurial growth, encouraging new businesses, as well as established ones, to start-up or remain in Pittsburgh. Several Pittsburgh-based corporations such as PPG and Alcoa have created foundations with regional development initiatives. In many instances, these foundations entail collaboration with the universities in Pittsburgh in order to change the image of the city and illustrate that southwestern Pennsylvania is truly a region with great potential. The greatest success of foundations involved with economic development in Pittsburgh may lie in their educational value- their drive to get everyone in the community involved in the revitalization efforts.

## **Tax Structure**

In order to understand the difficulties in Pittsburgh's ability to grow and retain technological companies it is important to explore the business environment. Despite the availability of early stage capital and foundation support, it is important to examine the formation of the city, the surrounding municipalities, and, most importantly, the tax structure. For the first 100 years after the formation of Allegheny County and Pittsburgh

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<sup>159</sup> *Aluminum Associate* [online]. Available from World Wide Web: (<http://www.aluminum.org/Template.cfm?Section=20033&template=/ContentManagement/ContentDisplay.cfm&ContentID=4994>)



City the area remained rural and agriculturally based. Under such conditions, municipal governments simply had to provide services such as public schools and road maintenance. However, by the late 1800's newer arrivals to the area stressed the resources of older pre-existing municipalities and local government. Because more people were living on the same amount of land, there was no increase in funding for the local governments, as there was only a basic land tax. Government resources were stretched beyond the point of being universally useful, so much so that even local road maintenance and public services were not being performed. As the city and county continued to grow in population, more municipalities emerged in order to better allocate resources and take care of the population. The growth of municipalities around the city slowed the growth of Pittsburgh itself. At its inception in 1794, the city included what is now known as downtown and the neighborhoods between the Monongahela and Allegheny Rivers. The city, realizing it lacked room to grow, attempted to expand its territory to continue economic growth.

To this end, in 1868 the city of Pittsburgh attempted to annex both Allegheny City, on the north side of the Allegheny River, and Birmingham, on the south side of the Monongahela, as well as the East End. With the acquisition of such territory, Pittsburgh would have a great advantage in the coming years when industry began to burgeon. The state law at the time only allowed the city to annex neighborhoods if the majority of voters in the area to be annexed approved. Those in Allegheny and Birmingham outright rejected the proposal to be incorporated into Pittsburgh. However, Pittsburgh was not satisfied with the acquisition of just the East End territory. Four years later in 1872 it

passed a "special law through the legislature".<sup>160</sup> With this law, Pittsburgh was not required to pass any referendum through Birmingham allowing them to annex what is now known as South Side. Still, many Pittsburghers were not satisfied and wanted to join with Allegheny City. These Pittsburghers mainly consisted of the wealthy business class. However, Allegheny was financially sound and had better public works, social services, and cultural institutions than Pittsburgh itself. Any of these reasons would be enough for the residents of Allegheny City to resist wanting to merge with Pittsburgh. In 1906, Pittsburgh again decided to push the proverbial annexing envelop, by passing a "one time law that allowed annexation if a combined majority of voters in both cities approved".<sup>161</sup> Later in 1907, the referendum lost in Allegheny but won by a landslide in Pittsburgh, which had twice as many registered voters. This led to the formation of what is now the "City of Pittsburgh".

With a long and complicated history of changes in law and tax structure (See Appendix B, Figure 1 for more information) it is not surprising that Pittsburgh continued to struggle with its tax revenues and larger tax structure. Recently there have been many changes to Pittsburgh's tax system in the attempt to change Pittsburgh from a city with the highest tax rates in the U.S. In fact, there has been movement since the 1980's to lower some of Pittsburgh's taxes. A federal move in 1986, The Federal Tax Reform Act, was designed to lighten the burden of income tax and simplify the tax code. It effectively brought the number of income brackets down from fourteen to three, and the top

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<sup>160</sup> *Aluminum Associate* [online]. Available from World Wide Web: (<http://www.aluminum.org/Template.cfm?Section=20033&template=/ContentManagement/ContentDisplay.cfm&ContentID=4994>)

<sup>161</sup> *Aluminum Associate* [online]. Available from World Wide Web: (<http://www.aluminum.org/Template.cfm?Section=20033&template=/ContentManagement/ContentDisplay.cfm&ContentID=4994>)

marginal bracket went from 50% to 33%.<sup>162</sup> While this purportedly helped nationally, Pittsburgh was in such troubled economic straits by 1986 that the change in federal income tax made little difference.

The inability of federal changes to aid Pittsburgh was just one problem; another was the on-going issue with high local taxes. When businesses are looking at cities as locations where they might set up a new office,

"...in many cases Pennsylvania doesn't make it to that short list of ten or five...they get eliminated ahead of time, and why do they get eliminated? Number 1, corporate taxes....we don't even make it to the radar screen."<sup>163</sup>

Until 1994, Pittsburgh's Corporate Net Income Tax (CNI) was at its peak with a flat rate of 12.25%<sup>164</sup> of corporate income. Realizing this would become, and arguably already was, an issue with attracting and maintaining businesses in the region, Governor Casey signed into law Act 48. Among other things, Act 48 decreased the CNI for the 1994 tax year to "11.99%, with further reductions to 10.99% in 1995, 10.75% in 1996, and 9.99% in 1997 and thereafter."<sup>165</sup> This was a step in the right direction. Nevertheless, by 2001 with a CNI tax of 9.99% Pennsylvania was ranked 3<sup>rd</sup> highest out of all 50 states<sup>166</sup>. Not only was this bad for businesses currently located in Pennsylvania, and consequently Pittsburgh, but the high CNI rate discouraged other businesses from building branches, or starting up locally.

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<sup>162</sup> Darrell M. West, "Public Assessment of Tax Reform," in The Western Political Quarterly Volume 43 Number 3 (September 1990), p. 649

<sup>163</sup> John Friel, interview with Stephanie Busi and Nate Maurer, November 10, 2005.

<sup>164</sup> *Pennsylvania's and Pittsburgh's High Taxes- How to Reduce the Burden* [online]. Available from World Wide Web: (<http://www.litigation-support.com/pghtax3.htm>)

<sup>165</sup> *Pennsylvania's and Pittsburgh's High Taxes- How to Reduce the Burden* [online]. Available from World Wide Web: (<http://www.litigation-support.com/pghtax3.htm>)

<sup>166</sup> *Final Report Section 13- Reduction of Pennsylvania Corporate Net Income Tax Rate* [online] Pennsylvania Department of Revenue. Available from World Wide Web: ([http://www.revenue.state.pa.us/tax\\_reform/cwp/view.asp?a=323&q=243218&tax\\_reformNav=|4390|](http://www.revenue.state.pa.us/tax_reform/cwp/view.asp?a=323&q=243218&tax_reformNav=|4390|))

A study completed in June 2001, *A Comparative Analysis of Major State Business Taxes in Pennsylvania and Other States*, reveals many other weaknesses in the Pennsylvania, and consequently Pittsburgh tax structure. Not only is the CNI tax rate not competitive with other states, but Net Operating Loss (NOL) policy is also way behind, along with a great deal of other tax structures. The NOL policy in Pittsburgh as of 2001 (the policy was established in 1998 with a \$1 million cap, which increased in 1999 to \$2 million) was to carry forward up to \$2,000,000 in loss for up to 10 years.<sup>167</sup> At that time only three states had a cap on how much could be claimed on the NOL, and nearly 2/3 of the states had a longer period of time for which the loss could be carried forward.<sup>168</sup> The initial change to a 10 year carry forward period had actually been a change that put Pennsylvania on a level playing field with comparable state NOL policies; however, not only did most other states have a better CNI tax rate, but they also have no cap to the losses allowed to be credited under their NOL policies. Again, Pennsylvania was behind in national trends. The NOL policy is particularly important to attracting new businesses and start-ups to the region as most start-ups (primarily high-tech/biotech companies) tend to have significant losses in their first few years of operation. This policy also appears to directly conflict with some of Pennsylvania's initiatives to bring research and development, as well as biotech and other high-tech industries to the region.

One of the less problematic instances of Pennsylvania's tax law has to do with another form of corporate tax. In this case businesses and "corporations that conduct

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<sup>167</sup> 2000. *A Comparative Analysis of Major State Business Taxes Pennsylvania and Other States* [online]. Available from World Wide Web: (<http://accdpel.org/public/cfm/library/reports/RptBizTax2000.pdf>), p. 8

<sup>168</sup> 2000. *A Comparative Analysis of Major State Business Taxes Pennsylvania and Other States* [online]. Available from World Wide Web: (<http://accdpel.org/public/cfm/library/reports/RptBizTax2000.pdf>), p. 8

business must divide, or apportion, their income and assets between states for tax purposes.”<sup>169</sup> Most states use some variation on the following formula:

$$\text{Apportionment \%} = \left( \frac{\text{property in - state}}{\text{total property}} + \frac{\text{payroll in - state}}{\text{total payroll}} + \frac{\text{sales in - state}}{\text{total sales}} \right) \div 3$$

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However, recent trends show that many states are opting to double weight the in-state sales tax in an effort to take off some of the tax burden on those businesses based in state, or with a large percent of property and employees in state. Pennsylvania has taken action by, first in 1998 double weighting the sales factor,

$$\text{Apportionment \%} = \left( \frac{\text{property in - state}}{\text{total property}} + \frac{\text{payroll in - state}}{\text{total payroll}} + 2 \left( \frac{\text{sales in - state}}{\text{total sales}} \right) \right) \div 4$$

171

and then in 2000 by weighting the apportionment formula to reflect mostly on in state sales (60% sales, 20% property, 20% payroll)<sup>172</sup>. This has been done as an effort to stimulate economic development by taxing those out of state businesses which use Pennsylvanians as customers, but do not employ them, or otherwise contribute to the economy.

Another issue, one particular to Pennsylvania, is the Capital Stock and Franchise Tax (CSFT). The CSFT “is often criticized for double taxing profits already subject to the corporate income tax [CNI].”<sup>173</sup> Another criticism of the CSFT is that it takes into account the element of income, which can be volatile year to year. Most other states

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<sup>169</sup> 2000. *A Comparative Analysis of Major State Business Taxes Pennsylvania and Other States* [online]. Available from World Wide Web: (<http://accdpel.org/public/cfm/library/reports/RptBizTax2000.pdf>), p. 8

<sup>170</sup> 2000. *A Comparative Analysis of Major State Business Taxes Pennsylvania and Other States* [online]. Available from World Wide Web: (<http://accdpel.org/public/cfm/library/reports/RptBizTax2000.pdf>), p. 20

<sup>171</sup> 2000. *A Comparative Analysis of Major State Business Taxes Pennsylvania and Other States* [online]. Available from World Wide Web: (<http://accdpel.org/public/cfm/library/reports/RptBizTax2000.pdf>), p. 9

<sup>172</sup> 2000. *A Comparative Analysis of Major State Business Taxes Pennsylvania and Other States* [online]. Available from World Wide Web: (<http://accdpel.org/public/cfm/library/reports/RptBizTax2000.pdf>), p. 10

<sup>173</sup> 2000. *A Comparative Analysis of Major State Business Taxes Pennsylvania and Other States* [online]. Available from World Wide Web: (<http://accdpel.org/public/cfm/library/reports/RptBizTax2000.pdf>), p. 16

prefer to tax on net-worth, which has more long term stability. One of the more positive aspects of the CSFT is the \$125,000 exemption of capital, capital employed in manufacturing, processing, and research and development. This exemption favors all types of business from start-ups, R&D companies, and larger manufacturing corporations. Nevertheless, the tax must be kept in perspective, and looking at other states it is clear that Pennsylvania's Corporate Stock and Franchise Tax is 4 ½ times the national average.<sup>174</sup> Overall, looking at the CSFT it is clear that it needs to be cut or overhauled. Pennsylvania has passed legislation which will “eliminate it entirely by 2009”<sup>175</sup> making Pennsylvania a more hospitable environment to companies large and small.

Overall the total business tax in Pennsylvania has remained around the 4<sup>th</sup> or 5<sup>th</sup> highest in the U.S. for a number of years. The states that are above Pennsylvania in overall business tax have varying types of taxes, which allow them to export a large portion of taxes. The major contributor to Pennsylvania's high tax rating is the Capital Stock and Franchise Tax (the Corporate Net Income Tax also plays a significant role). Having noted some of the problems in Pennsylvania's tax structure the question becomes, what has been/can be done to improve the situation?

In 2004, Governor Rendell established the Pennsylvania Business Tax Reform Commission. The Commission's purpose was to evaluate the tax structure in Pennsylvania. It also made recommendations that would broaden the tax base to allow rates to be reduced, level the playing field with other states, and create a fairer business

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<sup>174</sup> 2000. *A Comparative Analysis of Major State Business Taxes Pennsylvania and Other States* [online]. Available from World Wide Web: (<http://accdpel.org/public/cfm/library/reports/RptBizTax2000.pdf>), p. 20

<sup>175</sup> 2000. *A Comparative Analysis of Major State Business Taxes Pennsylvania and Other States* [online]. Available from World Wide Web: (<http://accdpel.org/public/cfm/library/reports/RptBizTax2000.pdf>), p. 20

climate to cultivate new growth.<sup>176</sup> The Commission found that in order to ‘level the playing field’ as Governor Rendell wanted, there would have to be several changes to the current tax structure. The first finding was that the Corporate Net Income Tax (CNI) would have to be reduced. The CNI “Tax rate is not competitive with other states. The Commonwealth’s nominal tax rate of 9.99%, third highest in the nation, discourages both new economic development and the retention of existing Pennsylvania businesses.”<sup>177</sup> The Commission specifically recommended that the CNI tax rate be dropped to 7.22%.<sup>178</sup> This percent was reached, as it would drop Pennsylvania from among the highest tax rates, to the 25<sup>th</sup> highest.<sup>179</sup> The Commission would recommend a drop in the CNI tax rate to 6.99%, which would further drop Pennsylvania to the 26<sup>th</sup> highest rate in the US.<sup>180</sup> Not only would dropping the CNI tax rate to 6.99% help in national standings, but it would also make Pennsylvania the lowest among its neighboring states.

**Comparison of Pennsylvania to Neighboring States, CNI Tax Rate**

Sate	Highest Rate	Tax Rate <sup>181</sup>
New Jersey	9.00	Flat
West Virginia	9.00	Flat

<sup>176</sup> *Final Report Section 3- Executive Order* [online] Pennsylvania Department of Revenue. Available from World Wide Web:

([http://www.revenue.state.pa.us/tax\\_reform/cwp/view.asp?a=323&q=243218&tax\\_reformNav=|4390|](http://www.revenue.state.pa.us/tax_reform/cwp/view.asp?a=323&q=243218&tax_reformNav=|4390|))

<sup>177</sup> *Final Report Section 4- Final Report* [online] Pennsylvania Department of Revenue. Available from World Wide Web:

([http://www.revenue.state.pa.us/tax\\_reform/cwp/view.asp?a=323&q=243218&tax\\_reformNav=|4390|](http://www.revenue.state.pa.us/tax_reform/cwp/view.asp?a=323&q=243218&tax_reformNav=|4390|))

<sup>178</sup> *Final Report Section 4- Final Report* [online] Pennsylvania Department of Revenue. Available from World Wide Web:

([http://www.revenue.state.pa.us/tax\\_reform/cwp/view.asp?a=323&q=243218&tax\\_reformNav=|4390|](http://www.revenue.state.pa.us/tax_reform/cwp/view.asp?a=323&q=243218&tax_reformNav=|4390|))

<sup>179</sup> *Final Report Section 13- Reduction of Pennsylvania Corporate Net Income Tax Rate* [online] Pennsylvania Department of Revenue. Available from World Wide Web:

([http://www.revenue.state.pa.us/tax\\_reform/cwp/view.asp?a=323&q=243218&tax\\_reformNav=|4390|](http://www.revenue.state.pa.us/tax_reform/cwp/view.asp?a=323&q=243218&tax_reformNav=|4390|))

<sup>180</sup> *Final Report Section 13- Reduction of Pennsylvania Corporate Net Income Tax Rate* [online] Pennsylvania Department of Revenue. Available from World Wide Web:

([http://www.revenue.state.pa.us/tax\\_reform/cwp/view.asp?a=323&q=243218&tax\\_reformNav=|4390|](http://www.revenue.state.pa.us/tax_reform/cwp/view.asp?a=323&q=243218&tax_reformNav=|4390|))

<sup>181</sup> *Final Report Section 13- Reduction of Pennsylvania Corporate Net Income Tax Rate* [online] Pennsylvania Department of Revenue. Available from World Wide Web:

([http://www.revenue.state.pa.us/tax\\_reform/cwp/view.asp?a=323&q=243218&tax\\_reformNav=|4390|](http://www.revenue.state.pa.us/tax_reform/cwp/view.asp?a=323&q=243218&tax_reformNav=|4390|))

Delaware	8.70	Flat
Ohio	8.50	Graduated
New York	7.50	Flat
Maryland	7.00	Flat
<i>Pennsylvania</i>	<i>6.99</i>	<i>Flat</i>

This would send a message to current in state businesses, that Pennsylvania is ready to create a welcoming tax environment. This would also help to spur businesses to move in to Pennsylvania.

Another recommendation was a mandatory combined reporting for businesses. "Separate company reporting uses narrow tax base and allows tax-planning opportunities such as the use of passive investment companies (PICs)...to shift income outside [Pennsylvania]."<sup>182</sup> Essentially this allows businesses to lower their taxes by placing some of their money out of state bounds. Mandatory combined reporting would show the money invested and PICs and put some of the tax burden on it. Hopefully what would happen is that companies, realizing that those dollars would be taxed, would attempt to keep the money in state either by investing in Pennsylvanian companies, or by generating more business.

Furthermore,

"the Commission believes that Pennsylvania's current \$2 million annual cap on the use of net operating losses (NOL) discourages economic development and conflicts with other state policy and funding initiatives that encourage technology-based start-ups such as biotechnology companies."<sup>183</sup>

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<sup>182</sup> *Final Report Section 4- Final Report* [online] Pennsylvania Department of Revenue. Available from World Wide Web:

([http://www.revenue.state.pa.us/tax\\_reform/cwp/view.asp?a=323&q=243218&tax\\_reformNav=|4390|](http://www.revenue.state.pa.us/tax_reform/cwp/view.asp?a=323&q=243218&tax_reformNav=|4390|))

<sup>183</sup> *Final Report Section 4- Final Report* [online] Pennsylvania Department of Revenue. Available from World Wide Web:

([http://www.revenue.state.pa.us/tax\\_reform/cwp/view.asp?a=323&q=243218&tax\\_reformNav=|4390|](http://www.revenue.state.pa.us/tax_reform/cwp/view.asp?a=323&q=243218&tax_reformNav=|4390|))



As only three other states have a NOL cap, it is reasonable to assume that in taking away the cap Pennsylvania will become more competitive with most states in that businesses, and in particular start-ups, will see that losses could be regained. In addition to eliminating the NOL cap, the Commission believed that lengthening the carry forward period would also be justified.

One final recommendation of the Commission was to do away with the Capital Stock and Franchise Tax (CSFT). This recommendation was more a statement of agreement with the current conditions as it had already been passed to phase out the CSFT ending in the year 2009. The Commission suggested making the process move faster, but was satisfied with the fact that the CSFT would no longer be an issue as of 2009, which would greatly lessen the tax burden on many companies in Pennsylvania.

There was one main specification given to all of these recommendations, and that was the following; "The Commission does not intend that any of its recommendations, including combined reporting, change the current treatment of Keystone Opportunity Zones [KOZ] or Keystone Innovation Zones [KIZ]."<sup>184</sup> Both KOZ and KIZ are economic initiatives to try and jump start areas in need. More specifically, Keystone Opportunity Zones are designed to give aid to areas with high unemployment, population loss, and low income. A KOZ is established by having the local taxing jurisdictions --of the city, county, school district, or municipality-- agreeing on which underdeveloped property should be designated. Then the local municipality must pass appropriate

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<sup>184</sup> *Final Report Section 4- Final Report* [online] Pennsylvania Department of Revenue. Available from World Wide Web: ([http://www.revenue.state.pa.us/tax\\_reform/cwp/view.asp?a=323&q=243218&tax\\_reformNav=|4390|](http://www.revenue.state.pa.us/tax_reform/cwp/view.asp?a=323&q=243218&tax_reformNav=|4390|))

regulations to reduce (waive, cut, or exempt) that area from taxes for a certain amount of time<sup>185</sup>. The tax breaks go to everyone; businesses, property owners, and residents.

A Keystone Innovation Zone is somewhat different in that it focuses on communities, which have universities, or institutions of higher education, in them.

“KIZs will focus on the four key areas that entrepreneurs, new companies and mature companies need to grow and expand - capital, facilities, technology innovation and workforce. KIZs will support technology innovation through the facilitation of technology transfer – the ability to leverage research and development occurring at the universities and research institutions – and the ability to commercialize the technologies, new products and processes evolving from R&D.”<sup>186</sup>

Both KOZs and KIZs are particularly helpful in the Pittsburgh area. Not only has Pittsburgh been losing population, but its economy could do with some help. A cut in taxes and extra incentives for research make for a great boon in the areas which have been found lacking.

The Pittsburgh area has, to date, been able to participate in both the KOZ and KIZ initiatives. The Keystone Innovation Zone in Pittsburgh is based around Carnegie Mellon University and the University of Pittsburgh. They have been pledged, as is the norm for KIZs, \$250,000.<sup>187</sup> The two Universities have planned to target three specific industries; life sciences, specialty chemicals, and horizon technologies (i.e. information

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<sup>185</sup> *What is KOZ?* [online]. Keystone Opportunity Zones. Available from World Wide Web: (<http://koz.newpa.com/what.html>)

<sup>186</sup> *Program Information- Keystone Innovation Zone* [online]. Pennsylvania Department of Community and Economic Development. Available from World Wide Web: (<http://www.newpa.com/programDetail.aspx?id=56>)

<sup>187</sup> *Program Information- Keystone Innovation Zone* [online]. Pennsylvania Department of Community and Economic Development. Available from World Wide Web: (<http://www.newpa.com/programDetail.aspx?id=56>)

technology, nanotechnology, and MEMs).<sup>188</sup> The Innovation Zone actually covers the greater Oakland area and hopes to not only increase the startup rate for tech companies in the area, but also increase investment, University spinouts, angel and venture capital funding, come up with a better plan to coordinate EDOs, and increase R&D operations.<sup>189</sup> This, of course, will be done not only with the funding for the KIZ, but with support of both the Universities.

When asked to discuss groups and initiatives which brought technology-based business to the region State Senator Jane Orié spoke about KIZs;

"[The Keystone Innovation P]rogram is a cornerstone of the state's economic stimulus package, the KIZ program offers the Commonwealth's graduates an incentive to stay in Pennsylvania by creating an environment where opportunities are abundant, help is accessible and innovation is not only encouraged, but also supported and rewarded. The KIZs encourage the creation of new business, expand the research and development sector of Pennsylvania's economy and facilitate technology transfer to existing companies. (Keystone Innovation Zones are designated zones that can be established in communities that host institutions of higher education – colleges, universities, and associate degree technical schools. The zones are designed to foster innovation and create entrepreneurial opportunities.)"<sup>190</sup>

The Senator not only feels strongly about the program itself, but that it would help to retain graduates from the region thus reinforcing the base of high tech workers.

A final piece of tax structure to look at is the Pennsylvania Research and Development Tax Credit Program. This program is designed to give tax breaks to companies which have already been involved in research and development (R&D) for at

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<sup>188</sup> *Program Information- Keystone Innovation Zone* [online]. Pennsylvania Department of Community and Economic Development. Available from World Wide Web: (<http://www.newpa.com/programDetail.aspx?id=56>)

<sup>189</sup> *Program Information- Keystone Innovation Zone* [online]. Pennsylvania Department of Community and Economic Development. Available from World Wide Web: (<http://www.newpa.com/programDetail.aspx?id=56>)

<sup>190</sup> Senator Jane Orié, interview with Steph Busi and Joe Phillips via email, sent November 9, 2005 and received November 22, 2005.

least one year and have not received other grants or substantial tax breaks. The R&D Tax program does not discriminate between large and small companies, but provides the same assistance.

