

EVALUATING THE FACTORS OF DEVELOPING GAINESVILLE'S
INNOVATION ECONOMY

By

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To my Parents

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TABLE OF CONTENTS

	<u>page</u>
ACKNOWLEDGMENTS.....	4
LIST OF TABLES.....	8
LIST OF FIGURES.....	9
LIST OF ABBREVIATIONS.....	10
ABSTRACT.....	11
CHAPTER	
1 INTRODUCTION.....	13
Shifting Economic Geography.....	13
Justification for Research.....	16
2 LITERATURE REVIEW.....	18
Structure of the Literature Review.....	18
Globalization, Regionalization, and Localization.....	18
The Death of Distance.....	18
An Urbanizing World.....	20
Opposing Forces.....	21
Combining Theories.....	23
Land, Labor and Capital.....	23
Land.....	23
A sense of place.....	23
Factors of location.....	25
Cluster development: strength in numbers.....	27
Hubs, incubators, research parks and others.....	28
The knowledge center community.....	30
The importance of being different.....	33
Networks and connectivity.....	35
A summary of land economics.....	37
Capital.....	38
Explaining capital.....	38
Capital investments.....	39
Comparative advantage.....	41
Characteristics of successful industries.....	43
Labor.....	45
Work smarter, not harder.....	45
Social classes.....	47
Creative class focus.....	50

	The innovative environment.....	53
	Increasing returns on investment.....	54
	The value of ideas.....	56
	Criticisms of the Literature Review	59
	Creative Class Criticism	59
	Equity and Social Imbalance	59
	Diversity in Education.....	60
	Innovation Economy: Adaptability and Academia.....	61
	Business Concerns	62
	Patent Trolls	63
	Literature Review Conclusion	63
3	METHODOLOGY	66
4	FINDINGS.....	68
	Profile of Gainesville, Florida	68
	Gainesville’s Economy.....	70
	Vested Interests	70
	Contextual Structure.....	73
	Capital Investments.....	76
	Culturally Creative	76
	Cluster Developments	80
	A Knowledge Center Community	85
	Gainesville’s Opportunities to Reinforce the Innovation Economy.....	87
	Broad Implications.....	88
	Labor Force Characteristics	91
	Business Opportunity	96
	Opportunities and Constraints of the Physical Environment.....	103
	Innovation Square and Other Cluster Developments	106
	What about the Creative Class?	110
	Transportation	112
	The Role of Government	116
	Hurdles to Overcome	120
	Criticism and Warnings.....	123
	Innovation economy concerns	123
	STEM industry deficits	124
	Innovation should not rely on external inputs.....	125
	Infrastructure.....	126
	Community and equity	127
	Criticism summation.....	129
	Summary of Findings	130
5	DISCUSSION	132
	Global Trends	132
	Transnational Corporations.....	133

Perception Is Reality	134
The Role of Government and the University	135
Economic Feasibility	139
Restrictions and Limitations of the Research	140
Topics for Further Research	140
Discussion Conclusion	141
6 CONCLUSION	143
Conclusion	143
Final Thoughts	145
APPENDIX	
A BIOGRAPHY OF INTERVIEWEES	146
B INTERVIEWS	150
C INTERVIEW QUESTIONS TEMPLATE	151
LIST OF REFERENCES	155
BIOGRAPHICAL SKETCH.....	164

LIST OF TABLES

<u>Table</u>		<u>page</u>
4-1	Performance. evaluation of existing transit service.....	79
4-2	Effectiveness measures. evaluation of existing transit service	79
4-3	Efficiency measures. evaluation of existing transit service	80
4-4	Level of Service. evaluation of existing transit service.....	80

LIST OF FIGURES

<u>Figure</u>	<u>page</u>
2-1 Location of world population.....	19
2-2 Location of American population	19
2-3 Centrifugal and centripetal forces	22
2-4 Shifting occupation classes in the U.S.....	50
2-5 U.S. manufacturing output vs. jobs.....	51
4-1 Gainesville’s residents are educated	69
4-2 Gainesville has many young people	69
4-3 Overview of Gainesville, FL.....	71
4-4 Gainesville, Florida characterisitcs	72
4-5 Activity centers in gainesville, FL.....	74
4-6 Innovation square context	75
4-7 Projected creative class growth between 2008 and 2018.....	77
4-8 U.S. biotech statistics from 1995-2005.....	82
4-9 Innovation square context	83
4-10 Innovation square as related to other cluster developments	85
4-11 Association between job growth and the creative class.....	86
4-12 Some of Gainesville’s creative class jobs.....	87
4-13 A look at population growth in Gainesville compared to Florida and