"Companies can receive a 10% tax credit for new R&D expense increases over a base period. The credit is applicable to the Pennsylvania Corporate Net Income tax (CNI), Capital Stock and Franchise Tax (CSFT) and Personal Income Tax (PIT). Unused credits can be carried over for up to 15 succeeding taxable years and the credit usage is limited to 50% of the tax liability in any year."<sup>191</sup>

Once again, this is showing the lengths Pennsylvania is willing to go in order to bring business, in this case R&D companies, into the region. This is particularly relevant to Pittsburgh because many of the companies the city is trying to attract fall under the category of Research and Development.

On November 2, 2005 House Bill 515 was passed by the Senate which;

"Reduce[s] the Personal Income Tax rate from the current level of 3.07 percent to 3.03 percent for 2007 and to 2.98 percent beginning January 1, 2008;

Increase[s] the Net Operating Loss cap to \$7.5 million in 2006 and to \$20 million for taxable years beginning after December 31, 2006;

Reduce[s] the Corporate Net Income (CNI) Tax rate from 9.99 percent to 9.59 percent for taxable years beginning after December 31, 2006; and,

Increase[s] the weight of the sales factor under the CNI used to apportion business income of multi-state corporations from 60 percent to 75 percent for 2006 and then to 90 percent in 2007 and thereafter."<sup>192</sup>

Overall the current tax situation discourages business, both those that are already established, and those which are looking to establish new businesses. However, with all of the tax incentives and initiatives which aid high-technology companies (as well as

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<sup>191</sup> 2003. *Pennsylvania R&D Tax Credit Deadline- September 15* [online] Available from World Wide Web: ([http://www.pennsylvaniabio.com/publicpolicy/RD\\_Tax\\_Credit\\_website.pdf](http://www.pennsylvaniabio.com/publicpolicy/RD_Tax_Credit_website.pdf)), p. 2-3

<sup>192</sup> Senator Jane Orié, interview with Steph Busi and Joe Phillips via email, sent November 9, 2005 and received November 22, 2005.

businesses in general), combined with the potential for change in the current tax structure, Pittsburgh is looking more and more welcoming to the corporate community.

Clearly Pittsburgh benefits from statewide tax reforms. In particular, Pittsburgh will benefit by the eventual cut of the Capital Stock and Franchise Tax, and cut in the Corporate Net Income Tax. Both of these tax reforms help to establish Pennsylvania, and by association Pittsburgh, as areas, which welcome new business. Also, many of the other tax reforms will help build incentive for companies to place more of their work force within state lines. The tax reforms combined with initiatives like the Keystone Innovation Zones help to spur, in particular, technology-based growth.

### **University Technology-Based Efforts**

Within the Pittsburgh technological community, the impact that the universities have is immense. For this small technology community, universities such as Carnegie Mellon University, University of Pittsburgh and University of Pittsburgh Medical Center have emerged as the central asset in regional economic development efforts around the world. The Bayh-Dole Act of 1980 enhanced the focus on universities as a source of economic development.<sup>193</sup> With this Act, universities could confer effective ownership of any technology developed by a faculty researcher under federally funded grants.<sup>194</sup> As a result, the enforcement of the Act catalyzed and fostered R&D and a new era of innovation within Pittsburgh universities. Leaders among the Pittsburgh community view the universities as fundamental building blocks for innovation around the region, especially with Carnegie Mellon's computer science department and the University of

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<sup>193</sup> Dr. Robert A. Lowe, Technology Transfer and Economic Development in Pennsylvania p. 5.

<sup>194</sup> Dr. Robert A. Lowe, Technology Transfer and Economic Development in Pennsylvania p. 5.

Pittsburgh, including UPMC, and its highly recognized healthcare services.<sup>195</sup> As Pittsburgh is making its way through a radical “high-tech” revolution, no research university wants to be left out of the region’s goal to compete globally. With these three institutions leading in their field, their efforts have collaborated and intertwined with Pittsburgh’s overall economic revitalization efforts in which connections and interactions between public and private sectors have been recognized in fueling development and competitiveness.

Duquesne University, Chatham College, Point Park University and Robert Morris University represent some of the local Pittsburgh colleges that contribute to the overall workforce of the community. Along with Carnegie Mellon, Uiveristy of Pittsburgh and UPMC, these schools are part of the city’s backbone in leveraging one of the best economic assets- universities. The local colleges focus on furthering the education and training of local residents and their future in a technology-based economy. If utilized correctly, they can all be anchors for revitalization.

### *Carnegie Mellon University*

Each university nurtures its own technology transfer office in which research and development is transformed into practical, capital feeding innovation and technology. Carnegie Mellon University opened its Technology Transfer Office in 1993 to help researchers commercialize their innovations and start new companies revolving around these technologies. At the time, there were very few places where university entrepreneurs could go for help. The office has helped to spin off about 50 companies and has produced intellectual property licensing agreements with about 65 commercial

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<sup>195</sup> David Palmer, interview with Emily Soong and Christine Filiciotto, November 16, 2005

firms.<sup>196</sup> As conditions are slowly changing in Pittsburgh, technology transfer has become a major effort pursued by Carnegie Mellon. Pittsburgh is striving to provide a friendly environment and outlet for individuals seeking to bring new concepts to market and to start new companies. More and more experienced entrepreneurs have utilized the university's resources, while maintaining ties with regional economic development organizations.

The Center for Technology Transfer (CTT) is the main hub at Carnegie Mellon for disseminating knowledge, innovations, and discoveries back to the public. Its goals include helping innovators promote new technologies in potential markets, marketing and protection of intellectual property, working with outside licensees to ensure a chance for development and sale of new products and other tasks important to commercialization. A few examples of Carnegie Mellon creations are: the Lycos search engine, a thin-film coating for ultra-high-data density computer disks used in most desktops and laptops, a telecommunications switching technology that led to the creation of over 1400 jobs at FORE Systems within seven years and a differential protein separation technique that is crucial in the drug discovery process.<sup>197</sup> In looking ahead, Carnegie Mellon has projected a few of its strong technology areas which include: data storage systems, system-on-chip circuit design, microelectromechanical systems, cybersecurity/data mining/data privacy, medical devices and instruments in information technology, and green chemistry.<sup>198</sup>

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<sup>196</sup> Bruce Gerson, "Innovation Exchange, a New Collaborative Model for Tech Transfer," Carnegie Mellon News, March 8, 2002. Available from World Wide Web: ([http://www.cmu.edu/cmnews/020308/020308\\_innovation.html](http://www.cmu.edu/cmnews/020308/020308_innovation.html))

<sup>197</sup> *Center for Technology Transfer* [online]. Pittsburgh: Carnegie Mellon University. Available from World Wide Web: (<http://www.carnegiemellonctt.com/default.aspx?EntryUID=d227285e-01cb-426b-9317-6672f6612b8c>)

<sup>198</sup> *Center for Technology Transfer* [online]. Pittsburgh: Carnegie Mellon University. Available from World Wide Web: (<http://www.carnegiemellonctt.com/default.aspx?EntryUID=d227285e-01cb-426b-9317-6672f6612b8c>)

Within the CTT, there are many roles, consisting of coaches, partners and advocates who act as managers of business development and licensing who guide the innovator and licensee through the commercialization process. These managers are responsible for evaluating disclosures, bringing together internal and external resources, market research, commercialization strategy planning, market innovations to potential licensees, negotiation of agreements and monitoring of licensee performance. It is believed that the rewards of technology transfer extend not only to the individual, but also the university and community, recognizing that partnerships between university researchers and companies can lead to new insights and applications of the work, research sponsorships and other financial grants, and job growth. Technology transfer can also drive new product applications, spur the formation of new companies, and foster regional economic development. However, most university innovations are considered “early stage” technologies, in which they do not officially become products or publicly accepted until three to five years, and sometimes even as long as ten years.<sup>199</sup>

Therefore, for any given innovation in the technology transfer process, there are five crucial steps involved. First, an innovator must submit a disclosure in which it is distributed to technical evaluators, while a Manager of Business Development and Licensing is assigned. Next, there will be an evaluation period in which assessment regarding whether or not the technology is a good candidate for commercialization will take place. The CTT will then seek out potential licensees for the innovation in terms of marketing. Fourthly, a licensing agreement must take place between the licensee company and the university. Lastly, intellectual property protection must be instilled in

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<sup>199</sup> *Center for Technology Transfer* [online]. Pittsburgh: Carnegie Mellon University. Available from World Wide Web: (<http://www.carnegiemellonctt.com/default.aspx?EntryUID=c1d55aea-95a5-4ce2-a12d543b45b672ea#HowLong>)



terms of confidentiality agreements, patents, copyrights, and public licenses. If an innovation is licensed to a company, the innovator will be able to share 50% of the net proceeds from the technology with Carnegie Mellon, while the remaining funds are used to support core university programs.<sup>200</sup>

The CTT also focuses on its entrepreneurial endeavors in which inventor-founded start-up companies are encouraged as a driving force among inventors, universities, and the region. The CTT assists start-ups by offering a wide range of services from assessments of a company's potential, working on shareholders' agreements and bylaws, business plans, identify potential candidates for company management, potential service providers, connections to potential sources of funding and incubation space. Carnegie Mellon will assist in various aspects of the start-up process and, if it holds over 10% in a company, a board seat will be taken.<sup>201</sup> Many of these in the pre-seed and seed stages may look towards certain state and regional organizations for funding. Carnegie Mellon is involved with a variety of government grant programs and economic development organizations including Innovation Works, Pittsburgh Life Sciences Greenhouse, Pittsburgh Tissue Engineering Initiative, and the Technology Collaborative.<sup>202</sup> Carnegie Mellon has been able to integrate many successful start-up ideas into the public. The following is a brief list of some of the companies founded with Carnegie Mellon technologies: Akustica, Blue Belt Technologies Inc., CA Surgica Inc., Carnegie

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<sup>200</sup> *Center for Technology Transfer* [online]. Pittsburgh: Carnegie Mellon University. Available from World Wide Web: (<http://www.carnegiemellonctt.com/default.aspx?EntryUID=1b2986c0-5f13-4fe8-b0d2-a7ba47adcf22>)

<sup>201</sup> *Center for Technology Transfer* [online]. Pittsburgh: Carnegie Mellon University. Available from World Wide Web: (<http://www.carnegiemellonctt.com/default.aspx?EntryUID=15e6ed03-4d39-4a46-a2a1-453da3089015>)

<sup>202</sup> *Center for Technology Transfer* [online]. Pittsburgh: Carnegie Mellon University. Available from World Wide Web: (<http://www.carnegiemellonctt.com/default.aspx?EntryUID=bf49bf84-64cf-4830-81d2-34c09e409d6d>)

Interactive, Carnegie Learning, Carnegie Speech, ChromoDynamics Inc., Ciespace Corporation, DesignAdvance Inc., EyeSee360, Helium Networks Inc., IC Mechanics, Plextronics, RoboMatter, and SEEGRID.<sup>203</sup> Carnegie Speech, DesignAdvance Inc., Plextronics and SEEGRID are all member companies of Innovation Works. Akustica, CA Surgica Inc., Carnegie Learning, Carnegie Speech, Helium Networks Inc., IC Mechanics and Plextronics are all member companies of the Pittsburgh Technology Council. Helium Networks Inc. and SEEGRID are also member companies of the Technology Collaborative. In the fiscal year of 2005, CTT completed 102 licenses, options and other agreements and had an overall 59% increase from the previous year.<sup>204</sup> Seven new start-up companies were also added to the list.<sup>205</sup>

### *University of Pittsburgh*

Among the Pittsburgh community, Carnegie Mellon University is not the only leading research institution. The University of Pittsburgh is dedicated to the development of education, research and public service. Playing a major role in technology transfer at the university is the Office of Technology Management (OTM). It was founded in 1996 with the vision of increasing company formation in support of university-based technologies and research. It is responsible for the protection, management and

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<sup>203</sup> *Center for Technology Transfer* [online]. Pittsburgh: Carnegie Mellon University. Available from World Wide Web: (<http://www.carnegiemellonctt.com/default.aspx?EntryUID=a2ecd7b5-73ba-4f70-bbd0-87bec035af7b>)

<sup>204</sup> *Center for Technology Transfer* [online]. Pittsburgh: Carnegie Mellon University. Available from World Wide Web: (<http://www.carnegiemellonctt.com/default.aspx?EntryUID=17b77f96-2947-4816-a004-6a8e6c373e6c>)

<sup>205</sup> *Center for Technology Transfer* [online]. Pittsburgh: Carnegie Mellon University. Available from World Wide Web: (<http://www.carnegiemellonctt.com/default.aspx?EntryUID=17b77f96-2947-4816-a004-6a8e6c373e6c>)

commercialization of intellectual property created by university faculty and students.<sup>206</sup> The OTM facilitates many of the same entities as Carnegie Mellon, for it aids in the invention commercialization process, protection through patents and copyrights, licensing of inventions, post-licensing oversight of agreement compliance, distribution of royalties and fees, and record keeping. The OTM has reported that the University of Pittsburgh conducts over \$555 million in sponsored research annually, of which \$375 million is credited to the University of Pittsburgh Medical Center,<sup>207</sup> and is in the top ten of NIH funded research institutions.<sup>208</sup> This has resulted in approximately 140 invention disclosures in research activity on an annual basis.<sup>209</sup> These disclosures are usually examined and reviewed by the OTM along with the University Technology Transfer Committee in which technical merit, market potential and patentability are all evaluated. The OTM specifically develops commercialization strategies for patent-pending technologies and a handful of non-patented technologies. Overall, approximately 75% of all University research is conducted in the health sciences.<sup>210</sup>

One of the OTM's goals is to actively seek out existing companies or play a founder role in the creation of new companies revolved around these new technologies. The OTM also assists outside companies in identifying research collaborators within the University and in negotiating sponsored research agreements. It is in this capacity that

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<sup>206</sup> *Office of Technology Management* [online]. Pittsburgh: University of Pittsburgh. Available from World Wide Web: ([http://tech-link.tt.pitt.edu/about\\_overview.html](http://tech-link.tt.pitt.edu/about_overview.html))

<sup>207</sup> *Clinical & Research Excellence* [online]. Pittsburgh: University of Pittsburgh Medical Center. Available from World Wide Web: (<http://aboutupmc.upmc.com/Clinical.htm>)

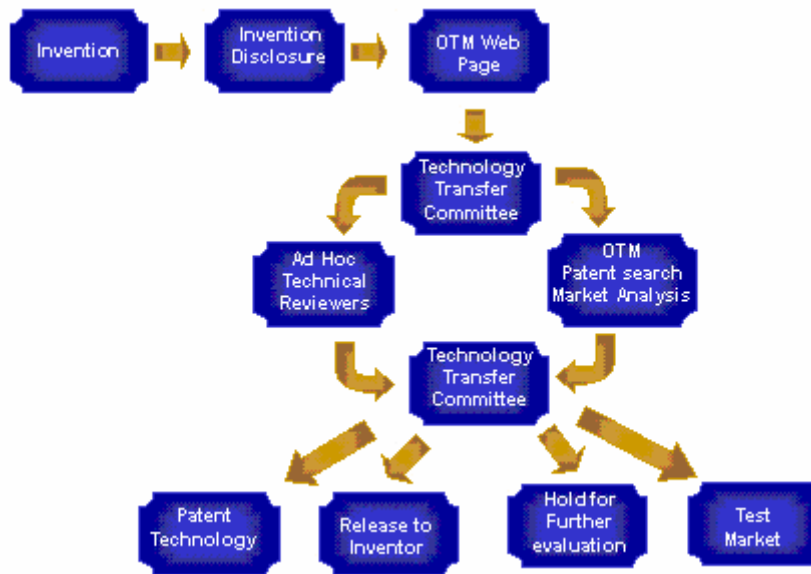
<sup>208</sup> *Office of Technology Management* [online]. Pittsburgh: University of Pittsburgh. Available from World Wide Web: ([http://tech-link.tt.pitt.edu/about\\_overview.html](http://tech-link.tt.pitt.edu/about_overview.html))

<sup>209</sup> *Office of Technology Management* [online]. Pittsburgh: University of Pittsburgh. Available from World Wide Web: ([http://tech-link.tt.pitt.edu/about\\_overview.html](http://tech-link.tt.pitt.edu/about_overview.html))

<sup>210</sup> *Office of Technology Management* [online]. Pittsburgh: University of Pittsburgh. Available from World Wide Web: ([http://tech-link.tt.pitt.edu/about\\_overview.html](http://tech-link.tt.pitt.edu/about_overview.html))

OTM serves as “the bridge between science and business” at the University of Pittsburgh.<sup>211</sup>

As documented by the Office of Technology Management website, the following diagram depicts the Invention Evaluation Process:<sup>212</sup>



The OTM is actively interested in business seeking innovative technology to expand or produce the company’s product offerings. Investors seek seed stage investment opportunities in technology-based startup companies, and entrepreneurs seek opportunities to lead the creation and operation of new enterprises. The OTM completes approximately 50-60 option and license agreements and assists in the creation of three to five new companies every year.<sup>213</sup>

The University of Pittsburgh has assisted in the development of various technology-based companies that have stemmed from the university’s innovations. A

<sup>211</sup> *Office of Technology Management* [online]. Pittsburgh: University of Pittsburgh. Available from World Wide Web: ([http://tech-link.tt.pitt.edu/about\\_overview.html](http://tech-link.tt.pitt.edu/about_overview.html))

<sup>212</sup> *Office of Technology Management* [online]. Pittsburgh: University of Pittsburgh. Available from World Wide Web: ([http://tech-link.tt.pitt.edu/about\\_overview.html](http://tech-link.tt.pitt.edu/about_overview.html))

<sup>213</sup> *Office of Technology Management* [online]. Pittsburgh: University of Pittsburgh. Available from World Wide Web: ([http://tech-link.tt.pitt.edu/industry\\_working.html](http://tech-link.tt.pitt.edu/industry_working.html))

few of these companies include Cook Biotech, Inc, Tessera Diagnostics, Inc. and ALung Technologies, Inc.<sup>214</sup> ALung Technologies is a company revolved around a membrane oxygenator technology developed by Artificial Lung Laboratory at the University of Pittsburgh and the University of Pittsburgh Medical Center's McGowan Institute of Regenerative Medicine. The technology was exclusively licensed to a Pittsburgh startup company. The company is the first to commercialize an artificial lung and this device is scheduled to be launched worldwide starting from 2006.

Along with the Office of Technology Management, the University of Pittsburgh Technology Commercialization Alliance (TCA) is another outlet for the most innovative and inspired commercial ideas at the University. Founded in 2002, TCA provides extensive entrepreneurial support, education and outreach for Pitt faculty, staff and students on the road from idea and innovation to commercialization.<sup>215</sup> TCA supports a Commercial Readiness Process program in which innovators are informed, motivated, and technically supported while bringing their concepts to market. The TCA hosts a number of periodic conferences and receptions that feature Pitt innovators and their innovations fostering collaboration among diverse departments.

Along with TCA, the University of Pittsburgh also established FirstLink, a program that moves promising first-response technologies from laboratories to the commercial market. The program was created in 2004 through a \$3.4 million federal grant.<sup>216</sup> One of its primary goals is to match technologies with companies that can

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<sup>214</sup> *Office of Technology Management* [online]. Pittsburgh: University of Pittsburgh. Available from World Wide Web: ([http://tech-link.tt.pitt.edu/industry\\_case.html](http://tech-link.tt.pitt.edu/industry_case.html))

<sup>215</sup> *Technology Commercialization Alliance* [online]. Pittsburgh: University of Pittsburgh. Available from World Wide Web: (<http://www.pitt.edu/tca/about.html>)

<sup>216</sup> Joyce Gannon, "First Line of Defense; University of Pittsburgh Program Helps Take First-Response Technologies from Lab to the Market" *Pittsburgh Post-Gazette*, October 14, 2005

commercialize them. It first identifies potential technologies and analyzes the market potential and economic viability of such products. FirstLink also assists its client companies in securing federal funding for their projects. Recent examples include at \$1 million success with Small Business Innovation Research grant awarded to Caracal Inc. and another \$1 million contract from the Department of Defense's office of Naval Research to Sage Technologies.<sup>217</sup>

Lastly, the University Research Council was established in July of 1976 as an attempt to stimulate research at the University of Pittsburgh.<sup>218</sup> A number of research projects are currently underway, including molecular motors and cellular movements, quantum computing and nano-optics. A recent highlight of a successful research effort was when it was reported that the University of Pittsburgh became the only institution in the United States to have a unique nanofabrication capability in which eight researchers in Pitt's Institute of NanoScience and Engineering (INSE) have just completed a new Raith electron beam Lithography and Nano Engineering (eLiNE) workstation.<sup>219</sup> A number of University of Pittsburgh students and faculty from various departments are scheduled for training. The eLiNE system is a new capability that has only recently become commercially available. The success of the eLiNE system can be attributed to the fact that it presents researchers with a completely new approach and outlook on nanometer-scale structures. In detail, the technology involves the creation of nanometer-

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<sup>217</sup> Gannon, "First Line of Defense; University of Pittsburgh Program Helps Take First-Response Technologies from Lab to the Market."

<sup>218</sup> *University Research Council* [online]. Pittsburgh: University of Pittsburgh. Available from World Wide Web: (<http://www.pitt.edu/~vpres/URC>)

<sup>219</sup> *Institute of NanoScience and Engineering* [online]. Pittsburgh: University of Pittsburgh. Available from World Wide Web: ([http://www.nano.pitt.edu/event.html#Pitt\\_Nanofabrication](http://www.nano.pitt.edu/event.html#Pitt_Nanofabrication))

scale structures using an electron beam that is focused to less than two nanometers.<sup>220</sup> A unique feature of this instrument is an electron beam-induced deposition and etching capability that allows metals, insulators and semiconductors to be added or removed, using the electrons as a nano-catalyst.<sup>221</sup>

*The University of Pittsburgh Medical Center (UPMC)*

Lastly, the University of Pittsburgh Medical Center (UPMC) has supported new biotechnology efforts with the aim of identifying potentially revolutionary medical technologies that will improve public health and welfare. Its affiliated companies, joint ventures and corporate sponsorships account for well over 3,000 skilled jobs in western Pennsylvania, with potential for significant growth.<sup>222</sup> UPMC's portfolio includes investments in various stages of development, assembled with the help of venture capital firms, government agencies, other academic medical and research centers and various international bioscience partners. The investments return financial benefits to western Pennsylvania, promote technologies developed by University of Pittsburgh researchers, import other new technologies to the region and fulfill a basic mission to advance medical science and patient care. UPMC has extensive biomedical expertise in the following fields: gene therapy, psychiatry, imaging technology, assistive technologies,

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<sup>220</sup> *Institute of NanoScience and Engineering* [online]. Pittsburgh: University of Pittsburgh. Available from World Wide Web: ([http://www.nano.pitt.edu/event.html#Pitt\\_Nanofabrication](http://www.nano.pitt.edu/event.html#Pitt_Nanofabrication))

<sup>221</sup> *Institute of NanoScience and Engineering* [online]. Pittsburgh: University of Pittsburgh. Available from World Wide Web: ([http://www.nano.pitt.edu/event.html#Pitt\\_Nanofabrication](http://www.nano.pitt.edu/event.html#Pitt_Nanofabrication))

<sup>222</sup> *About UPMC: Biotechnology* [online]. Pittsburgh: University of Pittsburgh Medical Center. Available from World Wide Web: (<http://aboutupmc.upmc.com/Biotechnology.htm>)

minimally invasive surgical procedures, bioengineering, medical robots, drug development, and biomedical informatics.<sup>223</sup>

Similarly, UPMC established the McGowan Institute for Regenerative Medicine in order to realize the potential of tissue engineering and other techniques aimed at repairing damaged or diseased tissues and organs.<sup>224</sup> The institution acts as a single base of operations for the University's developments in tissue engineering, cellular therapies, biosurgery and artificial and biohybrid organ devices. It is also involved with the commercial transfer of its technologies, especially related to regenerative medicine.

UPMC has a number of related companies, which include Askesis, BioTronics, D3 Advanced Radiation Planning Services, Golf Fitness Laboratory, ImPACT, Revivacor, SimMedical, Stentor and U-Pay.<sup>225</sup> Among Allegheny County, UPMC's market share is 45% and within a 29-county area, it is 25.3% of health care services.<sup>226</sup> UPMC has an annual budget that includes more than \$5 billion and more than \$6 billion in regional economic impact each year.<sup>227</sup> UPMC includes approximately 4,000 physicians in seventeen hospitals, and has created more than 100,000 jobs beyond direct employment.<sup>228</sup> The institution is credited for approximately \$375 million in National Institute of Health funding annually, ranking among the top ten recipients in the United

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<sup>223</sup> *About UPMC: Biotechnology* [online]. Pittsburgh: University of Pittsburgh Medical Center. Available from World Wide Web: (<http://aboutupmc.upmc.com/Biotechnology.htm>)

<sup>224</sup> *About UPMC: Biotechnology* [online]. Pittsburgh: University of Pittsburgh Medical Center. Available from World Wide Web: (<http://aboutupmc.upmc.com/Biotechnology.htm>)

<sup>225</sup> *About UPMC: Nurturing New Businesses* [online]. Pittsburgh: University of Pittsburgh Medical Center. Available from World Wide Web: (<http://aboutupmc.upmc.com/NurturingUPMC.htm>)

<sup>226</sup> *About UPMC: Facts & Figures* [online]. Pittsburgh: University of Pittsburgh Medical Center. Available from World Wide Web: (<http://aboutupmc.upmc.com/Facts.htm>)

<sup>227</sup> *About UPMC: Facts & Figures* [online]. Pittsburgh: University of Pittsburgh Medical Center. Available from World Wide Web: (<http://aboutupmc.upmc.com/Facts.htm>)

<sup>228</sup> *About UPMC: Facts & Figures* [online]. Pittsburgh: University of Pittsburgh Medical Center. Available from World Wide Web: (<http://aboutupmc.upmc.com/Facts.htm>)



States.<sup>229</sup> Pittsburgh Councilman Bill Peduto stated that, “The educational and medical communities are the backbone of the changing economy, and I always joke that the fact is the mills never closed they just moved; they went up the hillside and the rivers and landed in Oakland. UPMC employs over 40,000 people which are comparable to J&L in its heyday.”<sup>230</sup> In sum, UPMC hospitals and medical facilities represent the new steel mills of the twenty-first century.

Through university technology-based economic revitalization efforts in Pittsburgh, new knowledge, creativity and innovation are the key ingredients for sustainability. With the intensity of university technology transfer, there is the hope that corporations will continue to collaborate with university researchers to create dramatic breakthroughs in science, engineering and technology that will provide foundations for new businesses. Carnegie Mellon University, the University of Pittsburgh and UPMC are three institutions that have taken great strides to establish respected and unique names and titles for themselves, but have also collaborated in mutual relationships that are advancing Pittsburgh to become tomorrow’s central technology hub.

### *University Collaboration*

Carnegie Mellon University and the University of Pittsburgh each hold their own distinctive, unique abilities to provide innovation strength, helping the Pittsburgh region to become the leader in tomorrow’s world with their respective “brainpower.” However, an even greater force has been realized – the collaboration and matching of “CMU’s strengths in computer engineering and information systems with Pitt’s biomedical

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<sup>229</sup> *About UPMC: Facts & Figures* [online]. Pittsburgh: University of Pittsburgh Medical Center. Available from World Wide Web: (<http://aboutupmc.upmc.com/Facts.htm>)

<sup>230</sup> Bill Peduto, interview with Margaret Cartaya and Nate Maurer, November 7, 2005

expertise.”<sup>231</sup> Although both universities are renowned in their own distinguishing rights, it has been recognized that collaboration between the two institutions has the power to fuse and reinforce their overlapping goals. Both universities focus on connecting their innovations with the companies, entrepreneurs and investors around the region that present the possibility of transmitting innovative life in the technology-based economy of Pittsburgh. Together, the universities represent more than \$800 million in sponsored research funding<sup>232</sup>, are responsible for 414 inventions, 83 licensed technologies to private companies and helped create fifteen new companies in 2000 and 2001.<sup>233</sup>

As both institutions spearhead a new vision “hand-in-hand,” it was realized that a unifying factor was crucial for the new efforts. The unifying factor would act as a centralized force to provide stability, consistency and foundation for both sides. Carnegie Mellon President Jared Cohon and University of Pittsburgh Chancellor Mark Nordenberg appointed Don Smith as the economic development director for both universities. With this position, Smith is able to fulfill the linking role between the two institutions. Smith has described the collaborative efforts as “marrying strengths of CMU with those of Pitt.”<sup>234</sup> Smith is the vice president of economic development for the Mellon Pitt Carnegie Corporation (MPC) which was created in the 1960s to foster collaboration between Pitt and what was then called Carnegie Tech.<sup>235</sup> Presently, university technology commercialization and directing joint economic projects remain major aspects of Smith’s collaborative position.

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<sup>231</sup> “Don Smith,” University of Pittsburgh. University Times Volume 34 Number 10 (January 2002).

<sup>232</sup> Lauren Ward, “*Smith Leverages University Strengths to Drive Economic Development in Pittsburgh*,” Carnegie Mellon News, April 18, 2005.

<sup>233</sup> Rich Lord, “*Tech Transfer-Mation*,” TEQ Magazine (September 2002).

<sup>234</sup> “Don Smith,” University of Pittsburgh. University Times

<sup>235</sup> “Don Smith,” University of Pittsburgh. University Times

What makes the collaboration between the two universities so unique is the direct relationship that Don Smith holds with both university leaders. As Smith has noted before, he “has the ear of the chancellor and the president and the two provosts, so that [he] can bring concerns of existing units that are doing entrepreneurship or tech transfer or whatever, to the executive offices and also that [he] can look for opportunities for collaborative efforts among them.”<sup>236</sup> Smith has also assisted in CMU and Pitt’s efforts in the creation of various public/private partnerships such as the Pittsburgh Digital Greenhouse and the BioVenture/Life Sciences Greenhouse initiative. CUBE, Connecting Universities with Business Enterprises, represents a more recent project conducted by the two universities. The purpose of this initiative is to create solutions and channels for university resources to be flooded into the community’s overall economic state. As a representative of both universities, Smith’s involvement in these organizations strengthens university base with some of the most influential players involved in startup companies, attracting investment, and furthering the fostering process of the Pittsburgh technology-based economy.

UPMC also continues to play a critical role with the two universities. UPMC acts as a clinical care vehicle for some of the biotechnology that is developed by both research institutions. Although Smith does not have any formal role with UPMC, it is expected that a lot of joint efforts will be effectively played out with UPMC CEO Jeffrey Romoff and Scott Lammie of the UPMC Diversified and Services Group.

Smith has made it clear that university strengths will represent the region’s key competitive advantage, especially within the next ten years. The ultimate goals of these collaborative efforts are to generate more resources to grow and sustain the teaching and

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<sup>236</sup> “Don Smith,” University of Pittsburgh. University Times

research that goes on at the universities. New talent and innovation must be generated and transferred into companies and drive economic growth for the region. Smith has projected that many of the public/private organizations will relocate to the Oakland area, and is confident that the area will attract more outstanding faculty, attract and retain students, and generate an entrepreneurial, technology-based spirit that will present itself as one major reason as to why Pittsburgh is a great place to live and work. As Smith has noted, “time and persistence”<sup>237</sup> are two underlying ingredients that will be needed in the progression of economic development in Pittsburgh. With a common goal in mind, the future of the universities has come to be realized as interdependent.

### **MEDRAD, Inc.**

Privately funded organizations and universities play a huge role in Pittsburgh’s economic revitalization efforts, but calculating how successful they are is rather difficult. One potential measure of success is to examine companies who have persevered through Pittsburgh’s economic crises and now serve as a success model to other companies looking to start up or expand in the region. A city’s ability to showcase such companies enables it to secure financing for more economic revitalization initiatives which in turn will produce similar benchmark companies. One such success story is Medrad, Inc. Medrad was founded locally in 1964 by Stephen Heilman and has since become a worldwide leader in the manufacturing of medical imaging equipment and other innovative healthcare products. Even while Pittsburgh was losing hundreds of thousands of jobs during the steel industry collapse in the 70s and 80s Medrad remained in Pittsburgh and has since grown into a global corporation. In the words of current

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<sup>237</sup> Ward, “*Smith Leverages University Strengths to Drive Economic Development in Pittsburgh,*”

President and CEO, John Friel, “Medrad’s growth is proof that with committed employees and innovative products, a biotechnology company can thrive in western Pennsylvania. We expect to be here for many years to come.”<sup>238</sup>

The growth that Mr. Friel refers to is related to the recent announcement that Medrad will be building a new corporate center in the Tech 21 Research Park in Marshall Township, eighteen miles outside Pittsburgh. One of the reasons Medrad chose to expand there was the abundance of skilled and reliable workers that the region has to offer.

Additionally, Mr. Friel felt a sense of loyalty to the hard-working employees that have been with the company from the beginning and are responsible for where it is today.<sup>239</sup>

Unfortunately, outsiders do not always share the same sentiments of the region as Mr. Friel. Because of this, many companies choose to expand and start up in other cities. And why is this so often the case for Pittsburgh? Well, according to Mr. Friel, “we’re [the Pittsburgh region] viewed as hard to do business in.”<sup>240</sup> One such reason why the area garners such a bad reputation is the number of governments a company has to deal with. In Pittsburgh, not only do businesses have to worry about city and state laws (and their subsequent taxes) but they also have to concern themselves with the different counties and municipalities as well. In most states, companies only have to deal with one entity. “Another thing that we [the region] have working against us is, and it’s a real shame, but there’s a pessimistic attitude [among fellow business leaders.]”<sup>241</sup> It’s as if an infectious disease of negativity spreads from one leader to the next as they discuss the difficulties

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<sup>238</sup> John Friel, MEDRAD Corporate Center Press Conference, November 17, 2005

<sup>239</sup> John Friel, interview with Stephanie Busi and Nate Maurer, November 10, 2005

<sup>240</sup> John Friel, interview with Stephanie Busi and Nate Maurer, November 10, 2005

<sup>241</sup> John Friel, interview with Stephanie Busi and Nate Maurer, November 10, 2005

they encounter when working in the region. One such difficulty Mr. Friel encountered was the process of requesting for a proposal to the state for a site expansion:

“We put it out in April and we heard back from Pennsylvania in July. It was a disappointing response. I had some folks that were over in Ireland and we didn’t even have a proposal, we didn’t even put out a request; they came to us and were putting offers on the table, huge economic incentives. So on one hand it takes six months just for them to get back to you even though you’re saying, ‘I want to expand, and I want to create jobs.’ And on the other hand, as soon as you walk off the plane they’re saying, ‘Hey, how you doing, let me tell you what we have to offer.’”

It’s safe to say other companies face similar problems. And because of this, it’s no surprise to hear company executives complaining about the business climate of Pittsburgh. But the city of Pittsburgh does have a lot of positives attributes that should be highlighted.

Mr. Friel discussed the often-overlooked quality of life that Pittsburgh offers to employees. According to Friel, “It’s a great area, it’s a great place to live, it’s safe to raise a family and it’s culturally diverse.”<sup>242</sup> His comments are not unfounded, Pittsburgh has received high ranking over the years that give credence to the city’s high quality of life: city skyline ranks #2 in America for beauty (USA Weekend, May 2003), rated #1 for fastest commute time (Texas Transp. Inst.), rated the 17<sup>th</sup> cleanest city in the world (Wm. Mercer Consulting 2002), ranked the 3<sup>rd</sup> least expensive city in the U.S. (Site Selection Magazine, 2003), one of “America’s Most Wired Cities...and Towns,” (Yahoo! Internet Life, 2001) and Pittsburgh is home to eight hospitals ranked in top 100 in U.S. (Solucient). Furthermore, housing costs in Pittsburgh are 30% below the national average and the city is located within 500 miles of 50% of the U.S. population.<sup>243</sup>

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<sup>242</sup> John Friel, interview with Stephanie Busi and Nate Maurer, November 10, 2005

<sup>243</sup> *Living in Pittsburgh* [online]. Available from World Wide Web: (<http://www.medrad.com/careers/careers-pittsburgh.html>)

Medrad has embraced the advantages of Pittsburgh and, at the same time, overcome the city's shortcomings. Medrad boasts doubling its revenue from \$123 million in 1997 to \$254 million in 2002, making it one of the leading medical equipment manufacturers in the world. Their success showcases that it is possible for a company to rise to prominence in Pittsburgh's economic climate.

### **Seagate**

Seagate is another successful Pittsburgh case study. It is one of the few high technology companies that have recently moved to Pittsburgh. Created in 1979 and based in Scotts Valley, CA, Seagate earned its early fame by manufacturing the 5 ½" floppy disk drives for personal computers. Today, Seagate is the world's largest maker of disk drives<sup>244</sup>.

Seagate chose to come to Pittsburgh because they wanted to hire a professor at Carnegie Mellon University, Doctor Mark Kryder. Kryder started up and headed the Data Storage Systems Center (DSSC) at Carnegie Mellon University. He suggested to Seagate that if they wanted to hire him, they would need to build a research facility in Pittsburgh. When Kryder told the then Chief Technology Officer (CTO), Tom Porter, his idea, Porter was not initially receptive. The Pittsburgh Post-Gazette reported that Porter's eyebrows "Were halfway up his forehead" when Kryder initially suggested Pittsburgh. (REF)

Yet Doctor Kryder had several reasons for wanting to be in Pittsburgh. He mentioned that one reason was that Pittsburgh was a beautiful city and a great place to live. Another was that the area universities were educating fine students and he would be able to keep a few of them in Pittsburgh. Lastly, Kryder listed the DSSC and his relation

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<sup>244</sup> *Seagate* [online]. Available from World Wide Web: (<http://www.seagate.com>)

to Carnegie Mellon as his reasons for staying. “I am here because of Carnegie Mellon”<sup>245</sup>.

Convincing Tom Porter to build the facility in Pittsburgh was easier than convincing the entire city of Pittsburgh that this was a positive action. Kryder and Seagate encountered obstacles when trying to build the facility. The first was that if Seagate wanted to build a long-term research facility, they need time to do so. Temporary space was needed so that Kryder and his team of about 10 could get started. Another disadvantage was that when Seagate wanted to get office space, the deal almost fell through when it was mentioned that they needed to build a clean room. Kryder communicated to the landlords the value that a clean room would add to the building, but the owners did not believe this to be true. The landlord agreed to let Seagate build the clean room if, “It agreed to tear out the clean room once its lease expired.”<sup>246</sup> This showed a keen difference between Pittsburgh and Boston, where a landlord would have seen an increase in the value of such a property. Ultimately, the landlord allowed Seagate to build the clean room and did not tear it down when Seagate moved into a new facility.

The clean room, built at a cost borne by Seagate of \$14M, is currently without a tenant. An article in the Pittsburgh reported on the current state of the clean room. Unfortunately, the problem is that most companies were not interested in leasing the entire room, just a part of it. Currently the landlord has stated that if he cannot find a tenant, he will tear down the clean room. There are several people in various organizations that see the benefit of having the room be in use. Chief Operating Officer of the Pittsburgh Digital Greenhouse, David Ruppensberger, to gauge local and out of the

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<sup>245</sup> Mark Kryder, interview with Sean Friday and Stephanie Busi, October 27, 2005.

<sup>246</sup> Stephanie Franken, “*Top 50: Local entrepreneurs give their views on the Pittsburgh scene and what it takes to make it*,” *Pittsburgh Post-Gazette*, April 9, 2002. Available from World Wide Web: (<http://www.post-gazette.com/businessnews/20020406topentrepbiz9P9.asp>)



area interest in moving into the space. Ruppertsberger said, “We all recognize it as a resource we'd like to have in the region. If it's gone, no doubt it would be a loss to the region. If that happens, a couple of years from now we're all going to regret it.”<sup>247</sup> In the same article, Pam Golden, Pittsburgh Regional Alliance Spokeswoman agreed with Ruppertsberger. Golden says that there is a particular weakness in this sector right now meaning that the area is not fully capable of attracting companies that would use the clean room yet. These people realize that the room represents an honest effort that Pittsburgh is making to be more attractive to high technology companies. The room clearly represents an example of the limited scope of the technology industry that exists within Pittsburgh.

Today, Seagate has a 200,000 square feet research facility in the Strip District that has over 30,000 square feet of clean room space. The facility employs 150 people and 15 of the employees graduated from Carnegie Mellon. There were some obstacles along the way, but Seagate was still able to build a research facility in the city and has made a successful move. Seagate is in Pittsburgh because of Doctor Kryder and he is in the city because of Carnegie Mellon University and the critical role universities have in technology-based economic development. As successful as Doctor Kryder has been in drawing Seagate, there is work to be done. The issue of the vacant clean room is still an example of the limited scope of the technology industry that exists within Pittsburgh. The attitudes of people in Pittsburgh toward technology are changing slowly, but not fast enough to make the area more inviting to new companies. Even with these difficulties,

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<sup>247</sup> Maria Guzzo, “*South Side Clean Rroom is Gathering Dust,*” Pittsburgh Business Times, September 27, 2002. Available from World Wide Web: (<http://www.bizjournals.com/pittsburgh/stories/2002/09/30/story5.html>)

Pittsburgh still managed to attract a large company like Seagate to the area. Hopefully more companies will come.

## **Conclusion**

It is without a doubt that technology-based economic development in Pittsburgh is in its beginning stages. However, some headway has been made in the attempt to attract new businesses to the region and to encourage the growth of existing businesses. The involvement and collaboration with several world-class universities such as Carnegie Mellon University and University of Pittsburgh, has had an extremely positive affect on economic growth in general. The University of Pittsburgh Medical Center (UPMC) is an obvious asset to the region as both a center for high-quality healthcare services and R&D. The movement toward creating a new professional class of workers in Pittsburgh has been slow, but steady, and precipitated largely by the universities. The Center for Technology Transfer (CTT) at Carnegie Mellon seeks to take the research conducted at these universities and translate it into marketable ideas and products. The positive effect on TBED by private Pittsburgh-based corporations, such as Medrad and Seagate cannot be ignored. Hopefully, their continuing presence in Pittsburgh and collaboration with the universities will encourage other businesses to consider Pittsburgh as a home. The shifting tax structure in Pittsburgh is also working to create a more business-friendly environment. Overall, the region has great potential to transition from a city dominated by university-conducted research efforts, to a center for venture capital and a desirable location for start-up companies.

## **Chapter 5: Local Economic Development Organizations Promoting Growth**

### **Introduction**

While a few companies have been able to grow organically, the need for organizations to assist companies and construct paths for targeted industry growth is apparent. The Pittsburgh Technology Council, Innovation Works, Pittsburgh Life Sciences Greenhouse, and the Pittsburgh Digital Greenhouse are all major organizations who direct their energies toward helping Pittsburgh's technology sector blossom. They provide a variety of services ranging from connecting business leaders to investing resources and allocating funds for companies to prosper. Pittsburgh requires assistance to help start-up and retain businesses or the entire strategies of building a growth technology base will be undermined. The impact and success of these Pittsburgh organizations will provide an indication of Pittsburgh's prospects in the technology sector.

### **Pittsburgh High Technology Council**

In 1983, The Pittsburgh High Technology Council (PHTC) was formed several months after Governor Dick Thornburgh's Ben Franklin Partnership (BFP) took off. The PHTC was formed for many of the same reasons as the BFP - to support the growth of technology-based efforts in Pittsburgh -- though it embraced a different strategy. Rather than focusing on integration of technology into manufacturing and small business which was the purview of the BFP, the PHTC concentrated on developing a network system where members of the various fields would be able to communicate and find ways to

expand their businesses. The PHTC has experienced the beginning stages of development, especially through the rapid growth of the “roaring 90’s.” With the stock market collapse of the late 1990’s and the terrorist attacks of September 11, 2001, the PHTC is now aiming to revitalize Pittsburgh’s overall technology sector from those economic shocks.<sup>248</sup>

After naming Tim Parks as their first Executive Director, the Council immediately implemented their services to the four core principal regional networks of technology; Information Technology, Biomedical, Environmental, and Advanced Manufacturing. Participating in the Council's networks initially provided members with a variety of beneficial experiences: it provided an opportunity to create a higher profile through word-of-mouth advertising, a chance to meet their peers in their own network sector in order to promote free thinking and collaboration, and it allowed for bolstering management skills and industry expertise by attending the monthly and yearly conferences. The Council’s first Membership Directory, published in 1984, featured 140 industry and support members.<sup>249</sup>

While the Council was initially successful in fostering communication within the industry, the city’s major problem was that it was losing many of its skilled employees to other cities. An article from the June 1985 Pittsburgh Post-Gazette argues, “Okay Pittsburgh, We're losing some Pirate and Steeler Fans. Why?" and it frankly responds, "Because many electronics technology graduates go someplace else for a job.”<sup>250</sup> In 1985, twenty-eight engineers graduated from the University of Pittsburgh. Twenty-five graduates received employment opportunities after graduation, but twenty of those students relocated

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<sup>248</sup> Steven Zylstra, interview with Paul Buyanovsky, November 10, 2005.

<sup>249</sup> Pittsburgh High Technology Council [online]. Available from World Wide Web: (<http://www.pghtech.org>)

<sup>250</sup> William Stujko, “Where Are They Going?” Pittsburgh Post-Gazette, June 12, 1985.

outside of Pittsburgh after graduation.<sup>251</sup> The article argues that Pittsburgh faced two major problems in the mid-1980s. First, the University of Pittsburgh, the largest University in the city of Pittsburgh, should be graduating more than twenty-eight capable engineers. Secondly, the city of Pittsburgh desperately needed to find a way to incorporate their skilled laborers into its workforce.

The Pittsburgh High Technology Council realized that it needed to expand existing programs in order to foster education in technological fields. It also had to expand the technology sector in Pittsburgh so that the city did not lose its brainpower to other competing states. It was crucial that they simultaneously enacted these programs, otherwise, the city would continue educating its youth and losing its brainpower to technologically superior states, including California and Texas<sup>252</sup>.

The Council collaborated with Carnegie Mellon University in developing outreach programs that included prize-incentive competitions targeting high school students in the area who displayed innovative engineering ideas and displayed a proficiency in the high-technology field. At the same time, the Council provided additional incentives for non-members to join and for members to stay, including insurance coverage as well as tuition discounts.<sup>253</sup>

These two policies became effective immediately and proved to be a great success over the years. Articles from The Pittsburgh Post-Gazette and the Pittsburgh Press from 1980 show the extent of the impact the technology sector was having on the community and how drastically it was improving. Numerous optimistic titles about the growth and

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<sup>251</sup> Stujko, "Where Are They Going?"

<sup>252</sup> Pittsburgh High Technology Council [online]. Available from World Wide Web: (<http://www.pghtech.org>)

<sup>253</sup> Pittsburgh High Technology Council [online]. Available from World Wide Web: (<http://www.pghtech.org>)

expansion of the technology sector in Pittsburgh appear in these newspapers. To name just a few, the articles proclaimed, "Pittsburgh's off on a spin as high-tech firms multiply", "Oakland Rich in High-tech Firms", "City companies expecting boost in high-tech jobs", "New Firms cut teeth on tech center's aid", "Survey finds high-tech sales, jobs here booming", "High Tech firms lead job growth, study says."<sup>254</sup>

The "roaring 90's" spurred the creation of crucial initiatives by the Council, aiding Pittsburgh's technology sector to reach a new plateau. The launch of the Council's first website created a plethora of opportunities for expansion and development. The website has paved the way for the full integration of its members with the Council's staff. The site has allowed for greater amounts of communication between the various business sectors, which has led to increased collaboration. The site has also provided a much simpler route for announcements to be made by the Council and received by the members. Perhaps the most significant feature of the site is that it has become a primary access tool for employers seeking employees and vice-versa. In this regard the website has become the monster.com of the Pittsburgh technology world and has been solely responsible for linking thousands of high tech jobs<sup>255</sup>.

In addition to the website, the PHTC underwent drastic changes and improvements in the "roaring 90's." The Council moved from their isolated location in Oakland to the middle of the Pittsburgh Technology Center in Hazelwood. This change of venue helped to

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<sup>254</sup> Jeffery Fraser, "College Students Have High Tech-Hopes," Pittsburgh Press, January 18, 1985.  
Jonathan Lansner and John R. McCarty, "City companies expecting boost in high-tech jobs," Pittsburgh Press, November 15, 1984.  
David Ranii, "Pittsburgh's off on a Spin as High-Tech Firms Multiply," Pittsburgh Press, May 3, 1987.  
Barbara White Stack, "Oakland Rich in High-Tech Firms," Pittsburgh Post-Gazette, January 15, 1984.  
William H. Wylie, "New Firms Cut Teeth on Tech Center's Aid," Pittsburgh Press, February 10, 1984.  
Wendy Zellner, "High Tech Firms Lead Job Growth." Pittsburgh Post-Gazette, December 9, 1986.

<sup>255</sup> Pittsburgh High Technology Council [online]. Available from World Wide Web: (<http://www.pghtech.org>)

assimilate the Council within the community to promote membership recruitment, as well as to facilitate visits from its current members.<sup>256</sup> When the PHTC named their second-ever Executive Director Ray Christman as successor to Tim Parks in 1996, they were immediately presented with a novel and exciting idea. Christman proposed the introduction of the “Pittsburgh Technology 50 Awards” in 1996, and the Council supported it so strongly that by 1997 it became a premier event. The Tech 50 Awards honor the 50 fastest growing and most innovative and successful companies in the information technology, life sciences, and advanced manufacturing sectors; they also honor rising stars. The most prestigious award, bestowed to only one person annually, is the highly coveted “CEO of the Year”. The Tech 50 Awards provide an outlet for the public to actively become involved in making a difference. Christman’s Tech 50 Awards galvanized competition between the companies and the CEO’s and create public awareness of the technology community.<sup>257</sup>

When Christman stepped down and the new President Steven Zylstra was hired in 2000, the Council’s name was changed to the Pittsburgh Technology Council, as Zylstra felt that “High Technology” was not inclusive enough of the total technology industry<sup>11</sup>. At

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<sup>256</sup> *Council Moves* [online]. Available from World Wide Web: (<http://72.14.207.104/search?q=cache:KLN2fQ9wAPsJ:www.post-gazette.com/pg/04270/385097.stm+pittsburgh+high+tech+move+oakland+hazelwood&hl=en>)

<sup>257</sup> Pittsburgh High Technology Council [online]. Available from World Wide Web: (<http://www.pgtech.org>)

<sup>11</sup> *Pittsburgh Technology Council Celebrates 20 Years of Serving the Region* [online]. Available from World Wide Web: ([http://72.14.207.104/search?q=cache:d\\_WKoNaPsZwJ:news.pgtech.org/teq/teqstory.cfm%3Fid%3D951+christman+pittsburgh+high+tech+council&hl=en](http://72.14.207.104/search?q=cache:d_WKoNaPsZwJ:news.pgtech.org/teq/teqstory.cfm%3Fid%3D951+christman+pittsburgh+high+tech+council&hl=en))

<sup>12</sup> Steven Zylstra, interview with Paul Buyanovsky, November 10, 2005.

<sup>13</sup> Steven Zylstra, interview with Paul Buyanovsky, November 10, 2005.

<sup>14</sup> Steven Zylstra, interview with Paul Buyanovsky, November 10, 2005.

<sup>15</sup> Steven Zylstra, interview with Paul Buyanovsky, November 10, 2005.

<sup>16</sup> Steven Zylstra, interview with Paul Buyanovsky, November 10, 2005.

<sup>17</sup> Steven Zylstra, interview with Paul Buyanovsky, November 10, 2005.

this point, the Council was composed of approximately 1,800 members, but things quickly took a turn for the worse.

The bursting of the so-called stock market bubble in the late 90's-early 2000's hit New York, San Francisco and other major cities, but Pittsburgh was not immediately effected. Pittsburgh was still moving forward, companies were expanding and entrepreneurial start-ups were experiencing great success. That was, until the terrorist attacks of September 11, 2001. The national disaster hit Pittsburgh with double force as the industry felt the combined influence of the terrorist attacks coupled with the stock market collapse at the same time. Suddenly, everything the PTC had been working for over the years sank before its presence<sup>12</sup>. Larger companies began downsizing at a rapid rate, smaller companies collapsed, and even the PTC had to reduce its workforce by about half. After only a year in office, Zylstra was faced with a true crisis.

The technology industry would remain stagnant and dazed for the next year and half to two years. Pittsburgh's economy was progressing and the impact of the terrorist attacks and stock market disaster were waning. Zylstra took the initiative to rebuild his PTC back up to pre-downsize levels and fought to integrate new projects and initiatives to revitalize its condition.

Zylstra developed such programs as the Entrepreneurs Peer Network, which stimulates and strengthens professional entrepreneurial relationships and encourages collaboration, and the Enterprize Business Plan Competition, where the winner every year receives funding to start-up their new business. Thus far, the Enterprize Business Plan Competition has given away over \$70 million in funding for start-up businesses with some recent successes such as Guru.com and SmartOps. However, Pittsburgh's local government



has been very stagnant and even has programs, which deter growth and expansion.

According to Zylstra, the government structure in Allegheny County is dated, operating under a 19<sup>th</sup> Century model, where there is such an exorbitant amount of municipalities (131) that the county leads the country in this type of government fragmentation<sup>258</sup>.

Zylstra has been working to fight against the current tax structure while trying to gain support to reduce taxes to encourage business development. The PTC is strongly pushing House Bill 515, which proposes to raise the cap on Net Operating Expenses. Currently, Pennsylvania is one of only two states, New Hampshire being the other, that places a cap on net operating expenses. This means that businesses can not write off business expenses after a certain level and must pay taxes on any purchases made after the cap. This makes the area much less attractive to outside businesses and makes it even harder to survive for growing businesses<sup>13</sup>.

Zylstra feels that a major obstacle to expanding business in Pittsburgh is that the mayors are too complacent<sup>14</sup>. They do not want to step on any toes, so they refuse to fight for tax breaks and new legislation, which would limit the number of municipalities in the government<sup>15</sup>. Unfortunately there is no easy way to resolve this, as the people voting on these issues are the same people who would lose their jobs at the expense of bettering the structure.

The Council has been advocating its position to lower local, state, federal, and regulatory taxes over the last five to ten years. Thus far, the Council has been successful in eliminating the state computer sales tax as well as the state capital stock and franchise tax<sup>259</sup>. In addition, it has been successful in extending the net operating loss tax credit

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<sup>258</sup> Steven Zylstra, interview with Paul Buyanovsky, November 10, 2005.

<sup>259</sup> Steven Zylstra, interview with Paul Buyanovsky, November 10, 2005.

carry-forward period from ten to twenty years, and has helped in extending Pennsylvania's research and development tax credit until 2008<sup>260</sup>. Over the years the Council has fought to continue state funding for the Ben Franklin Technology<sup>16</sup> Development Authority (previously the Ben Franklin Partnership) as well as the Pennsylvania Technology Investment Authority, which invests heavily in technology development.<sup>17</sup>

### **Innovation Works**

While the PHTC has enjoyed 23 years in office devoid of scandals and controversy, the Ben Franklin Partnership suffered through a publicity nightmare involving a major mismanagement of federal money amounting to millions of dollars. Because of this, the Ben Franklin Partnership actually changed its name in 1999 to Innovation Works. Along with the name change, the members decided to restructure the organization.

Its new stated goal was to increase the success rate for new companies in Southwest Pennsylvania, by supplying expertise, outside resources, and investments.<sup>261</sup> Innovation Works has done this by identifying and investing in early-stage companies, which deal with the areas of hardware, robotics, manufacturing, and biotechnology.<sup>262</sup> This was seen as a necessity in a region where technological development is not a prime industry, and venture capital is limited.<sup>263</sup> Hence, Innovation Works attempts to get

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<sup>260</sup> Steven Zylstra, interview with Paul Buyanovsky, November 10, 2005

<sup>18</sup> 2005. *About Us* [online] Innovation Works. Available from World Wide Web: (<http://www.innovationworks.org/about.jsp>)

<sup>19</sup> 2005. *About Us* [online] Innovation Works. Available from World Wide Web: (<http://www.innovationworks.org/about.jsp>)

<sup>20</sup> Corilyn Shropshire, "Start-Ups Find Favor in 'Risk-Adverse' Pittsburgh," Pittsburgh Post-Gazette, August 7, 2005

involved with early-stage companies so that it can assist with long-term growth.<sup>264</sup> In addition, since these growing companies are involved in high-technology and new industries, they have the potential to contribute positively to the Pittsburgh economy with new wealth, jobs and investment.<sup>265</sup>

Innovation Works develops early-stage companies in Pittsburgh through funding and support. Their staff is made up of past successful industry executives, who specialize in software development, medical devices, product commercialization and marketing.<sup>266</sup> These same staff members select the companies Innovation Works chooses to put into their portfolio. It sees these investments as loans, not grants or handouts.<sup>267</sup> Each company that is chosen starts with an initial investment of \$100,000. After that, there is a series of additional \$100,000 investments. If the company still needs additional funding beyond the additional \$100,000 investments, there is a \$300,000 investment. In the past there had been a final tier investments called the “Equity Co-Investment.” These funds could be given at up to \$500,000. However, to be eligible for this final tier, the company had to secure at least one other cash investment from an outside source, such as venture capital or angel investors, that was equal to or greater than the amount of money the company receives from Innovation Works.<sup>268</sup> Most companies did not qualify for this stage since they could not find adequate venture capital, or private funds. Thus, last year Innovation Works stopped supplying it, which suggests Innovation Work’s inability to

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<sup>21</sup> “*Seeding Regional Growth: 1999-2004 Innovation Works*,” Innovation Works Community Report (December 2004): p. 3.

<sup>22</sup> 200.5 *Innovation Works* [online]. Available from World Wide Web: (<http://www.innovationworks.org>); “*Seeding Regional Growth: 1999-2004 Innovation Works*,” in Innovation Works Community Report (December 2004): p. 3.

<sup>23</sup> Terri Glueck, interview with Sara Lewis and Eddie Szeto, October 25, 2005.

<sup>24</sup> Dan Fitzpatrick, “*Pennsylvania Technology Center Unveils New Investment Plan, Management*,” Pittsburgh Post-Gazette, September 20, 1999.

<sup>25</sup> 2005. *Programs* [online]. Innovation Works. Available from World Wide Web: (<http://www.innovationworks.org/programs.jsp>)

grow companies or possibly that it does not assist those that require additional funding. Lastly, it could be indicative of companies not needing the resource that was being provided.

When Innovation Works was formerly known as the Ben Franklin Partnership it had a problem with companies repaying their loans.<sup>269</sup> Innovation Works has solved this issue through “heavy duty” reporting back to the state as to how their money is distributed to companies. Another change has been that all of the loans come in the form of convertible debt. This is so that Innovation Works does not need to put valuation on the company, and so the market can determine the value.<sup>270</sup> The loans are then typically paid back within three to five years with interest. However, Innovation Works is seen as “friendly money” because it looks for about a ten percent turnaround while venture capitalists typically look for thirty. And while a representative of Innovation Works sits on the board of its companies, it does not attempt to take over control of the company as the venture capitalist. Typically venture capitalists do contribute to the companies in Innovation Works’ portfolio at a rate of nine to one, but after the company has reached the higher stages of investment.

Another funding program implemented by Innovation Works is known as the Technology Adoption Grand Fund (TAG.) The TAG was first given out in 2004<sup>271</sup>, and is aimed towards advancing the competitive advantage of Southwest Pennsylvanian manufacturers by providing funding, access to universities, and other resources to aid in

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<sup>26</sup> “*Summary Report Investigation: Ben Franklin Technology Center of Western Pennsylvania,*” Section 1. Commonwealth of Pennsylvania, Department of the Auditor General of Special Investigations, March 25, 1999.

<sup>27</sup> Terri Glueck, interview with Sara Lewis and Eddie Szeto, October 25, 2005.

<sup>28</sup> “*Innovation Works, Political Leaders Unveil Technology Adoption Grant Fund to Assist Regional Manufacturers,*” Innovation Works Press Release, October 18, 2004.

product development, engineering, prototyping, and more.<sup>272</sup> It is believed that this will help modernize manufacturing in the Pittsburgh region by helping companies gain access to the newest technology. It provides funds of up to \$50,000 to manufacturers located in multiple regions of Southwest Pennsylvania. The grant requires the company to have fewer than 250 employees, match dollar-for-dollar the amount of the grant, explain how they will retain jobs and create new ones, and clarify how their project has “enterprise-wide implications.”<sup>273</sup>

Still, TAG, and the other investment programs offered by Innovation Works, is not the entire portfolio of the organization. One additional aspect is the program LifeSPAN. LifeSPAN was launched in 2004, in conjunction with Pittsburgh Life Science Greenhouse, to expand on its attempt to help more early-stage companies that focus on the life sciences. This was formed because it was believed that the Pittsburgh region has a funding gap between the research phase and the commercialization phase. And, Innovation Works seeks to support industries that Pittsburgh already has a strong basis for. LifeSPAN plans to help companies deal with this gap by implementing hands-on support, while providing guidance, finding investments, and leading them to commercial success.<sup>274</sup>

Innovation Works is continually trying to expand its involvement and investment in the technological and scientific industries of the Pittsburgh community. However, not all investors are happy with the role Innovation Works plays in the development of

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<sup>29</sup> 2005. *Technology Adoption Grant* [online]. Innovation Works. Available from World Wide Web: (<http://www.innovationworks.org/html/programs/tagf.jsp>)

<sup>30</sup> 2005. *Technology Adoption Grant* [online]. Innovation Works. Available from World Wide Web: (<http://www.innovationworks.org/html/programs/tagf.jsp>)

<sup>31</sup> “*Innovation Works, Pittsburgh Life Sciences Greenhouse Launch LifeSPAN,*” Innovation Works Press Release, March 23, 2004.

companies.<sup>275</sup> Also, the success rate of Innovation Works/ Ben Franklin is still not blatantly apparent after twenty-three years.<sup>276</sup>

Still, some companies have benefited from the Innovation Works program. One such company is DesignAdvance, Inc. The company received its first Innovation Works investment in 2004, but it was not an easy process. After winning the Pittsburgh Technology Council's EnterPrize Business Plan competition they still met skepticism at Innovation Works on how they would deliver return on investment and the various details of their business plan. Using the staff support available at Innovation Works the company was able to refocus their business plan and hone in on the presentation. Shortly after they finalized their proposal they closed a 1.25 million dollar round of financing from companies such as Spencer Trask, Compunetix and Innovation Works.<sup>277</sup> Now having launched their product in 2005, they have added nine employees and 1.45 million in financing since their first meeting with Innovation Works barely a year ago.<sup>278</sup>

Innovation Works hopes to be out of business in ten years, meaning that they hope the technology community in Pittsburgh has grown and their services are no longer needed.<sup>279</sup> But, in the meantime the publicly supported organization is attempting to help Pittsburgh grow a technology sector. It invests in things that Pittsburgh is already successful at because of the University system,<sup>280</sup> and works to support them so that they can affect the economy of Pittsburgh as a whole. Innovation Works is not a venture capital firm, but an organization that helps prepare companies by acting as experienced

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<sup>32</sup> Dr. Robert A. Lowe, interview with Sara Lewis and Sean Friday, November 1, 2005.

<sup>33</sup> Terri Glueck, interview with Sara Lewis and Eddie Szeto. October 25, 2005.

<sup>34</sup> "Seeding Regional Growth: 1999-2004 Innovation Works," Innovation Works Community Report. p. 18.

<sup>35</sup> "Seeding Regional Growth: 1999-2004 Innovation Works," Innovation Works Community Report. p. 18.

<sup>36</sup> Terri Glueck, interview with Sara Lewis and Eddie Szeto. October 25, 2005.

<sup>37</sup> Terri Glueck, interview with Sara Lewis and Eddie Szeto. October 25, 2005.

“angels” and veteran technology managers. It is a role needed for a city like Pittsburgh with a large gap between research and commercialization, and a seemingly limited supply of private investment.

### **Pittsburgh Life Sciences Greenhouse**

While making moves to develop and expand, Pittsburgh announced in the early 1990’s that it needed to become a national and international arena for the bioscience industry specifically. The city concluded that it must foster and become home to new bioscience endeavors where support would be abundant enough for a growing business environment. As a result, Pittsburgh united and collaborated with its world-renowned universities, medical centers, researchers, economic development organizations, and local and state governments. A product of such a vision is the Pittsburgh Life Sciences Greenhouse (PLSG).

Prior to the creation of the Pittsburgh Life Sciences Greenhouse, an initiative program named BioVenture was mapped as an effort to position Pittsburgh as a region that would thrive as a leading player in the Life Sciences research and innovation field. The venture was initially a project that was launched by Carnegie Mellon University President Jared Cohon and University of Pittsburgh’s Chancellor Mark Nordenberg, both co-chairs of the Pittsburgh BioVenture/Life Sciences Greenhouse Steering Committee.<sup>281</sup> The two leaders were assisted in their efforts by Don Smith, who is now the economic development director for Carnegie Mellon and the University of Pittsburgh, and the Pittsburgh Regional Alliance. Extensive community input into plan development included one-on-one interviews with more than 120 people as part of a strategic analysis;

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<sup>38</sup> Bill Flanagan, “*BioVenture/Life Sciences Greenhouse Aims to Develop Bioscience Industries*,” Carnegie Mellon News, December 5, 2001

three community sessions involving 140 people and 62 organizations spanning industry, academia, health services, service providers, economic development organizations and elected officials; and a follow-up community briefing with 80 individuals.<sup>282</sup> Numerous issues were hotly debated during this time period. One of the most important discussions centered on whether universities should concentrate directly on commercialization of scientific and technological advances or whether they should focus on improving the quality of basic science flowing from campus laboratories.

Ultimately, leaders in the BioVenture project determined that the best course of action for the initiative would be to merge the university collaboration with the Commonwealth's high-profile economic development initiative, a move that would ensure that southern Pennsylvania would play a role in the greater Pennsylvania research and development plans. During the premature stages of this BioVenture project, Governor Tom Ridge announced that the Commonwealth of Pennsylvania would allocate \$100 million in tobacco settlement funds to create three Life Sciences Greenhouses throughout Pennsylvania- Pittsburgh, Philadelphia, and central Pennsylvania. This investment represents one of the largest one-time, technology-based economic development investments in Pennsylvania history. Around the same time in 2001, it was found that sixteen states had reported using tobacco settlement funds intended for biotechnology and health research- Colorado, Connecticut, Illinois, Kansas, Louisiana, Massachusetts, Maryland, Michigan, Minnesota, Missouri, New Jersey, New Mexico,

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<sup>39</sup> *Pittsburgh BioVenture/Life Sciences Greenhouse Prospectus Fact Sheet* [online]. Pittsburgh Life Sciences Greenhouse. Available from World Wide Web: (<http://plsg.com/content.aspx?id=27420650-d83d-4359-adfc-cd5d926fec91>)



Ohio, Pennsylvania, Utah, and Wisconsin.<sup>283</sup> The three Greenhouses were instructed to be modeled after the Pittsburgh Digital Greenhouse, a nonprofit initiative founded in June of 1999, which was designed to lead Western Pennsylvania in computer chip design. Don Smith was one of the original architects of the Digital Greenhouse, a state-funded collaboration between universities, companies, and nonprofit organizations. The digital greenhouse has cultivated over twenty five businesses and also encompasses three Pennsylvania universities as well as the state government.

The three Life Sciences Greenhouses were created as an entity through the state legislation Act 77 of 2001. The primary goal of the act was to stimulate economic growth and job creation by accelerating commercialization of discoveries in the life sciences. As a stipulation of the settlement, an important emphasis was placed on improved human health.<sup>284</sup> In 2003, it was predicted that Pennsylvania's tobacco settlement fund would reach approximately \$400 million annually over a twenty-five year period.<sup>285</sup> Act 77 of 2001 allocated this annual funding into the following seven categories: (1) 30% to fund new health insurance programs (2) 19% to university and medical institute research (3) 13% to provide home and community based care for elderly residents (4) 12% for prevention of tobacco use (5) 10% for hospital reimbursement for uncompensated care (6) 8% to expand the PACE program (7) and 8% to be transferred to a State Treasury endowment.<sup>286</sup> In addition to these ongoing appropriations, Act 77 also set aside eight one-time appropriations for the full year of 2001 to 2002. Out of the eight

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<sup>40</sup> 2001. McGeary and Smith. Report on State Support for Health Research for Funding First [online]. Available from World Wide Web: (<http://www.laskerfoundation.org/ffpages/reports/mcgeary.htm>)

<sup>41</sup> *Tobacco Settlement/Act 77* [online]. Department of Health. Available from World Wide Web: (<http://www.dsf.health.state.pa.us/health/cwp/view.asp?a=186&Q=229582&healthPNavCtr=%7C>)

<sup>42</sup> Christopher Guadagnino, "Tobacco Allocation Getting Results," *Physician's News Digest* (February 2003).

<sup>43</sup> House Bill No. 2 Session of 2001 [online]. The General Assembly of Pennsylvania. Available from World Wide Web: (<http://www.legis.state.pa.us/WU01/LI/BI/BT/2001/0/HB0002P2378.HTM>)

appropriations, the \$100 million investment towards the three greenhouses was the largest initiative in comparison to other investments of \$60 million in venture capital investments, \$25.8 million to the State Treasury endowment, \$25 million to fund grants to community-based providers to improve health care for low-income individuals, and \$20 million to rural hospitals.<sup>287</sup>

As a result, the three participating Greenhouse regions each requested a significant portion of the \$100 million fund. At the time, Pittsburgh asked for \$40 million from the state, while Harrisburg was looking for \$41.9 million, and Philadelphia was seeking \$45 million.<sup>288</sup> In 2002, Governor Mark Schweiker was expected to “divvy up” the \$100 million among the three greenhouses. Along with other PLSG officials, Governor Schweiker made the final announcement on April 3, 2002 at Cellomics, Inc., a biotechnology spin-off of Carnegie Mellon that develops software and equipment for testing new drug therapies.<sup>289</sup> Despite each city’s request, each Life Sciences Greenhouse was awarded exactly one-third (\$33.33 million) of the total investment value.<sup>290</sup>

The development of the PLSG stemmed from three initial research and analysis phases. The first two phases included the Regional Life Sciences Core Competency Analysis and the Regional Technology Infrastructure Review. The first phase ended on September 1, 2001 in which the three regions were required to submit assessments of their economic core strengths and weaknesses as well as analyze market and industry

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<sup>44</sup> Guadagnino, “*Tobacco Allocation Getting Results.*”

<sup>45</sup> “*Schweiker expected to announce Life Sciences Greenhouse funding,*” Pittsburgh Business Times, April 2, 2002

<sup>46</sup> Jeff Cohen, “*Greenhouse Attracts First Company; Gets \$33.33 Million in State Funding,*” Carnegie Mellon News.

<sup>47</sup> Cohen, “*Greenhouse Attracts First Company; Gets \$33.33 Million in State Funding.*”

trends.<sup>291</sup> From this analysis, Pittsburgh's assessment focused on helping to fill a gap in seed capital as well as improving economic infrastructure for the life-sciences start-ups. The second phase involved the analysis of the investment strategies for the greenhouses, including how they would be governed and operated as well as job creation potential. The third phase was a development of strategies in which a prospectus was established to propose strategies, tactics, and actions required to accomplish the goals set by Carnegie Mellon, the University of Pittsburgh, and the Commonwealth of Pennsylvania.

The Pittsburgh Life Sciences Greenhouse states its objective as the following, "The mission of the Pittsburgh Life Sciences Greenhouse is to develop critical mass in the life sciences industry cluster in the Pittsburgh region. We define critical mass by the number of companies, the number of jobs and the supporting research infrastructure necessary to sustain long-term sustainability of the cluster."<sup>292</sup> The greenhouse's original strategy was focused around four target areas- drug discovery tools and targets, therapeutic strategies for neurological and psychiatric disorders, tissue/organ engineering and regenerative medicine, and medical devices and diagnostics. The organization has since began to broaden the original four focus areas to other existing strengths that provide larger economic potential, including diagnostics, medical robotics, nanobiotechnology, and tools and services. The PLSG has also introduced many new programs and activities such as the Collaborative Research Fund, Executives-in-Residence, Incubator, Life Sciences Network, LifeSPAN Investor Forum, Opportunity Fund, Venture Capital Outreach, Pre-Seed Fund, Seed Fund, SBIR Advance, Technology Development Fund, and the Universities Facilities Fund. Funding for these projects will

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<sup>48</sup> "Life-Sciences Greenhouse taking root in Pittsburgh," *Pittsburgh Business Times*, October 30, 2001

<sup>49</sup> *Pittsburgh Life Sciences Greenhouse* [online]. Available from World Wide Web: (<http://www.pittsburghlifesciences.com>)

come directly from the Commonwealth of Pennsylvania, the regional foundation community, industry, federal, and local governments. All together, the PLSG revealed in 2001 that it would set in motion a \$600 million, ten year business plan, which would include public and private dollars.<sup>293</sup>

In 2003, the PLSG declared that it would become a “membership organization” in which each company would pay an annual due of \$500 in order to participate in the programs listed above. The following are a few PLSG portfolio company members: Aethon, Alung Technologies, CrystalPlex, D3 Advanced Radiation Planning Services, EADevices, Fluorous Technologies, Immunetrics, KeyBay Pharma, Medrad, TissueInformatics, ViaCirq, ZelleRx, along with fifteen others.<sup>294</sup> The Collaborative Research Fund, Pre-Seed and Seed Fund, SBIR Services, and Technology Development Fund are all PLSG programs that involve providing seed capital to starting companies while helping such organizations develop their idea or product into the marketplace. The following table describes each program in more detail:

**PLSG Programs**

<b><u>Program</u></b>	<b><u>Description</u></b>
Collaborative Research Fund	Supports company-initiative projects developed between the firm and research institutions.
Pre-Seed/Seed Funds	Involves stimulating early investment in the premature stages of life science companies.
SBIR Advance	Trains entrepreneurs to better access federal funding opportunities such as the Small Business Innovative Research (SBIR) program.
Technology Development Fund	Aimed at providing financial support for verification of early stage technical inventions that have potential to be commercialized through a regional start-up company.

<sup>50</sup> Flanagan, “BioVenture/Life Sciences Greenhouse Aims to Develop Bioscience Industries.”

<sup>51</sup> Pittsburgh Life Sciences Greenhouse [online]. Available from World Wide Web: (<http://www.pittsburghlifesciences.com/content.aspx?id=benefits>)

All the projects must primarily fall within the PLSG's four main areas of technical focus. In 2003, it was reported that the first round of funding grants came about from the Greenhouse's Technology Development Fund, which awarded \$277,774, and the Collaborative Research Fund, which awarded \$499,947.<sup>295</sup>

Other PLSG programs engage the development of the people involved and the business environments of the start-ups. For example, Executives-in-Residence is a program that focuses on providing a well-trained pool of Life Sciences executives to start-up firms. It is projected that Entrepreneurial Training and Workforce Development programs will be introduced within the next four years. The Opportunity Fund and University Facilities Fund are two funds targeted specifically towards university and institutional technical progress. The Opportunity Fund provides capital for universities to attract major scientific talent, while the University Facilities Fund was designed to increase the commercialization potential of the Life Sciences technologies developed by the region's institutions. Finally, an incubator was created to assist member organizations in finding specialized laboratory and office space for their new growing companies. The PLSG currently consists of twenty-seven members and ten community members. The most recent PLSG initiative is the movement of NanoDynamics, Inc., which recently expanded from Buffalo, NY to the PLSG Incubator. Although the company is not solely involved in biotechnology, it serves the defense, energy, electronics, and engineering industries, building a diverse line of products based on nanotechnology, including everything from fuel cells for the military; antimicrobial

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<sup>52</sup> Pamela Gaynor, "Pittsburgh Life Sciences Greenhouse awards grants Group will begin charging \$500 annual dues," Pittsburgh Post-Gazette, November 19, 2003.

agents for bandages and hygiene products; and golf balls and sporting equipment.<sup>296</sup> The PLSG's decision to reach out to a company outside of biotechnology sector reflects its desire to contribute to the overall technology-based sector in Pittsburgh. PLSG has realized the necessity of intertwining technology efforts with a variety of other sectors in order to achieve greater success for the overall economic state of the city. In Pittsburgh, the company will receive \$1.1 million from the Pennsylvania Department of Community and Economic Development to create a new division in the Pittsburgh Life Sciences Greenhouse with up to 50 employees over five years.<sup>297</sup> According to the Chief Executive Officer of the company, Keith Blakey, NanoDynamics partly decided to develop a branch in Pittsburgh due to its relationship with a professor at the University of Pittsburgh. NanoDynamics has licensed some technology developed by the professor, who will continue to develop and commercialize the technology.<sup>298</sup>

In April of 2002, the PLSG attracted its first company Renal Solutions, Inc (RSI). Leaders among the Pittsburgh Life Sciences Greenhouse consider Renal Solutions to be one its first success stories.<sup>299</sup> At the time, RSI was a medical device and healthcare service company based in West Lafayette, Ind., and had decided to relocate to western Pennsylvania to take full advantage of both PLSG and Pittsburgh's growing medical, research and business assets. RSI focuses on developing a self-contained, transportable kidney dialysis product for patients with chronic kidney failure. This product enables patients to self-administer dialysis therapy in their own home without the need of a health care professional. The device improves patient's clinical outcomes and quality of life,

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<sup>53</sup> "NanoDynamics Opens Pittsburgh Office," Pittsburgh Business Times, October 5, 2005.

<sup>54</sup> Tracy Drury, "NanoDynamics Growing in Buffalo, Pittsburgh," Business First, 2005.

<sup>55</sup> Ken Krizner, "Pennsylvania Creates Infrastructure for Growth in Life Sciences" Expansion Management Magazine (September 2005).

<sup>56</sup> David Palmer, interview with Emily Soong and Christine Filiciotto, November 16, 2005

while reducing medical costs.<sup>300</sup> The company relocated to Thorn Hill Industrial Park in Warrendale, Allegheny County and is expected to employ 150 people within three years.<sup>301</sup> Scott Lammie, executive vice president of UPMC Diversified Services, which worked alongside the PLSG in attracting Renal Solutions to the region stated, "We're very gratified that Renal Solutions has chosen to relocate to the Pittsburgh region. This is an affirmation of the Pittsburgh Life Sciences Greenhouse strategy and a testament to the tremendous resources and talent that the region's life sciences industry has to offer."<sup>302</sup> All together, it is approximated that Renal Solutions has raised around \$43-48 million and currently has a product pending for FDA approval.<sup>303</sup>

In 2002, previous President and Chief Executive Officer of the Pittsburgh Life Sciences Greenhouse Dennis Yablonsky had the opportunity to participate in an international biotechnology conference for the first time. BIO 2002 was held in Toronto and showcased Pittsburgh's efforts to become a "biotech hot spot."<sup>304</sup> The greenhouse was selected by the Biotechnology Industry Organization, a Washington D.C. based trade association that was hosting the conference. During the conference, the greenhouse was able to exhibit its model for emerging biotech regions. In other significant news since the founding of the PLSG, it was reported in 2003 that the greenhouse would relocate to Bridgeside Point in the Pittsburgh Technology Center. The building holds an incubator facility which consists of 40 percent lab, 60 percent office space, and was expected to house up to 10 life sciences companies.<sup>305</sup> It was joined by Quaker BioVentures, a \$200

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<sup>57</sup> Cohen, "Greenhouse Attracts First Company; Gets \$33.33 Million in State Funding."

<sup>58</sup> Ron DaParma, "First Biotech Firm Signs on as Governor Announces Funding," Pittsburgh Tribune-Review, April 4, 2002.

<sup>59</sup> Cohen, "Greenhouse Attracts First Company; Gets \$33.33 Million in State Funding."

<sup>60</sup> David Palmer, interview with Emily Soong and Christine Filiciotto, November 16, 2005

<sup>61</sup> "Convention will highlight Pittsburgh's biotech approach," Pittsburgh Business Times, June 3, 2002.

<sup>62</sup> "Greenhouse confirms move, names interim CEO," Pittsburgh Business Times, January 27, 2003.

million Philadelphia-based life science venture capital firm, which opened up another office in the region. In the same year, it was publicized that Dorris Platika would be replacing Dennis Yablonsky, who would be leaving the PLSG for the state government.

The Pittsburgh initiative has encouraged Carnegie Mellon University and the University of Pittsburgh to overcome an antagonistic past and strive for a closer private and public relationship. Don Smith, vice president of economic development for the two universities, stated that the institutions represent more than \$800 million in sponsored research funding.<sup>306</sup> As a major player within both universities, Smith suggests that the region's economic advances will begin with Carnegie Mellon and the University of Pittsburgh. In the media, the relationship between University of Pittsburgh Chancellor Mark Nordenberg and Carnegie Mellon University President Jared Cohon has been carefully monitored. In 2001, the Pittsburgh Business Times noted that the two leaders had "gravitated to each other naturally."<sup>307</sup>

Among the biotechnology sector, there are varying views in regards to the progress of the PLSG. Some consider the PLSG a success story at its stage while some others believe that there is still a lot of work to be done. In a recent article written by Doros Platika earlier this year, he analyzed the first two years of the PLSG. From this article, it was suggested that the PLSG has tremendously impacted the local economic base in the Life Sciences. He notes that more than 100 life sciences companies have been assisted in the Pittsburgh region, while the PLSG has invested in more than eighteen companies that have raised a total of approximately \$70 million.<sup>308</sup> In 2004, its training

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<sup>63</sup> Lauren Ward, "Smith Leverages University Strengths to Drive Economic Development in Pittsburgh."

<sup>64</sup> Maria Guzzo, "Biotech Partnership will test Bond between Nordenberg, Cohon," *Pittsburgh Business Times*, December 21, 2001.

<sup>65</sup> Doros Platika, "A drive toward innovation," *Pittsburgh Post-Gazette*, March 22, 2005.



program had accounted for more than \$4 million in federal Small Business Innovative Research grants to the Pittsburgh area.<sup>309</sup> In collaboration with other local institutions, the Greenhouse has attracted nearly \$2.5 million from the U.S. Department of Labor to retrain 400 workers for jobs in the life sciences.<sup>310</sup> The Greenhouse has helped create a life sciences angel investor network by teaming up with the state-sponsored Innovation Works. The PLSG has also helped renovate or build more than 400,000 square feet of research space, while assisting Carnegie Mellon University and the University of Pittsburgh to attract exceptional faculty who are innovating technologies that have the potential to change the world. The incubator is at 100 percent of capacity and is housing 16 organizations and companies.<sup>311</sup> The Greenhouse's direct investment and services programs have brought in more than \$200 million in private money and other sources to leverage the state investment by 10 to 1.<sup>312</sup> During 2005, three major conferences were held in Pittsburgh, which helped boost local businesses. The conferences included the Convergence 2005 Drug/Device Summit this month and the Pennsylvania Business of Nanotechnology conference in April.<sup>313</sup>

On the other hand, during the recent BIO 2005 conference held earlier this year, it was reported that Pittsburgh's efforts were not on par with the efforts made by other biotech regions such as Philadelphia. Despite almost \$1 billion in federal research funds going to the Pittsburgh region, the area is still far from reaching the goal of "life sciences hub."<sup>314</sup> This notion is justified with the argument that the PLSG is fairly new and has

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<sup>66</sup> Platika, "A drive toward innovation."

<sup>67</sup> Platika, "A drive toward innovation."

<sup>68</sup> Platika, "A drive toward innovation."

<sup>69</sup> Platika, "A drive toward innovation."

<sup>70</sup> Platika, "A drive toward innovation."

<sup>71</sup> Corilyn Shropshire, "Biotech conference shows Pittsburgh still lags in life sciences," *Pittsburgh Post-Gazette*, June 26, 2005.

only coordinated its efforts in recent years, while Philadelphia has had a major head start in its history of pharmaceutical research and development. In addition, the amount of funding and talent that is flourishing in the Pittsburgh area it is still considered low in comparison to other major biotech areas. In a recent study that was released at the BIO 2005 conference, a number of regions were ranked in accordance to their booming life sciences industries; however, Pittsburgh was not included on the list.

Currently, the PLSG believes that the Pittsburgh environment has the ability to leverage its strengths and has the potential to fulfill a niche in the market in which it can perform well. For example, no region has put a strong stake in the fields of nanotechnology or tissue engineering. For this reason, it is possible for a region like Pittsburgh to position itself in these areas for the advancement of the city.<sup>315</sup> PLSG has also recently developed a strategy to create a nascent pharmaceutical cluster in Pittsburgh, even though the city has never had a presence in this sector before.

According to Doros Platika, the PLSG is trying to convince national pharmaceutical companies to “donate” unused intellectual property to the organization, which it can use to start a medium-sized firm. The payoff for the company is that if the newly formed entity develops a marketable drug they will receive considerable royalties. For Pittsburgh, this newly formed entity can serve as a hub around which smaller research-based firms can develop. According to Platika, the PLSG was debating whether to patent this strategy as a business method, but decided against it earlier this year.<sup>316</sup>

Recently, the PLSG sought an initiative to raise a \$150 million venture fund, as part of its plan to jump start growth in the local biotechnology sector. The fund would be

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<sup>72</sup> David Palmer, interview with Emily Soong and Christine Filiciotto, November 16, 2005.

<sup>73</sup> Doros Platika, personal communication with Jay Aronson, December 2004.

managed by the Greenhouse as a means of creating new companies around the Pittsburgh community that would hopefully attract more venture capital to its efforts. The fund is part of a previously announced plan, named the Evergreen Initiative, which is designed to cultivate an anchor biotech company in Pittsburgh that would attract and spin off other companies. The new fund's aim would be to create fifteen new companies in the area over the next decade. Many of the companies would come from licensing agreements the Greenhouse hopes to form with large pharmaceutical or medical device companies looking for outside investment to help move their later-stage technologies forward.

It is clear that the development of high-technology in Pittsburgh is still in its early stages and is slowly gaining momentum. The final concern regards the question of whether or not such biotech initiatives will work and exactly how much time it will take in order to realize the long-term impacts. Once this is answered, it will be possible to determine whether or not the investment was worthwhile. It is undeniable that the Greenhouse has catalyzed the region's life sciences sector, while linking researchers and entrepreneurs together in order to improve funding and market opportunities. With the Greenhouse's various partners in the community, such as universities, researchers, state and other greenhouse initiatives, hospitals, economic development organizations, trade associations, and local and state governments, the PLSG may not be an over-night wonder story, but it is certainly setting the Pittsburgh community in the right direction.

### **The Technology Collaborative**

Yet another attempt to cultivate technology in Pittsburgh was the product of a merger of the Pittsburgh Digital Greenhouse and The Robotics Foundry, which today has

become The Technology Collaborative (TTC.). The TTC is another direct example of a Pittsburgh collaborative aimed to help technology grow. This non-profit state-funded organization has grown out of a desire to expand industry in Pittsburgh to include a newer, more technology-based economy. Today, it focuses mostly on research in the robotics, advanced electronics and cyber security fields. From the creation of the PDG in June 1999, to its existence today (circa January 1, 2005) as the TTC, the organization has undeniably had an impact on the Pittsburgh region, gaining its share of both supporters and critics. Whether The Technology Collaborative has been a successful endeavor is a highly debatable topic that can be examined from multiple perspectives.

In the late 1990's, Governor Tom Ridge spearheaded what was then known as "Project Renaissance." This was an economic revitalization plan that would target areas with high unemployment in the commonwealth, such as southwestern Pennsylvania, and sought to introduce a more technology-based economy to the region. The project existed for approximately a year and a half before Governor Ridge finalized the creation of the Pittsburgh Digital Greenhouse in June 1999. The Pennsylvania Department of Community and Economic Development provided \$3.2 million for this project in 1999 and another \$10 million was committed by Governor Ridge by 2002. As of 2003, the Pittsburgh Digital Greenhouse had been the recipient of approximately \$17 million in state funding.<sup>317</sup> The original plan provided for an organization that would exist as a public/private partnership, with funding and support also coming from three international corporations: Sony Corporation, Oki Electric Industry and Cadence Design Systems. The Greenhouse also depended on the research capabilities and talent from three world-class

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<sup>74</sup> Pittsburgh Digital Greenhouse Established [online]. Available from World Wide Web: (<http://www.ssti.org/Digest/1999/072399.htm#Pittsburgh%20Digital%20Greenhouse%20Established>)

Pennsylvania universities: Carnegie Mellon University, University of Pittsburgh and Pennsylvania State University.

At the time of the PDG's formation, the technology sector was going through a huge shift prompted by the so-called crash of the dot-com industry. In the post-PC era of computing, there was a greater emphasis on nanotechnology and the development of system-on-a-chip (SoC) technology. This became the focal point for the Pittsburgh Digital Greenhouse. Governor Ridge said, "The next boom market in technology will be smart consumer products that impact our lives in ways we can't imagine. This technology will help us make the products we use today faster, cheaper and better tomorrow...we want to grow these products in Pennsylvania. That's what the Pittsburgh Digital Greenhouse is designed to do."<sup>75</sup> The original goal of the project involved the collaboration on behalf of several competing companies in order to come up with better ideas more quickly. Governor Ridge considered a Uniform Trade Secrets Act so the companies could legally share their ideas. However, upon its creation, Governor Tom Ridge and the Pittsburgh Digital Greenhouse board decided to move away from ideas generated by established, international corporations and more toward developing a technology-based economy in Pittsburgh by attracting start-up companies to the area.

The Technology Collaborative is a conglomeration of the Pittsburgh Digital Greenhouse and the Robotics Foundry. These two organizations merged in January 2005 due to overlapping goals in robotics, advanced electronics and cyber security. The President of the Pittsburgh Digital Greenhouse, David Ruppertsberger, is now the President of The Technology Collaborative. The former President of the Robotics

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<sup>75</sup> "Gov. Ridge Plants Seeds for 'Pittsburgh Digital Greenhouse' to Make Southwest PA the Leader in 21<sup>st</sup> Century Technology," *PR Newswire*, June 9, 1999.

Foundry, William Thomasmeyer, is the current Vice President of the National Center for Defense Robotics. Although the merger has occurred too recently to really assess whether or not it has been successful, there are several logical reasons for why both organizations agreed to combine forces. As mentioned earlier, the Pittsburgh Digital Greenhouse depends mostly on state funding, whereas the Robotics Foundry was a federally funded organization affiliated with National Center for Defense Robotics (NCDR). This provides for an even larger budget for the newly formed Technology Collaborative. It comes down to making sense for two organizations that are both looking to expand Pittsburgh's economy in the technology arena to streamline their efforts. The mission statement of The Technology Collaborative is "to boost Pennsylvania's technology-based economy and create a 'business friendly' environment to attract new companies to the region, helping local companies grow and foster start-ups."<sup>319</sup> It basically follows the prerogatives of the Pittsburgh Digital Greenhouse, seeking greater economic development in the technology sector. TTC currently has about 50 principal members including companies such as Seagate Technology, Cadence, OKI, Sony and IBM.

There have been some important achievements that have come out of the creation of these two organizations. "The Greenhouse helped boost the number of chip design companies in the region to 35, including a dozen that were either formed or opened shop here, putting Pittsburgh on the map in the world of semiconductors."<sup>320</sup> It is without a doubt that the PDG and TTC have helped encourage start-up companies to settle in Pittsburgh. The university involvement has also attracted talented professionals and

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<sup>76</sup> *The Technology Collaborative* [online]. Available from World Wide Web: (<http://www.techcollaborative.org/>)

<sup>77</sup> Corilynn Shropshire, "Pittsburgh-area Technology-oriented Organizations to Merge in January," *Knight Ridder Tribune Business Times*, Dec 17, 2004.

faculty from all over the world to Pittsburgh. It is also important to note that this instance it is a two-way street- the creation of the PDG has also positively affected the three Pennsylvania universities that are affiliated with the organization. Through the efforts of the PDG, all three universities involved now offer a master's degree in advanced chip design. The most notable accomplishment of the TTC has definitely been the encouragement of collaboration between universities and high-technology start-ups. However, because it is a new organization, it is not known whether or not the TTC will be successful enough to retain the talent base that it has brought to Pittsburgh.

There is, however, an entirely different angle to the issue of the state and federal governments funding research and development organizations like the PDG. When looking at the statistics, the reality is that the Pittsburgh Digital Greenhouse has not even come close to the original goals laid out by Governor Tom Ridge in the late 1990's. Ridge had predicted that the PDG would create 1,500 new jobs in the first three years of its existence. Although it was on track, or even doing better, for what was expected for the first two years (661 jobs were created by the PDG by the summer of 2001), the growth of the organization suddenly slowed down, almost coming to a complete halt in 2002. As of late 2004, the Pittsburgh Digital Greenhouse had created just 600 jobs, not even half of what Ridge had expected by the year 2002. What this shows is the inability of the organization to sustain growth. It is unrealistic to think that it would continue to grow as quickly as it did in its first two years, but it should not be losing employees after the first two years either. To many, this seems to signify failure, especially considering the amount of money that was poured into the project.

Although the Commonwealth of Pennsylvania is currently sponsoring many projects seeking to revitalize Southwestern Pennsylvania's economy by introducing more high-technology industries to the region, many still doubt whether there is even a place in Pittsburgh for high-tech companies. This begs the question: Is TTC really doing anything for Pittsburgh? For a city that has historically been very blue-collar, it makes sense that it will take more than five years to make a shift to a high-tech based economy, especially since there is not enough talent in the region to support it.

This argument is supported by an article in *The Wall Street Journal* commenting on the "Skills Gap" that exists in Pennsylvania. According to Kris Maher, "workers in a free-market economy should have plenty of incentive to remain competitive in the labor market by getting a good education and acquiring strong skills. But for some reason that is not happening enough—especially in heavily industrialized states like Pennsylvania that have relied on manufacturing jobs that don't require a high level of education."<sup>321</sup> The article goes on to state that among the 50 states, Pennsylvania ranks 46<sup>th</sup> in the percentage of its labor force with education levels beyond high school. There are state and federally funded organizations that are helping to retrain these displaced workers, but they have been largely unsuccessful. Organizations like TTC ignore this issue completely in their quest to entirely turn over a new leaf. Their work to foster an environment for biotech start-up companies in Pittsburgh is definitely not targeting this issue. However, TTC might help instill the value of higher education in future generations of Pittsburghers.

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<sup>78</sup> Kris Maher, "Labor Pains: Closing the Skills Gap," Wall Street Journal, November 22, 2004.



After examining the history of the PDG, its successes, its failures and the possible future of the TTC, many questions come to mind. Although TTC claims to be bringing a considerable amount of nationwide and international talent to Pittsburgh, will this really help the city as a whole? It is a possibility that this will succeed only to create small pockets of wealth concentrated around the university-sphere that fails to reach into the communities? And will the chip-design programs (that the PDG helped to create) graduate young people that plan to stay in Pittsburgh and form start-up companies, or will they follow everyone else to Boston or the Silicon Valley?

These are important questions that Pittsburghers cannot afford to brush aside. They are very difficult to answer because the effort to introduce high-technology industry to Pittsburgh is so recent compared to the period of time it existed as a manufacturing center. However, we can only hope that a few of the original goals set out by Governor Tom Ridge for the PDG are eventually reached. It seems that the newly formed Technology Collaborative is setting its goals more realistically than the Pittsburgh Digital Greenhouse did when it was first created in 1999. Some would see this as a sign of the PDG's past failures, but it might also be a sign that the project is maturing and coming into its own as a true collaboration of two note-worthy efforts.

## **Conclusion**

Pittsburgh is slowly being recognized as a place that is making its way into the high technology arena and moving away from the old steel mill worker image of the past. The former CTO of Seagate technologies Tom Porter even admitted that he still believed it was the rust belt city of decades before. But when Porter came to the city in 2002, for

the first time in years, he was impressed by the progression the city has made towards high technology. The PDG, Innovation Works, PLSG and PHTC are all working together to achieve the same goal: to make Pittsburgh a more welcoming environment for technology-based economic growth. In time, Pittsburgh will be that kind of place. Even with the odds stacked against the success of Pittsburgh (a declining population, especially of recent college graduates, the city's former blue-collar image and companies leaving the area) Pittsburgh is still in a position to take advantage of the city's unique assets . The success stories of the area high technology companies have shown us that there are several positives of doing business in Pittsburgh. Pittsburgh has the opportunity over the next few years to continue attracting high technology companies that will benefit the city.

## **Chapter 6: General Working Conditions & Racial Disparities in Pittsburgh**

### **Introduction**

So far the report has provided a survey of Pittsburgh's history, explored regional and statewide development, and has looked at economic development on a policy level. This chapter moves to an in depth examination of the impact of high-technology economic development on issues of race, class, and gender in Pittsburgh. Dr. Leon Haley, of the University of Pittsburgh, suggested that Pittsburgh is a tough town and, "there's something good about saying we're a tough town, we're a tough folks here, we love our sports and we're rough and tumble – we don't take no stuff."<sup>322</sup> This quality is a product of the history of the city and continues to effect the economic and general development of Pittsburgh both directly and indirectly.

This chapter will explore how Pittsburghers benefit from TBED, their ability to get jobs, living conditions, education, and annual salary. Without looking at such data, it would be hard to properly evaluate the effects of economic development initiatives. We will also examine why people have decided to come to, or leave, Pittsburgh. This is important with respect to how economic development over the past few decades impacted peoples' lives (both native Pittsburghers, and newcomers). For a few particular cases, the choices individuals make about living in Pittsburgh are linked to job opportunities, perceptions of the city, and other issues discussed within this chapter.

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<sup>322</sup> Haley, Leon, interview with Jimmy Song and Joe Trevithick, November 4, 2005.

Finally, we will examine one neighborhood in Pittsburgh, the South Side, which is attempting to balance economic growth with the needs of the existing community. Our analysis of their economic development strategy is presented at the end of this section.

### **How Economic Development Affects Pittsburghers**

A major issue that comes to light when looking at technology-based economic development in Pittsburgh is how this development affects the standard of living in and around the city. Understanding the employment trends and looking at wages is critical. Also, disparities between the White community and the African American community, as well as between the upper and lower classes have come to light. Disparity in employment and wages between the communities has been expanded to include certain associated issues, such as education at the primary school and secondary levels.

Pittsburgh has experienced a certain level of economic stagnation, which has been noted specifically in its overall employment growth. Pittsburgh maintained employment growth from 0-1.9% during 1990, but it fell off to negative growth in 1991 lasting until 1992. Even when it brought its employment rate back up in 1993, it never exceeded 0-1.9%. The levels stayed almost constant even through 1999, a period during which most states experienced more extensive positive growth. Before employment growth petered off in 1999, Pennsylvania was lumped together with Ohio, Michigan, and West Virginia, as being unable to generate employment growth above 2%. It has also been noted that, “throughout the 1990s, Middle Atlantic States (New Jersey, New York, and

Pennsylvania) had smaller employment change rates than did most other states.”<sup>323</sup> This is in stark contrast to the fact that Pittsburgh was second in employment growth among the nation’s top fifty largest cities from 1987 until 1992.<sup>324</sup>

Pittsburgh has also maintained relatively low unemployment numbers in the past. In 1990, Pittsburgh’s unemployment rate was 5.4%<sup>325</sup>, while the national unemployment rate was 5.7%.<sup>326</sup> It would generally appear that Pittsburgh has more of an issue creating new jobs and new job markets than it does filling them. Some have claimed that the perceived labor shortage is not all it seems and has led to poor investment in the local economy. Dr. Leon Haley, Director of Public and Urban Affairs at the Graduate School of Public and International Affairs at the University of Pittsburgh, and former head of the Pittsburgh Urban League, has said there is a need to, “[f]ind a way to pool those jobs and to where they may be marketed outside of Pennsylvania, to attract the people, immigrants primarily to the Pittsburgh area.”<sup>327</sup> This is not an uncommon sentiment when talking to people about ways to create growth in the Pittsburgh economy.

This would also seem to correspond with various funds ear-marked by Governor Dick Thornburgh during the 1980s. In documents from 1980, it can be seen that the Governor’s office increased funding for the Pennsylvania Industrial Development Authority to \$18 million, \$7 million for additional training programs, \$1.1 million to the

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<sup>323</sup> Patricia Aleman, Edna Biederman, James Grounds, Douglas K. Himes, Guy Podgornik, and Harriet G. Weinstein, “*Regional Economic Patterns in the United States, 1990-1999*,” in US Department of Labor Bureau of Labor Statistics, July 2001. Available from World Wide Web: (<http://www.bls.gov/opub/mapbook/home.htm#Preface>)

<sup>324</sup> Aleman, Biederman, Grounds, Himes, Podgornik, and Weinstein, “*Regional Economic Patterns in the United States, 1990-1999*.”

<sup>325</sup> “*Household Data Annual Averages, Employment status of the civilian noninstitutional population 16 years and over by sex, 1971 to date*,” in US Department of Labor, Bureau of Labor Statistics, October 4, 2005. Available from World Wide Web: (<ftp://ftp.bls.gov/pub/special.requests/lf/aat2.txt>)

<sup>326</sup> *Unemployment Rate 16+* [online]. Available from World Wide Web: (<http://data.bls.gov/cgi-bin/surveymost?gp+42>)

<sup>327</sup> Haley, Leon, interview with Jimmy Song and Joe Trevithick, November 4, 2005.

Pennsylvania Employable Program (designed to help qualifying persons find jobs), and \$2.25 million to boost state tourism, claimed to be the, “largest single provider of jobs for minorities, women, and youths.”<sup>328</sup> This indicates that developing industry and training programs and then finding people to fill these jobs were high on the agenda, even twenty-five years ago. The push for tourism is also interesting, because it appears that this could have been promoting job growth in Pennsylvania as a whole.

However, while job growth may have been promoted, it appears that the kind of job growth does not translate into higher annual salaries, despite high average wages. For the 1.08 million people employed in the Pittsburgh area, the mean hourly wage is \$16.85, but more shockingly the mean annual salary is \$35,050.<sup>329</sup> Fully 74% of adults employed in the Pittsburgh area work in jobs that pay under \$20 per hour, which often translates to annual salaries under \$40,000 a year.<sup>330</sup> This can be explained by what appears to be a general lack of full time employment. The mean working hours for both private industry in Pittsburgh and those working for the state and local governments was under 40 hours per week; 36 and 36.3 hours respectively.<sup>331</sup> This was up from 2003, where both mean

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<sup>328</sup> *Blacks, 1979-1982*, Press Release from the Governor’s Office, October 7, 1980. Archival Collection of Dick Thornburgh, 1932-(ongoing), AIS 98:30. Series 233, Sub-Series 13. This archival collection containing this text is located at the Archives Service Center, University of Pittsburgh. Available from World Wide Web: (<http://digital.library.pitt.edu/cgi-bin/t/text/text-idx?idno=AIS9830.11.26.0029;view=toc;c=thornreports>)

<sup>329</sup> 2004. Metropolitan Area Occupational Employment and Wage Estimates, Pittsburgh, PA [online] ; 2005. US Department of Labor, Bureau of Labor Statistics [online]. Available from World Wide Web: ([http://www.bls.gov/oes/current/oes\\_6280.htm](http://www.bls.gov/oes/current/oes_6280.htm))

<sup>330</sup> 2004. Metropolitan Area Occupational Employment and Wage Estimates, Pittsburgh, PA [online] ; 2005. US Department of Labor, Bureau of Labor Statistics [online]. Available from World Wide Web: ([http://www.bls.gov/oes/current/oes\\_6280.htm](http://www.bls.gov/oes/current/oes_6280.htm)) Generated from the data provided there. 802,680 employed persons working in job classes where the mean hourly salary is under \$20/hour, out of a total of 1,081,690 employed persons.

<sup>331</sup> 2004. *NC BL 09/00/2005 Table: Pittsburgh, PA, Bulletin 3130-06* [online]. US Department of Labor, Bureau of Labor Statistics. Available from World Wide Web: (<http://www.bls.gov/ncs/ocs/sp/ncbl0743.txt>)

hours were less than 35 hours per week.<sup>332</sup> A full-time working week is generally considered to be 40 hours or above. In 2001 just over half (51.9%) of black males employed were employed full time, and less than half (47%) of black women were employed full time. The white community did not fair significantly better, with only 59.1% and 47.6% of white men and women workers employed full time respectively.<sup>333</sup>

Interestingly enough when compared to cities like New York and Boston, the mean working hours for private industry are not wholly dissimilar, and in fact Boston has a lower mean hours worked per week, under 34 hours.<sup>334</sup> More importantly, however, is the fact that for Boston and New York the mean annual salaries across the board are \$48,230 and \$49,000 respectively. This can be directly related to the fact that in New York City for example, only around 51% of the population is employed in jobs with mean hourly wages under \$20 per hour.<sup>335</sup>

Despite the number of initiatives in the city aimed at high-technology discussed in earlier chapters, it would appear that these jobs are elusive for the vast majority, for reasons of education primarily, and the majority of workers in the city do not benefit directly from such initiatives. According to the Bureau of Labor Statistics, the number of people employed in Pittsburgh in, “Computer and Mathematical Science Occupations,”

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<sup>332</sup> 2003. *NC BL 09/00/2004 Table: Pittsburgh, PA, Bulletin 3125-05* [online]. US Department of Labor, Bureau of Labor Statistics. Available from World Wide Web: (<http://www.bls.gov/ncs/ocs/sp/ncbl0650.txt>)

<sup>333</sup> Dr. Ralph L. Bangs, Christine M. Anthou, Shannon Huges, and Chris Shorter, “*Black-White Benchmarks for the City of Pittsburgh*,” University Center for Social and Urban Research, 2004

<sup>334</sup> 2004. *NC BL 06/00/2005 Table: Boston-Worcester-Lawrence, MA-NH-ME-CT, Bulletin 3125-66* [online]. US Department of Labor, Bureau of Labor Statistics. Available from World Wide Web: (<http://www.bls.gov/ncs/ocs/sp/ncbl0714.txt>)

<sup>335</sup> 2004 Metropolitan Area Occupational Employment and Wage Estimates, New York, NY [online]. Available from World Wide Web: ([http://www.bls.gov/oes/current/oes\\_5600.htm](http://www.bls.gov/oes/current/oes_5600.htm)); generated from the date provided there. 2,029,730 employed persons working in job classes (excluding farm based labor) where the mean hourly salary is under \$20/hour, out of a total of 3,978,760 employed persons.

“Architecture and Engineering Occupations,” and, “Life, Physical, and Social Science Occupations,” remains under a 100,000 people.<sup>336</sup>

These trends burden Pittsburgh’s minority community, which is predominantly African American. Pittsburgh has a number of Black/White disparities in both unemployment and wages. With regards to unemployment, in the early 1990s Pittsburgh had the, “[f]ifth highest disparity between black and white unemployment rates for males age 16-19 (32%) and the second highest for female rates (29%),” as well as, “[t]hird highest disparity between black and white unemployment rates for males age 25-54 (13%) and the fourth highest for female rates (9.9%).” These comparisons were made between 50 large US cities with the defining parameters being, “at least 3% black population, less than 50% Hispanic population, and less than 3% military employment.”<sup>337</sup> Per-capita increases in personal income in the black community were only half what they were for whites, and in 1990 Pittsburgh had the, “[f]ourth highest disparity between black and white persons age 18-64 in poverty,” at 21.1%.<sup>338</sup> By 2004, Pittsburgh still had the seventh highest poverty rate for African Americans and the fifth highest for whites, among major US cities.<sup>339</sup>

There is also the matter of full-time employment that has been mentioned earlier in this section. Dr. Leon Haley also noted this as a significant issue facing the African American community in Pittsburgh. During an interview he said:

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<sup>336</sup> 2004 BLS: Metropolitan Area Occupational Employment and Wage Estimates, Pittsburgh [online]. US Department of Labor, Bureau of Labor Statistics. Available from World Wide Web:

([http://www.bls.gov/oes/current/oes\\_6280.htm](http://www.bls.gov/oes/current/oes_6280.htm)); 52,400 people according to the data provided

<sup>337</sup> Dr. Ralph L Bangs and Dr. Jyun Hyun Hong, “*Benchmarks Special Report*,” University Center for Social and Urban Research, 1995

<sup>338</sup> Bangs and Hong, “*Benchmarks Special Report*.”

<sup>339</sup> Bangs and Hong, “*Benchmarks Special Report*.”



"For example you guys may not go into these neighborhoods, but all you have to do is drive into some of these inner city neighborhoods and you see there's too much idleness. There [are] absolutely too many men, particularly African American men walking the streets mid-day, like now [the interview started at 9:30 AM], in the Hill District, Westside, and Homewood. That is not a good, [not] a sign of health. So inner city revitalization, making our neighborhoods grow and prosper, and provide opportunities either there or outside of there seems to be very critical to Pittsburgh."<sup>340</sup>

This statement matches the statistics stated earlier, and is assuredly not a sign of a community's economic health, as Dr. Haley notes.

Education and job training have been implicated on many occasions as reasons for disparities in employment and annual salary. This is consistent with various schools of thought that the job growth in Pittsburgh has been targeted too much at high-technology and jobs requiring advanced education. This suggests that those in the city without the requisite skills would be left out of technology-based economic growth. In Pittsburgh during the early 1990s "the percentage of white residents of Pittsburgh age 25-59 with a four-year college degree or higher (30.1%) was three times the percentage of black residents (10.1%)," though the African American population according to the 1990 Census was roughly a tenth of the size of the white community in all of Allegheny County.<sup>341</sup> While this data was specifically targeted at a gap between the African American and White communities, it does show that the vast majority of people in Pittsburgh between the ages of 25 and 29 do not have a four year degree or higher.

This is not to suggest that this number has not been growing. Between 1990 and 2000, the number of males over 25 with bachelor's degrees or higher in the black community (in Pittsburgh) climbed 1.9-2.4%, while in the white community it grew to 4.1-5.7%. Among women, the increases during the period are much more pronounced

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<sup>340</sup> Haley, Leon, interview with Jimmy Song and Joe Trevithick, November 4, 2005.

<sup>341</sup> Bangs and Hong, "*Benchmarks Special Report.*"

with women in the black community over 25 with bachelor's degrees or higher rising some 42-43%, while in the white community the increase was 11-35%.<sup>342</sup>

Unfortunately, this does not immediately translate into a definite "brain gain." In a study done at the University of Pittsburgh in 2001, it was found that "stayers" and "leavers" in terms of graduates of colleges in the city formed distinctly different demographics.

"Stayers tend to be female, married, with children, Duquesne graduates, white, American citizens, and holders of MS or MBA degrees....[while] leavers tended to be male, CMU graduates, single, minority, foreign nationals, and holders of BS degrees."<sup>343</sup>

The study appears to imply that the people best equipped to assist in the development of high technology in the city (newly graduated students in sciences and engineering) are exactly the kind of people who are leaving.

Education, specifically in terms of Pittsburgh's African American community is also something that warrants investigation. Building off the issue of those leaving Pittsburgh with an advanced degree, a study done at the University of Pittsburgh concluded that, "[r]estrictive recruitment and selection criteria that narrow the pool of candidates present senior executives of other organizations, such as CEOs, vice presidents, chairmen, who are not as likely to be racial/ethnic minorities and women."<sup>344</sup> Whether or not this is a product of a much smaller number of qualified individuals or not, Dr. Leon Haley alludes to this himself in saying:

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<sup>342</sup> Bangs, Anthou, Huges, and Shorter, "*Highlights of the Black-White Benchmark Reports.*"

<sup>343</sup> Dr. Susan B. Hansen and Leonard Higgins. "Career and Location Decisions: Recent Pittsburgh Area University Graduates," University of Pittsburgh, 2001. p. iv

<sup>344</sup> Dr. Ralph L. Bangs and Christine M. Anthou, "African American and Women Board Members in the Pittsburgh Region," University Center for Social and Urban Research, 2001; Produced for The Building One Economy Committee Funded by The Pittsburgh Foundation and The Richard King Mellon Foundation

"I don't think we, African-Americans, go out and say... 'Come to Pittsburgh, it's a great place.' I've heard Atlantans say that. 'Why don't you move down here?' I've heard people in Florida and Charlotte say, 'Things are happening, why don't you come down here?' I don't think African-Americans in Pittsburgh would be marketers for Pittsburgh to say, 'Come here, boy, there's really some great opportunities for you here. There's a growth area, lots of opportunity.' They would not say that."<sup>345</sup>

This, in Dr. Haley's mind, was linked to a certain perception of racism among African Americans in Pittsburgh, and he went on to say that, "it hurts, it still hurts,"<sup>346</sup> in terms of getting people to stay, move from other places, and contribute to the economic development. This sentiment is consistent with reports that suggest that Pittsburgh's minority community is still weak in terms of higher education. The new incorporated city/county was 24<sup>th</sup> lowest among cities, and 12<sup>th</sup> lowest among metro areas/counties for African American men above the age of twenty-five with a bachelor's degree or above at 12-14%. It was 22<sup>nd</sup> and 10<sup>th</sup> lowest respectively when it came to African American women as well at 13%.<sup>347</sup>

However, in terms of local education, Dr. Haley has great faith in Pittsburgh's primary and secondary education system. He challenges the idea that Pittsburgh is rooted in a history that poorly prepares people for higher education by saying,

"For the purpose of going on to advanced education. I think public schools in the system got a bad rep... Not everyone was going to go to college in the '40s and '50s and '60s, not everybody really needs to go to college today. So I think schools in Pittsburgh did what I think public schools in general in this country have done and that is to prepare different kinds of individuals for different careers."<sup>348</sup>

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<sup>345</sup> Haley, Leon, interview with Jimmy Song and Joe Trevithick, October 28, 2005.

<sup>346</sup> Haley, Leon, interview with Jimmy Song and Joe Trevithick, October 28, 2005.

<sup>347</sup> Bangs, Anthon, Huges, and Shorter, "*Highlights of the Black-White Benchmark Reports.*"

<sup>348</sup> Haley, Leon, interview with Jimmy Song and Joe Trevithick, November 4, 2005.

According to him, schools have been preparing kids with the potential to go on to higher education since the 1950's.<sup>349</sup>

One can see from the data and first person accounts that there have been a number of basic factors impairing job growth resulting in stagnation of growth in employment. From this one can conclude that getting jobs for those with lesser skills or education is important to Pittsburgh's growth. Also, there is something to be said about the inability to retain those with the skills necessary to work the high-tech sector in the city. Education, especially higher education, seems to be irrevocably linked to job growth in these sectors.

### **Local Workforce Lacks Skills to Staff High-Tech Companies**

In October 2002, the Pennsylvania Labor Department issued a report stating that nearly 350,000 workers in Pennsylvania were unemployed.<sup>350</sup> At the same time the Pennsylvania Department of Community and Economic Development, a state controlled agency whose mission is to attract and retain businesses, stated that 24% of businesses in the state cannot find enough qualified workers.<sup>351</sup> The disparity and mismatch can be explained by what economists call a 'skills gap'. Executives and owners in the business refuse to hire individuals that do not have the proper training and background. This has led to alarming labor shortage in Southwestern Pennsylvania and in turn has heavy repercussions on the economy of the region. In order to better comprehend the effects of the skills gap, we must first understand the history of the job market in Southwestern Pennsylvania.

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<sup>349</sup> Haley, Leon, interview with Jimmy Song and Joe Trevithick, November 4, 2005.

<sup>350</sup> Pennsylvania Workforce Investment Board, 1999-2001

<sup>351</sup> Pennsylvania Workforce Investment Board, 1999-2001

The Decline of Big Steel led to a massive recession during the 1980s. During this time, Southwestern Pennsylvania struggled to regain ground in the economy. In order to revitalize the economy, policy makers focused on supporting manufacturing and service sector jobs. Unfortunately, the big push for service sector and manufacturing jobs did not increase the amount of jobs or aid the economy of Southwestern Pennsylvania. Instead in the 1990s, politicians turned to a new sector that they believed would assist with job creation and growth. Throughout the 1990s, policy makers focused on bringing back the economy of Southwestern Pennsylvania by supporting High-Tech jobs; initiatives of this type are referred to as Technology-based Economic Development (TBED). TBED was a good ground base to revitalize the economy of Southwestern Pennsylvania. But because most individuals grew up during the labor intensive era, or the era of Big Steel, many locals lack the education and skills needed to successfully benefit from TBED.

During the 1990s, Pittsburgh began to recognize the lost opportunities in Southwestern Pennsylvania. Between 1970 and 1990, Southwestern Pennsylvania experienced the largest percent loss, approximately 54%, in manufacturing jobs of any major region in the nation.<sup>352</sup> Between 1990 and 1993, Southwestern Pennsylvania lost 12,100 full time manufacturing jobs (see Appendix A, Figure 1). The loss in manufacturing jobs caused policy makers to shift their focus to high-technology opportunities that they could cultivate or bring into Southwestern Pennsylvania.

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<sup>352</sup> “*Working Together Consortium and Pittsburgh Regional Alliance,*” in *Working Together to Connect Workers to the Jobs of the Future*, ed. Mark A Nordenberg (1998), p. 7.

The 1993 Merhabian White Paper recognized that Pittsburgh needed to abandon their manufacturing roots and embrace a “post-industrial” economy.<sup>353</sup> The White Paper recognized that full-time Manufacturing jobs were declining at a significant rate. In order to prevent this, Robert Merhabian, former president of Carnegie Mellon University, outlined four basic strategies: first, he called for the improvement of the downtown area, second, he suggested building new infrastructure to increase communication and transportation, third, Merhabian wanted to create new organizations and collations to retain population, and fourth, he called for the support of new-technology industries through creation of venture capital pools and transferring of technologies from university to industry. The Working Together Consortium was created to actualize Merhabian’s objectives; the overarching goal of the Working Together Consortium was to create 100,000 jobs by January 2000.

Early in the process, policy makers recognized the importance of educating individuals about the opportunities, and to provide them with the skill sets needed to be able to participate in High-Tech Industry. They outlined a plan to stimulate job growth in Southwestern Pennsylvania. In order to do so, they needed to educate the individuals in the labor and management market. In this, the policy makers wrote:

"In order to achieve a level of management/labor cooperation that enables implementation of modern, continuous improvement work environments, they maintain that the region must ensure that its workforce and its managers – in both union and non-unions settings – are capable of embracing and implementing high-performance manufacturing strategies."<sup>354</sup>

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<sup>353</sup> “Carnegie Mellon University Center For Economic Development and White Paper Committee of the Allegheny Conference on Community Development,” in Toward A Shared Economics Vision For Pittsburgh and Southwestern Pennsylvania, ed. Robert Merhabian (1993), p. 5.

<sup>354</sup> “Center for Economic Development,” Carnegie Mellon University; “Connelly Center,” Duquesne University’s; “Making the Grade: Assessing the Climate for Retaining and Expanding Manufacturing Businesses in the Greater Pittsburgh Region,” Price Waterhouse LLP, September 1994, p. 42.

Policy makers recognized the importance of basic skill sets and relationships with the high-tech industries they were looking to bring in; to the manufacturing industries they were looking to improve upon.

In 1996, the American Association of Community Colleges found that there was a steep decline in the number of unskilled jobs, jobs that required a high school diploma or less. In 1950, positions of this type accounted for approximately 60% of the opportunities that were available in the United States. However, by the year 2000, they predicted that the “job market” share by unskilled positions would shrink to approximately 15%.<sup>355</sup> This same pattern can be observed in Southwestern Pennsylvania.

In 1998, the Regional Workforce Development Initiative Oversight Committee of the Working Together Consortium and the Pittsburgh Regional Alliance published a joint report on the progress and obstacles of the Consortium. In their report they stated, “[i]f we want this region’s economy to grow and thrive, then it is essential that we invest in workforce quality.”<sup>356</sup> Through this, they loosely outlined potential technical sectors to focus on and how to go about educating individuals to obtain jobs in those sectors.

Southwestern Pennsylvania’s market for human capital is driven by employers’ demands for prepared and capable workers. While there are some workers that can directly meet the needs of the regions employers, many High-Tech firms require much training prior to job placement. Unfortunately, Southwestern Pennsylvania’s human capital has two problems with it: first, the workforce is aging and shrinking, and second,

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<sup>355</sup> “*Working Together Consortium and Pittsburgh Regional Alliance*,” in *Working Together to Connect Workers to the Jobs of the Future*, ed. Mark A Nordenberg (1998), p. 2.

<sup>356</sup> “*Working Together Consortium and Pittsburgh Regional Alliance*,” in *Working Together to Connect Workers to the Jobs of the Future*, ed. Mark A Nordenberg (1998), p. 3.

the workforce quality is poor because of the lack of basic skills.<sup>357</sup> It is because of these problems that Southwestern Pennsylvania lacks a strong labor force and economic base.

Southwestern Pennsylvania is constantly struggling to keep its population within its borders. The population has been steadily decreasing since the 1950s. Within the last quarter century, the population decreased by over 200,000 (see Appendix A, Figure 2). At the same time, the population ages 65 and older have been increasing and is projected to increase more by 2010. This means that the labor pool for Southwestern Pennsylvania has been shrinking at an alarming rate since at least the 1970s.

Southwestern Pennsylvania has one of the largest numbers of educational resources and training programs in the nation. There are four community colleges located in Allegheny, Beaver, Butler and Westmoreland Counties, providing the workforce approximately 135,000 trained adults a year.<sup>358</sup> Furthermore, there are over 70 private proprietary schools in Southwestern Pennsylvania. Moreover, the Working Together Consortium notes, “the area’s many colleges and universities offer technical, bachelors, masters and doctoral degrees, as well as executive education programs.”<sup>359</sup> Southwestern Pennsylvania has a strong hold in educational programs.

Despite the population loss in the region, employers do not seem to be bothered by these findings. In fact, because of the area’s strong academic training programs, employers rated Southwestern Pennsylvania as comparable to competitor regions in terms

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<sup>357</sup> “*Working Together Consortium and Pittsburgh Regional Alliance*,” in *Working Together to Connect Workers to the Jobs of the Future*, ed. Mark A Nordenberg (1998), p. 8.

<sup>358</sup> “*Working Together Consortium and Pittsburgh Regional Alliance*,” in *Working Together to Connect Workers to the Jobs of the Future*, ed. Mark A Nordenberg (1998), p. 8.

<sup>359</sup> “*Working Together Consortium and Pittsburgh Regional Alliance*,” in *Working Together to Connect Workers to the Jobs of the Future*, ed. Mark A Nordenberg (1998), p. 8.



of employee productivity, trainability and availability.<sup>360</sup> However, at the same time these same firms felt that their employees had a lack of basic skills. Dr. Kent Rogers reported that one-in-five firms would provide basic skills training onsite due to deficiencies in basic skills.<sup>361</sup>

These findings were supported by Carnegie Mellon University's Center for Economic Development. The study found that almost 40% of small and medium sized businesses noted that their new hires with high school diplomas had less than adequate skill levels. They reported, specifically in the Greater Pittsburgh Area, "[t]hese companies frequently cited the lack of basic skills, especially math and writing."<sup>362</sup>

In the more recent years, Educational Achievement has improved according to the Regional Economic Revitalization Index for Southwestern Pennsylvania 2000. Over time, the region's fifth graders have steadily improved their reading performance. However, results on math performance are extremely mixed.<sup>363</sup> Opportunities to take Advanced Placement courses and tests have expanded for public schools in Southwestern Pennsylvania. In addition, students are being introduced to computer technology and the internet more readily and at an earlier age.<sup>364</sup> These measures are important because these younger students are the largest source of Southwestern Pennsylvania's future workforce. As technology and education improves, students will be more readily able to handle the influx of high-technology jobs.

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<sup>360</sup> "A Marketing Strategy and Action Plan to Accelerate Economic growth in Southwestern Pennsylvania," McKinsey & Company, November 1997.

<sup>361</sup> "Working Together Consortium and Pittsburgh Regional Alliance," in Working Together to Connect Workers to the Jobs of the Future, ed. Mark A Nordenberg (1998), p. 6.

<sup>362</sup> "Regional Economic Revitalization Index," The Center for Economic Development, H. John Heinz III School of Public Policy and Management, Carnegie Mellon University, May 1998.

<sup>363</sup> "Working Together Consortium," in The Regional Economic Revitalization Index For Southwestern Pennsylvania – 2000, ed. (2001), p. 52.

<sup>364</sup> "Working Together Consortium," in The Regional Economic Revitalization Index For Southwestern Pennsylvania – 2000, ed. (2001), p. 52.

Similarly, groups outside of academia are focusing on teaching children about High-Tech industrial growth. The Pittsburgh Technology Council has implemented the Technology Literacy Initiative. This objective of this program is to break the stagnation and encourage students to learn about and become interested in the rapid movement of technology<sup>365</sup>. Groups are trying to educate students on the growing High-Tech industry to prepare them for the job market.

Despite the fact that there is an inherent “skills gap” in Southwestern Pennsylvania, the government and other organizations are working to instruct basic skills required by employers. The effects of this education will not be seen until the next generation of students move into the job market. And even though there is large focus on High-Technology education for students, we must not forget that manufacturing is still the main component of business in Pittsburgh, representing approximately 45% of all business in the area. Steven Zylstra, President of the Pittsburgh Technology Council comments, “It is essential to educate students on manufacturing and to keep students in the area to implement better and more efficient ways of manufacturing.”<sup>366</sup>

### **Attaining & Retaining Skilled Workers**

One issue that Pittsburgh has been dealing with for almost two decades is how to retain its work force, not only those in manufacturing and in service jobs, but also those that would be considered skilled workers. A study published in 2001, *Career and location decisions: Recent Pittsburgh area university graduates*, looks into the city's

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<sup>365</sup> Steven Zylstra, interview with Paul Buyanovsky, November 10, 2005.

<sup>366</sup> Steven Zylstra, interview with Paul Buyanovsky, November 10, 2005.

"brain drain"<sup>367</sup>, meaning the loss of skilled workers, as well as why Pittsburgh is having difficulty attracting workers (particularly graduates from local universities). The study focuses in on Duquesne University, the University of Pittsburgh, and Carnegie Mellon University graduates.

Almost half of the interviewed graduates, who were employed, work in the Pittsburgh area, and many more had found their first job in the area. Perhaps even more intriguing is that fully 1/3<sup>368</sup> of graduates who grew up outside the Pittsburgh area have decided to stay and work. Native Pittsburghers are more likely than non-natives to stay in the Pittsburgh region, which is why the previous statistic is so remarkable. The question now becomes, who continues to leave, why aren't more people attracted to the region, and how can the region become more attractive to them?

Many graduates tend not to look for jobs in the Pittsburgh area simply because of the low salaries associated with the region. While it is true that Pittsburgh is not an expensive city to live in, many students want more. Those graduates who leave tend to disproportionately be in the scientific and technological fields.<sup>369</sup> As mentioned earlier, the study classifies graduates into two groups, Stayers and Leavers.<sup>370</sup> But why do these types of people decide to stay or leave? According to the study most graduates, regardless of the university they attended, base their decisions primarily on job opportunities or family considerations (is there family in the area? etc.). A secondary

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<sup>367</sup> Dr. Susan B. Hansen, "*Career and location decisions: Recent Pittsburgh area university graduates*," Graduate School of Public and International Affairs, University of Pittsburgh, September 2001, p. i.

<sup>368</sup> Dr. Susan B. Hansen, "*Career and location decisions: Recent Pittsburgh area university graduates*," p. i.

<sup>369</sup> Dr. Susan B. Hansen, "*Career and location decisions: Recent Pittsburgh area university graduates*," p. i.

<sup>370</sup> Dr. Susan B. Hansen, "*Career and location decisions: Recent Pittsburgh area university graduates*," p. iv.

consideration is the amenities offered; "climate, geography, cultural diversity, and leisure activities."<sup>371</sup>

It has been suggested in a Study at the University of Pittsburgh by Dr. Susan Hansen that some ways to get graduates to stay in the region would be to:

- “ \*Stress affordable housing and living costs...
- \*Pay more attention to minority concerns...[such as the] lack of cultural or ethnic diversity
- \*Improve the quality and visibility of amenities appealing to young professionals...
- \*Communicate the positive trends in Pittsburgh's economy...
- \*Increase the number of internships available...<sup>372</sup>

The latest statistics show the retention for local university graduates has been good, it would be prudent to encourage even more to stay. This might happen organically as more companies set up in the region, and more jobs are available. However, it never hurts to be on the proactive side trying to attract more skilled workers and graduates to the area.<sup>373</sup>

For more detailed statistics please refer to Appendix A, figures 3 through 8.

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<sup>371</sup> Dr. Susan B. Hansen, “*Career and location decisions: Recent Pittsburgh area university graduates,*” p. ii.

<sup>372</sup> Dr. Susan B. Hansen, “*Career and location decisions: Recent Pittsburgh area university graduates,*” p. ii.

<sup>373</sup> For more data on Pittsburgh graduates please refer to Appendix B, figures 1 through 6.

## Chapter 7: Population and Gentrification

Allegheny County is comprised of 1.25 million people, and about 26% of the total population resides within Pittsburgh (334,563).<sup>374</sup> In 2002, the county received 12.4% of the federal grants and funds that were allocated to Pennsylvania. This funding totaled \$10,616,712,000. Relating to that, the percentage of persons with bachelor's degrees in the county is around 28%, which is roughly 6 points higher than the state average, with the city of Pittsburgh hovering only 4 points higher than the state average. The average per capita income is \$22,491 in Allegheny County, nearly \$2000 higher than the state income; however, Pittsburgh's average income per capita is approximately \$2000 lower than the state average.

As we shall see in this chapter, job growth in the technology sector does not uniformly impact all neighborhoods and populations equally. Jay French, the Director of Special Projects (with a focus on biotechnology in Pittsburgh) for US Senator Santorum, attributes the development in blighted areas for business to the extremely low rents. However, this development increases land value, and encourages more development it sometimes makes the same area unaffordable for the current residents. If Pittsburgh finds a way to balance development across various neighborhoods, and balance biotechnology development with increases in private sector activity and production and manufacturing, Pittsburgh will be able to grow in a way that benefits current residents and people moving into the city. Permanent, stable, and consistent economic growth (the benefits residents and people moving to Pittsburgh) is prohibited by many factors unrelated to expenses

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<sup>374</sup> The U.S. Census Bureau, 2000.

(especially federal funding) meant to attract (bio)tech – most having to do with creating a business friendly environment through tax reform and zoning reform.

Other factors he believes are important are making neighborhoods convenient for daytime workers and employees, residents, and patrons of the various businesses in the area. One of the ways to do this is to improve the aging infrastructure (especially transportation), redevelop Brownfield properties, and to make sure that all neighborhoods have a supermarket and are multi-functional (residential, retail/commercial and business oriented).<sup>375</sup> Porter also suggests that attracting and retaining younger, well-educated individuals to the area will be an important measure to grow the technology industry and the cities overall economy. With this he mentions that retail, restaurant and service/consumer businesses may be an important part of developing an image that attracts these individuals<sup>376</sup>. These developments can also help in creating a balance with young professionals/researches, etc, to young skilled workers, educated in technical schools/ career development schools such at ITT Technical Institute, to ensure a growing production technology center<sup>377</sup>.

## **Gentrification**

In a recent discussion with this class, former Pennsylvania Governor Dick Thornburgh, ranked *gentrification* as one of the main three measures of the success of technology development in Pittsburgh, along with job development and company development. He argued that an overall increase in city prosperity brought about through

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<sup>375</sup> Jay French, interview with Erica Nurnberg,

<sup>376</sup> Michael E. Porter, “*Clusters of Innovation Initiative*,” Pittsburgh Council on Competitiveness. (Washington D.C., 2002) p. 43.

<sup>377</sup> Michael E. Porter, “*Clusters of Innovation Initiative*,” Pittsburgh Council on Competitiveness. (Washington D.C., 2002) p. 43.

the high technology economy would benefit the entire community, even those people who do not have high-paying jobs in the sector.<sup>378</sup>

Gentrification is a general term for the “clean up” of a community or neighborhood as well as its general increase of prosperity. The physical process of gentrification normally includes the physical clean up and repairs of current buildings and brownfields, the refitting or demolition of vacant buildings and residences as well as the building and development on vacant lots. Often, the arrival of wealthier people in an existing urban neighborhood is one of the main catalysts for this development, as is an increase in businesses that provide jobs in fields that the highly educated would be main participants. In recent years, the increases of wealthy persons involved in gentrification within Pittsburgh stem out of the fields of technology, health care and higher education.

The “new money” in Pittsburgh has triggered a surge in development and an increase in rents and property values and has had a great impact of on many neighborhoods’ character and culture. Neighborhoods mostly effected by increasing property values, rents and new residential development include South Side, Oakland, Shady Side, East Liberty, and Lawrenceville. Development in Oakland, Shady Side and even Squirrel Hill has been slow but constant and sustainable. This development has been attributed strictly to location of Carnegie Mellon University and The University of Pittsburgh and UPMC. The Oakland area is a convenient place to put new businesses that serve the college and medical community and is increasingly becoming the homes of young medical professionals, and medical technicians coming out of vocational and technical schools whom have a desire to live among their peers. Due to increasing development of technology in the areas directly surrounding the University and the

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<sup>378</sup> Governor Richard Thornburgh, History and Policy Project Class Discussion, December 1, 2005.

continued expansion of UPMC, there has been an increase in the number of small restaurants and small markets extending past Forbes Avenue, all the way to Boulevard of the Allies. Within a 1 mile radius of the center of Oakland (the 15213 area code), between Centre Avenue and Blvd. of the Allies, South of the Train Tracks and North of Kirkpatrick Street, there are currently 101 restaurants that Serve the college, medical and health care communities.<sup>379</sup>

Shady Side on the other hand is seen as a community that attracts recent college graduates from middle and upper class backgrounds that desire to live in a more “urban” and “cultured” setting, as well as University professors and administrators that desire to within walking distance of the Universities.

To the middle class, gentrification is overwhelmingly considered a positive change. It is often the root of reduced crime, the cause of new investment in buildings and infrastructure, and increased economic activity. However, the benefits of gentrification are mostly enjoyed by the newcomers to the neighborhood and not by the individuals who lived there before costs increased. This is most clearly demonstrated by the rising property values in Pittsburgh’s South Side that have made it increasingly hard for long term residents to afford their property taxes- especially with the 2005- 2006 evaluation.

As a reflection of its proximity to Carnegie Mellon University, Shady Side’s success has created quick results in the surrounding areas, as its constantly increasing rents and property values have caused many younger persons who desire to live away from their parents to move into less desirable areas close to Shady Side, including North Oakland and East Liberty.

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<sup>379</sup> *Mapquest* [online]. Available from World Wide Web: (<http://www.mapquest.com>).



In order to better serve the technology and university community (including many of the non- Pittsburgh natives) the initiative to attract Whole Foods into East Liberty has proved to be an extremely successful tact in serving the communities in Pittsburgh that are considered “desirable”. As a response to this “niche” supermarket, developers and entrepreneurs have taken initiative to increase housing within walking distance of Whole Foods especially along Center Ave. and the streets feeding into Shady Side, and the creation of the restaurants and coffee shops that Richard Florida finds to important to developing a city. Included in this development are the new condominiums that are currently under construction on the corner of Centre Ave and Negley Avenue. Additionally, new development includes the new Starbucks and Marriot Residence Inn that joined the community in the past 3 years. More notably is the new Ethiopian Restaurant, whose owner was featured in the December 2005 issue of Pittsburgh Magazine’s article, “40 most important people under 40”, as the restaurants has proved incredibly successful and is seen as a footbridge between the University culture and the black community living between Centre Ave and Penn Ave.

Gentrification on the other hand is often not so kind to the lower classes. Black communities in Pittsburgh, in particular the Hill District in the past were ripped apart by the desire for gentrification. In the attempt to improve the community, bureaucrats in city hall decided to cut off major transportation veins and arteries leading into the district to create a “Residential Mall.” This area was meant to house a middle and upper class community who would frequent an Opera House and an Arts Center (only one was built, the Opera House, which was turned into a Hockey Rink, now Mellon Arena) and instead created a black hole in between Oakland and the Universities and Downtown. The area

was never actually gentrified and today is considered a hub of crime, drug dealing and other symptoms of blight.

Residential vacancies and Brownfields in Pittsburgh are also a major issue with development opportunities within the city proper. Areas like the Hill District are particularly blighted and recent economic development initiatives have only exacerbated problems.

The EPA (federal) found that,

“The Hill District (population 2,246), located between downtown Pittsburgh and the Oakland/University neighborhood, is an island of blight between two prosperous and economically vital areas of Pittsburgh (population 334,563). The decline of the district was accelerated by a large urban renewal project that forced more than 1,500 families and 400 businesses to relocate outside the community. Between 1990 and 2000, the district lost 18 percent of its population. Approximately 76 percent of district residents are minorities, and the poverty rate is 36 percent. Fifty-seven percent of houses and buildings in the neighborhood are built atop the Pittsburgh coal seam, and 90 percent of the structures are considered substandard.”<sup>380</sup>

The recent development initiatives have focused on high tech growth and growth in the medical field. However, very little of this growth has contributed to the economic success or the wellbeing of the individuals who live in the physical area. The Hill District is still plagued with what the Pittsburgh Post Gazette describes as, “A lingering problem that neighborhood leaders fear could threaten the Hill's rebound is the prevalence of drug dealing that remains a 24-hour business in the community.”<sup>381</sup>

However, individuals including Former Governor Thornburgh, and Special Projects Manager for Senator Santorum, Jay French, believe that this area is prime real

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<sup>380</sup> *Brownfields 2004 Grant Fact Sheet* [online]. Environmental Protection Agency. Available from World Wide Web: (<http://www.epa.gov/brownfields/04grants/pittsburgh.htm>)

<sup>381</sup> “*Return to Glory*,” *Pittsburgh Post-Gazette*, April 11, 1999. Available from World Wide Web: (<http://www.post-gazette.com/newslinks/19990411hilldistrict1.asp>)

estate for development because it is sandwiched between the University and Downtown and because it contains a major artery between the Universities and South Side. Although both have different ideas of what they would like to see developed there, they both have hope that development will take place soon. Former Governor Thornburgh sees the Hill District, especially the Lower Hill along Blvd. of the Allies as a potential community of residences “similar to the Upper East Side of New York” the would contain town homes and small shops. French on the other hand would like to see the area as a pathway to downtown with both residential space and new office space that would blend the downtown communities with Oakland and the University. French believes that because of the incredibly inexpensive cost of land, that the Hill is a prime location for technology start-ups coming out of the University.<sup>382</sup>

When determining whether gentrification has been a success in an area vacancy rates is one of the main measures of development, including how much development is occurring. Vacancy rates can also help determine where the best places to encourage development, as well as what type of development is needed. If for example, if it is found that an area has a high vacancy rate (around 20%)<sup>383</sup>, such as Downtown, there is great room for development.

“In Pittsburgh’s Central Business District there are 20.8 million square feet of office space, nearly 50 percent of the region’s total. The vacancy rate for all classes of buildings was 18.1 percent while the City’s Class A buildings vacancy rate was more than 20 percent in the third quarter of 2004.a rise of 37 percent since 2001.”<sup>384</sup>

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<sup>382</sup> Jay French, interview with Erika Nurnberg,

<sup>383</sup> *The Hollowing Out of Downtown Pittsburgh* [online]. Available from World Wide Web: (<http://www.alleghenyinstitute.org/briefs/vol5no7.pdf>)

<sup>384</sup> *The Hollowing Out of Downtown Pittsburgh* [online]. Available from World Wide Web: (<http://www.alleghenyinstitute.org/briefs/vol5no7.pdf>)

The exploration of the incentives both businesses have to move to neighborhoods and the incentives people have to move to neighborhoods is also particularly important. Even though in the past couple of years Downtown has experienced a spark of residential development with the gutting of a major building and of a factory creating 6<sup>th</sup> Street Lofts overlooking the Cultural District and Heinz Lofts that was formerly a Heinz factory. “Heinz Lofts promises urban living at its best. And with so many on-site amenities you’ll get the feeling that you’re in a new town right in the middle of Pittsburgh.”<sup>385</sup> Looking to take advantage of the growing healthcare and medical community, as well as its corporate offshoots, Heinz Lofts seeks to attract young professionals looking for urban living by offering a high tech business center on premise with high-speed internet connections built into every apartment. It offers the variety of 80 different floor plans to keep the young professionals feeling that they have a unique space, and contains an on premise convenient store to make up for the fact that there is no local grocery store within walking distance.

The new residential development occurring downtown, especially near the cultural district is attempting to present the idea that Pittsburgh can become a “car optional” city, but has yet to fully market itself to the engineers and future business sharks that are emerging from neighboring CMU. This is a significant contrast to the tactics of real estate firm Walnut Capital, which goes as far as providing private door to door shuttle service from their apartments that are located off a bus route, directly to Hamburg Hall, CMU’s main engineering building.

French believes that new development downtown will occur after technology development picks up speed in the areas such as Oakland, Hazelwood and South Side and other areas with easy access to the Universities. “Once technology firms grow large

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<sup>385</sup> Heinz Lofts [online]. Available from World Wide Web: (<http://www.heinzlofts.com>)

enough that they need increased services, corporate, consulting and management firms will begin to occupy Downtown.” French also noted that the light rail connector from North Shore to Downtown would be another method of connecting more people to downtown. The goal is to connect the business and tech industries while still paying particular attention to providing access for University Students to all around Pittsburgh. This will help university students make a more informed decision about whether they desire to stay after commencement. If the proposal development and course of studies (including environmental impact studies, etc.) stay on course, ground may be broken as early as 2016.<sup>386</sup>

Gentrification is often attributed to the value of the land being gentrified as determined by location and by the success of neighboring districts and the ability to access the developing area. When a neighborhood reaches capacity in the amount of residences, commercial venues and industrial sites it can hold, and “building up” is too expensive or too risky, neighboring communities are the next places to be developed, as they are convenient and less expensive to build in. Other reasons that certain areas are gentrified include lenient zoning for new construction. New commercial development is often unwanted in residential areas, while new residential development is often very desirable in pre-existing commercial and business zones.

Initial development of businesses within Pittsburgh is influenced by the costs, location and convenience of an area. Development in the high-technology field has been occurring in areas that are located close to the Universities whose faculty and students are involved in the success and development of businesses. Commercial development has been occurring in areas where there are underserved growing residential communities. A

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<sup>386</sup> Jay French, interview with Erika Numberg,

successful example of this has been the neighborhood of South Side, which allows for the influence of their Chamber of Commerce in their zoning process- thus allowing these institutions to develop where they believe they will be most profitable and desirable.

### **South Side Success**

One of the most quickly growing neighborhoods in Pittsburgh is the South Side. The neighborhood is a mixture of commercial, light industry and residential housing, consisting mostly of high-density rentals, townhouses and single and double family homes. The residential areas are mixed throughout the South Side Flats, which heads up the River, and on the South Side Slopes. The commercial area lines East Carson Street and has recently spans from Sixth Street to Twenty Seventh Street and has continue to expand to Hot Metal Street and is now pushing towards 33<sup>rd</sup> Street. This district is zoned as being a “Local Neighborhood Commercial” zone.

South Side might as well be South Beach to Richard Florida, who argued that coffee shop culture is an important part of developing a city. Local and corporate coffee shops co-exist on the corners of 14<sup>th</sup> and East Carson Streets because of the variety of potential patrons. Corporate giant Starbucks serves the non-smoker, young professionals and families of South Side, while the Beehive serves the artistic, rolled tobacco smoking crowd of young people with blue hair, fishnet stockings and army boots.

There has been a recent blast of development in South Side as the “Business District” was recently redefined to include another 7 blocks along East Carson Street. The consistent flow of both new houses and commercial properties in Pittsburgh continue to

be bought, sold and occupied at a very fast rate.<sup>387</sup> South Side Works has attracted new and expanding technology firms and has even attracted the company clothing company Urban Outfitters, which will be creating as many as 600 new jobs.<sup>388</sup> Additionally property values in this neighborhood has increased nearly three-fold in the past decade with the average price of a home being \$37,000 ten years ago and hovering around \$100,000 currently.

The area is one of the more successful neighborhoods due to its relatively high occupancy rate/ low vacancy rate. Approximately 87% of the housing units in South Side are occupied, in comparison to the city's average, which is around 80%. A local and national historic district, the vacancy rate on Carson Street is only 10 percent, compared to more than 40 percent in 1982. More than 120 storefronts have been restored and renovated.<sup>389</sup> One of the more successful programs in South Side that has contributed to this tremendous recovery is the URA's Streetface program. This program is "a forgivable loan program that matches up to 40 percent of the cost of restoration, rehabilitation, or new construction projects up to \$10,000 for storefronts or \$30,000 for an entire building. This program also covers architectural fees. Funding is allocated on a first come, first served basis based on an application and review process."<sup>390</sup>

The South Side Planning Task Force has taken an active role in the neighborhoods development. One of the recurring recommendations in The South Side Neighborhood Plan is a zoning recommendation that calls for "Second story space for hi-

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<sup>387</sup> <http://www.southsidepgh.com/images/PDF/SSNP2K.pdf>

<sup>388</sup> Jay French, interview with Erika Nurnberg,

<sup>389</sup> The Southside Neighborhood Plan 2000 [online]. Available from World Wide Web: (<http://www.southsidepgh.com/images/PDF/SSNP2K.pdf>)

<sup>390</sup> *Façade Improvements on the South Side* [online]. Available from World Wide Web: ([http://www.southsidepgh.com/invest/business\\_improvements4.php](http://www.southsidepgh.com/invest/business_improvements4.php))

tech businesses should be pursued.” Other parts of the plan to encourage further development include repeated calls for educational programs that help encourage residents to keep up with changing markets. On many occasions the neighborhood plan calls for educational programs to be expanded and improved. On many occasions the plan references preservation of South Side’s Vo-Tech, and one put forth by *Brashear and UPMC South Side* says, “Programs should be developed to increase the employment of area residents by assessing current and future job opportunities and matching these opportunities with unemployed and underemployed residents as well as job training providers; organizations should support and develop programs to promote adult work readiness to lessen the impact of welfare changes and to encourage educational enrichment services for teenage youth.”<sup>391</sup>

What must be understood however is that the plan has been overwhelming successful in recent years and has very little to do with specifically attracting the high-tech industries- and mostly attacks the issue of an unfriendly business climate over all, and zoning issues. South Side has attracted many of the new businesses by letting the private sector be involved in economic development and zoning plans along side of the private citizen. Although this may not necessarily be the right route for every community in Pittsburgh, if South Side is considered a model community for economic revitalization, the process of making zoning changes to help attract both business and residential development has proved most successful. The Neighborhood Plan further attributed

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<sup>391</sup> *Façade Improvements on the South Side* [online]. Available from World Wide Web: ([http://www.southsidepgh.com/invest/business\\_improvements4.php](http://www.southsidepgh.com/invest/business_improvements4.php))



zoning as being what “promote[s] quality development and to develop strategies to minimize possible negative impacts of differing adjacent land uses.”<sup>392</sup>

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<sup>392</sup> *Façade Improvements on the South Side* [online]. Available from World Wide Web: ([http://www.southsidepgh.com/invest/business\\_improvements4.php](http://www.southsidepgh.com/invest/business_improvements4.php))

## Chapter 8: Conclusions

Pittsburgh has the ability to be economically competitive with any major city in the United States. Not only is Pittsburgh strong in technology-based initiatives and start-up companies, but it has a strong University backing in addition to renowned medical facilities. Nevertheless Pittsburgh is not without its own dynamic issues. Throughout this report research has shown that the city is lacking in several key areas. These areas, or factors, inhibit the city's growth and cause flight from the region (both business flight and population flight). In order to compete on a national level Pittsburgh needs to arrest this flight. Several key policy recommendations have been reached to aid the city not only in stopping flight, but in attracting population and businesses to the region.

These recommendations can be grouped into six categories: Diversification of the Economy; Consistent Metric Evaluators; Job Creation and Training Issues; The Role of Public, Private, and Non-Profit Organizations; Population and Image Issues; as well as Business Environment and Government Structural Issues. The following is a compilation of the recommendations divided into the six categories.

### *Diversification of the Economy*

There have been many examples which illustrate the dangers of having an economy based off of one industry. In Pittsburgh the obvious example is the decline of the steel mills and subsequent economic recession. While this report stresses the issue of building up a technology-based economy it is important to note that other sectors of the economy should be invested in as well. This can be done by creating legislation that supports a more general economic development rather than specifically targeting tech-

based development. Another way to promote a diverse economy would be to support tech-based development, and look into mechanisms which would aid in the creation of service industries for the tech-based businesses.

### *Consistent Metric Evaluators*

One major problem that the project course ran into was one of how to measure success or failure of businesses and initiatives. The data available mainly consisted of money invested, or job creation. However, these numbers cannot reflect the success of a company. For example Body Media, which was founded in Pittsburgh by a group of CMU affiliates, lends inspiration to other start-up companies and entrepreneurs in the area. Another example would be Seagate setting up a branch in the city. This move has helped to brighten the image of the city as a place where top technology businesses go to set up new research facilities. Because inspiration and positive image are qualitatively-measured attributes, it is very difficult to assess the actual value of such businesses or initiatives in the city.

Another issue specific to evaluations is the idea of tracking investments made by EDOs. Pittsburgh needs to create some way to keep track of companies that have received money from the various EDOs in order to monitor their progress and see if they are making wise investments. Specifically, there should be stringent regulations and follow-up evaluations on government monies invested in development groups such as Innovation Works and the Life Sciences Greenhouse. It appears as though a great deal of government money is being invested without a proportionate return. Yet, again the question becomes, what is proportional? It is understandable that start-up companies will

lose money for the first few years of business, but when should the public expect a return on their investment?

This leads into the problem of looking at incremental changes, and how to choose the appropriate time frame for analyzing economic policies and investment returns. Estimates for analyzing policy spread from 20 years to 50 years. Given the fact that we are only 26 years removed from initial policies designed to reconstruct Pittsburgh's and Pennsylvania's economies, it might be too soon to tell if these policies are effective. In particular, the initial expectations of the Thornburgh administration were lofty, and it is difficult to analyze the success of the policies implemented, or even whether the success can yet be measured.

#### *Job Creation and Training Issues*

A major problem in Pittsburgh right now, as discussed earlier, is the skills gap. Education of native Pittsburghers is essential to closing the skills gap, as well as retaining more college and graduate level students. This is not only essential to the survival of the city, but also to attract businesses to the region. An important issue in job creation is that technology-based development most likely will not generate the number of jobs that Pittsburgh might need. An economic boon, whether tech-based or otherwise, would assist in generating more jobs (i.e. service based, and product based).

#### *The Role of Public, Private, and Non-Profit Organizations*

One issue seen again and again in Pittsburgh is the reliance on government funding. Pittsburgh needs to reduce its dependence on government backing. Not only

does it take tax dollars away from other important economic initiatives, but public funding has an odd quality of not always yielding a return. For this reason the city should concentrate on promoting private funding organizations which would not only keep closer track of investments, but not take money away from the city. Also, policy should be created to focus on, and to better utilize, the university base in the city.

### *Population and Image Issues*

Pittsburgh needs to work on its image, both to outsiders and natives. For natives, the city needs to emphasize the difficulty of turning a city's economy around, and show how it is working towards this end. Pittsburgh should also look into making the city as attractive as possible through cultural revitalization efforts to minimize population attrition. Moreover Pittsburghers need to become more amenable to the idea of investing in the city's economic growth, in particular the growth of technology-based economy. High-tech could be the next big step for Pittsburgh's economic future, and the community must be convinced that it is in their own best interest to support economic initiatives supporting technology-based expansion.

Of equal importance is Pittsburgh's national reputation. The city needs to figure out what demographic it wants to attract, and then figure out a marketing plan. Building off that, the city needs to project a sense of an economically stable area with public amenities (such as the museums and parks). What's more, realizing Pittsburgh should address the image of high taxes and poor general business climate due to structural problems in the government system (to be discussed in the next section). If these issues are addressed, and there are jobs available, immigration will certainly increase.

### *Business Environment and Government Structural Issues*

The business environment in Pittsburgh at present does not appear to be very welcoming. With a government system that is difficult to navigate, given the city structure and 130 municipalities, combined with an almost hostile tax structure, it is not surprising that more businesses haven't come to Pittsburgh. As this report suggests, many things can be done to improve the business environment in Pittsburgh.

The government system should be simplified. At the very least the government should become more proactive in helping businesses new to the region acclimate to the differences between the city and municipalities. A city-county merge would also lessen the burden of issues with government structure on businesses. Also, the city's tax structure should be overhauled to not only become more amenable to businesses, but to provide more incentives for businesses to come to the region. Continuation of niche creation, as well as investment directed towards already established industries, sectors, and markets would greatly help to retain businesses and aid in diversification. Finally an initiative that links already established businessmen (CEOs etc.) with entrepreneurs in the region would greatly aid the successful development of new businesses.

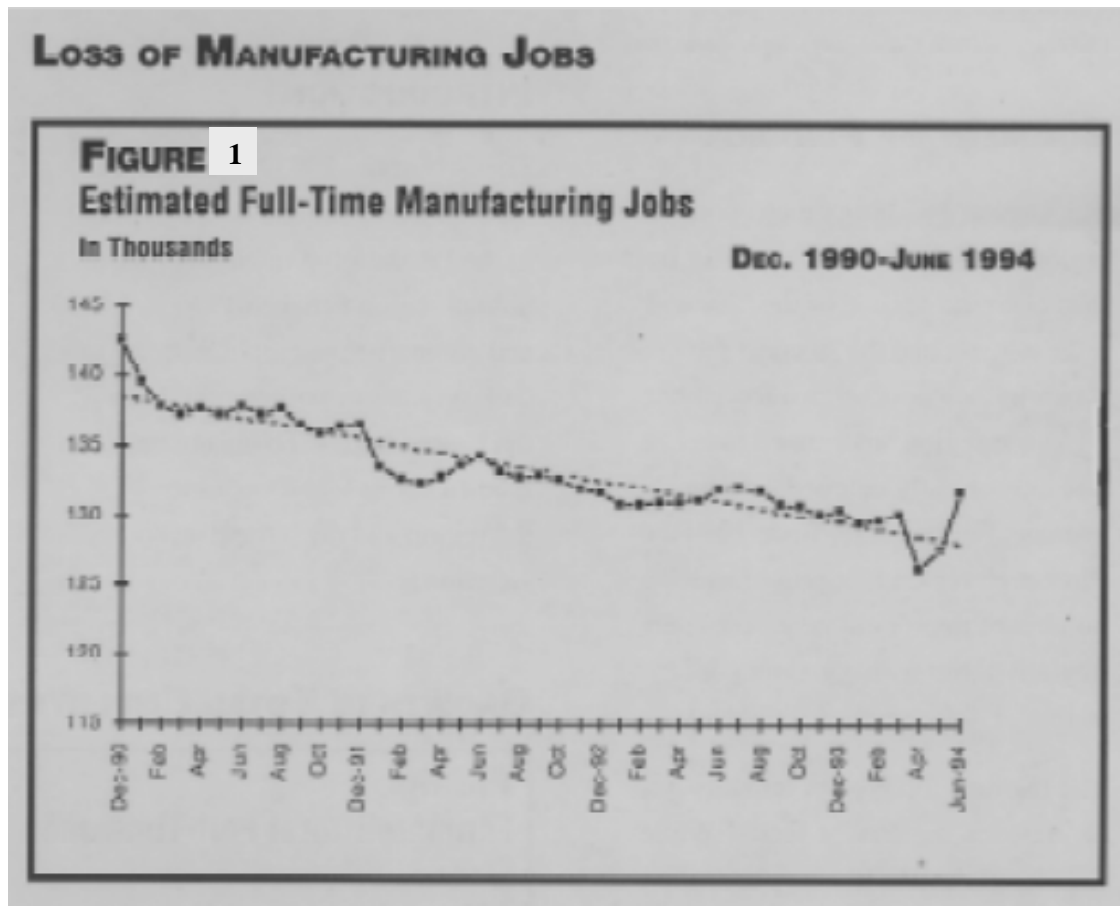
### *Summary*

Pittsburgh has several issues it needs to address before it can seriously consider perusing technology-based economic development. It needs a more highly skilled work force, a more welcoming business climate, and a better image to attract start-ups and branch development. Pittsburgh's economic focus and EDO community appear to be in desperate need of revision and accountability. Furthermore, no assessment system exists for the massive amount of data being used to support (or detract) from current initiatives.

What's really going on with economic assistance, job growth, and the effects of economic development on the city (as well as other important issues) is not entirely clear. And, this feeds a generally negative image of Pittsburgh. This negative image is often perpetuated by city residents, which further hurts the economic climate.

Additional research needs to be done in order to get a broader picture of Pittsburgh's general economic climate as well as look into what type of development would best benefit native and non-native Pittsburghers.

## Appendix A



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Figure 2

<b>Population Trends – Southwestern Pennsylvania</b>					
<b>(In Thousands)</b>					
	<b>1970</b>	<b>1980</b>	<b>1990</b>	<b>2000</b>	<b>2010</b>
<b>Total Population</b>	2,876	2,780	2,598	2,616	2,641
<b>Age 0-64</b>	2,567	2,412	2,158	2,154	2,166
<b>Age 65 and over</b>	309	369	441	462	475
<b>% population 65+</b>	11%	13%	17%	18%	18%

Source: Woods and Poole Economics, Inc.

<sup>393</sup> *The Greater Pittsburgh Region: Working Together to Compete Globally*, ed. Robert Mehrabian and Thomas O'Brien (Pittsburgh: Carnegie Mellon University Center for Economic Development and Allegheny Conference on Community Development, 1994).



**Figure 3**

<b>Importance of Values Related to Job Choice, by Sex and Degree Level<sup>394</sup></b>					
Factors (ranked)	All (2131)	Male (1043)	Female (1076)	Under- graduate (995)	Grad (1126)
1. Interesting/challenging job	3.81	3.82	3.81	3.80	3.83
2. Opportunity for advancement	3.51	3.54	3.47	3.55	3.47
3. Employer benefits	3.32	3.28	3.35	3.36	3.28
4. Starting salary	3.29	3.28	3.31	3.32	3.27
5. Good roads, easy commute	3.15	3.04	3.25	3.17	3.13
6. Cost of living/housing	3.14	3.09	3.20	3.12	3.16
7. A chance to help others	3.12	2.92	3.32	3.10	3.14
8. A region with cultural attractions	2.95	2.88	3.03	2.94	2.96
9. Closeness to family	2.93	2.78	3.07	2.91	2.95
10. Flexible job hours	2.92	2.81	3.00	2.93	2.89
11. Geography, climate	2.86	2.85	2.86	2.90	2.82
12. Outdoor recreation	2.80	2.87	2.74	2.82	2.78
13. Continuing education	2.78	2.61	2.93	2.90	2.67
14. Quality of public schools	2.71	2.72	2.70	2.57	2.83
15. Ethnic/cultural diversity	2.71	2.62	2.80	2.69	2.73
16. Job nearby spouse/partner	2.65	2.50	2.80	2.56	2.73
17. Being close to friends	2.65	2.58	2.71	2.72	2.59
18. Having lots of young people	2.49	2.47	2.50	2.58	2.41
19. Lots of nightlife	2.29	2.32	2.26	2.48	2.13
20. Availability of child care	1.90	1.83	1.95	1.85	1.93
21. Nationally ranked sports teams	1.81	1.93	1.70	1.85	1.78

Scale: very important = 4; somewhat important = 3; not so important = 2; not at all important = 1

<sup>394</sup> Dr. Susan B. Hansen, "Career and location decisions: Recent Pittsburgh area university graduates," Graduate School of Public and International Affairs, University of Pittsburgh, September 2001, p. 21.

**Figure 4**

<b>Where Pittsburgh Graduates are Working Now (top 15)<sup>395</sup></b>	
Location	Percentage
1. Pittsburgh Region	46.2%
1. PA	9.8%
2. California	4.9%
3. New York	4.6%
4. Ohio	3.0%
5. Maryland	2.8%
6. Virginia	2.6%
7. New Jersey	2.6%
8. Massachusetts	2.5%
9. North Carolina	1.5%
10. Texas	1.5%
11. Illinois	1.4%
12. Washington D.C.	1.2%
13. Florida	1.2%
14. Georgia	1.1%
15. Washington	1.1%

**Figure 5**

<b>Current Working Location of Pittsburgh Area Technology /Engineering Graduates<sup>396</sup></b>					
Occupation	Pittsburgh Region	Elsewhere in PA	Elsewhere in US	Abroad	Total
Technology/Engineering (N=411)	<b>34.8%</b>	<b>9.0%</b>	<b>54.5%</b>	<b>1.7%</b>	<b>100%</b>
Engineering, Computer Science (N=254)	31.1	8.7	59.4	0.8	100
Technical/scientific research (N=98)	39.8	8.2	46.9	5.1	100
Computer industry/ programmer (N=59)	42.4	11.9	45.8	0.0	100
All other occupations (N=1282)	<b>49.2%</b>	<b>10.7%</b>	<b>38.1%</b>	<b>2.0%</b>	<b>100%</b>

<sup>395</sup> Hansen, p. 24

<sup>396</sup> Hansen, p. 25

**Figure 6**

<b>Job Value Rankings for Techies and Non-Techies<sup>397</sup></b>				
Factors	Techies		Non-Techies	
	Mean	Rank	Mean	Rank
Interesting/challenging job	<b>3.87</b>	1	3.80	1
Opportunity for advancement	3.54	2	3.50	2
Employer benefits	3.34	3	3.31	3
Starting salary	3.30	4	3.29	4
Cost of living/housing	3.10	5	<b>3.15</b>	7
Good roads, easy commute	3.03	6	<b>3.18</b>	6
Flexible job hours	2.94	7	2.90	10
Outdoor recreation	<b>2.90</b>	8	2.78	12
Physical setting: geography, climate	2.89	9	2.85	11
Opportunities for continuing education	2.80	10.5	2.77	13
A region with cultural attractions	2.80	10.5	<b>2.99</b>	8.5
Closeness to family	2.76	12	<b>2.99</b>	8.5
A chance to help others	2.72	13	<b>3.22</b>	5
Job for spouse/partner	2.63	14	2.66	17
Ethnic/cultural diversity	2.56	15.5	<b>2.75</b>	14.5
Being close to friends	2.56	15.5	<b>2.67</b>	16
Quality of public schools	2.52	17	<b>2.75</b>	14.5
Having lots of young people	2.43	18	<b>2.50</b>	18
Lots of nightlife	2.22	19	<b>2.30</b>	19
Availability of child care	1.86	20	1.90	20
Nationally ranked sports teams	1.74	21	<b>1.83</b>	21

*Scale: very important = 4; somewhat important = 3; not so important = 2; not at all important = 1. **Bold** = significant difference ( $p < 0.05$ )*

<sup>397</sup> Hansen, p. 27

**Figure 7**

<b>Reasons Persons Who Had a Previous Job in Pittsburgh Gave for Leaving<sup>398</sup></b>	
Reasons for Leaving	Percentage
<b>Job-related</b>	<b>65.8%</b>
Lack of job opportunities there/better opportunity elsewhere	44.1%
Accepted a job elsewhere	9.3%
Higher salary	3.7%
Job in Pittsburgh had been a temporary/part-time position	3.1%
Job offer was in my field	1.2%
To take a new job	1.2%
All other job-related reasons	3.1%
<b>Family</b>	<b>17.4%</b>
Wanted to live with spouse/significant other	11.8%
To go back home/to be near family/friends	5.6%
<b>City/region</b>	<b>13.0%</b>
Didn't like climate/weather	3.7%
City was not culturally diverse/was unsophisticated	1.2%
Commute long distance	1.9%
Never felt at home/didn't fit lifestyle	0.6%
Wanted a change/lived there long enough	5.0%
All other city/region reasons	0.6%
<b>Educational</b>	<b>3.7%</b>
To further education elsewhere	2.5%
Graduated	1.2%

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<sup>398</sup> Hansen, p. 33

**Figure 8**

<b>Job Value Rankings for Stayers and Leavers<sup>399</sup></b>				
Factors	Stayers		Leavers	
	Mean	Rank	Mean	Rank
Interesting/challenging job	3.80	1	3.85	1
Opportunity for advancement	3.51	2	3.51	2
Employer benefits	3.40	3	3.28	4
Starting salary	3.34	4.5	3.31	3
Cost of living/housing	3.34	4.5	2.96	7
A chance to help others	3.26	6	2.98	6
Closeness to family	3.23	7.5	2.67	13
Good roads, easy commute	3.23	7.5	3.02	5
Opportunities for continuing education	3.01	9	2.57	14
Flexible job hours	2.97	10	2.83	10.5
Quality of public schools	2.95	11	2.52	16
A region with cultural attractions	2.92	12	2.95	8
Being close to friends	2.82	13	2.50	17.5
Outdoor recreation	2.79	14	2.83	10.5
Job for spouse/partner	2.74	15.5	2.55	15
Physical setting: geography, climate	2.74	15.5	2.94	9
Ethnic/cultural diversity	2.69	17	2.68	12
Having lots of young people	2.46	18	2.50	17.5
Lots of nightlife	2.25	19	2.29	19
Availability of child care	2.03	20	1.77	20
Nationally ranked sports teams	2.01	21	1.69	21

*Scale: very important = 4; somewhat important = 3; not so important = 2; not at all important = 1. **Bold** = significant difference ( $p < 0.05$ )*

<sup>399</sup> Hansen, p. 25

## Appendix B

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**Figure 1**

<u><b>A Brief Outline of Pittsburgh Taxes</b></u>	
1900's	<p><b>Classification System for Property Taxes</b></p> <p>Pittsburgh split its property taxes into three main categories; agricultural, rural or suburban, and full city. This was done so farmers wouldn't be driven away and so that those with industrial buildings or apartment houses (those with the most funds) would pay the most.</p>
1912	<p><b>Abolishment of Classification System for Property Taxes</b></p> <p>All property was taxed at a flat rate. People were no longer sitting on large, undeveloped areas allowed to pay half tax. This produced a new incentive for Pittsburghers to build up or sell land. Also, this helped take some of the tax burden off workers and the small business owner.</p>
1913	<p><b>Tax Reform: Graded Tax Law</b></p> <p>"The rate of taxation on buildings shall be reduced by 10% every three years, beginning in 1914, until by the year 1925 buildings will pay only 50% of the rate upon their property."<sup>400</sup></p>
1913	<p><b>Federal Income Tax</b></p> <p>The establishment of the first permanent Federal Income Tax</p>
1924	<p><b>Income Tax Cuts</b></p> <p>At the end of WWI, the government realized it could not continue taxing citizens at the same rate so it drastically cut taxes.</p>
1986	<p><b>Federal Tax Reform Act</b></p> <p>Designed to lighten the burden of income tax and simplify the tax code, it effectively brought the number of income brackets down from 14 to 3.</p>

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<sup>400</sup> *Tax Legislation*, August 1913, p. 462.

## Afterword

This History and Policy Project Course report represents the culmination of a semester of hard work by this year's seniors in the history and policy major. This course is highly unusual in that the students are given a policy question with historical dimensions at the beginning of the semester and are expected to produce a professional-quality research report on the topic by the end of the semester. It is unique to Carnegie Mellon, and has been used as the capstone for the History and Policy major since 1980. My main responsibility as the professor of the class has been not to give my students answers, but rather to give them a question and then facilitate their search for answers.

Throughout the semester, the students have learned how to use various reference databases, work in archives, conduct oral history interviews, and interpret primary and secondary sources critically. Other than assigning groups to various tasks and editing the report, I essentially let the students decide what directions the project would take. Although this has obviously been a difficult task for them, I think it is clear that the students have learned a tremendous amount and developed skills that will serve them well in the real world. They have also produced this highly informative report which seeks to grapple with questions that have vexed policy makers and academics for nearly three decades. Although we make no claims to resolve all of the issues we address, we have done our best to outline all of the major problems.

Why did I assign my students the task of analyzing the history of technology-based economic development in Pittsburgh? The simple answer is that when I came to Carnegie Mellon University two years ago to interview for the job that I now have, I harbored a vision of Pittsburgh that has turned out to be anything but correct. Although I had visited the city once in 1999 and knew that it was truly a beautiful place, I still imagined a rust-belt city living in the past, much like middle-aged high school football star whose life peaked when he was 18 and threw the winning touchdown against the cross-city rivals. The Pittsburgh that I have come to know and love, however, is not living in the past. Brilliant people (both from the area and transplants from places like New York, San Francisco, and Boston) are starting innovative and profitable companies, and city leaders are working hard to make Pittsburgh a better place to live and work. Yet, the reality is that there are still many obstacles—some old and some new—to starting and building a high-tech company in Pittsburgh. I wanted to understand what these obstacles were and what was being done to fix them in both the public and private sectors.

Finally, I would like to take this opportunity to thank two people who have made this report possible: my teaching assistant, Alex Bennett, and Matt Hamilton, a graduate student in Engineering and Public Policy, who served as a “project manager,” supervising the students studying the various economic development organizations that have emerged in Pittsburgh over the past 15 years. Matt and Alex served more as co-teachers with me than assistants—they are both incredibly knowledgeable and have helped the students as much, if not more than I have. Matt and Alex: Thank You!

**Professor Jay Aronson  
Carnegie Mellon University  
Pittsburgh, PA  
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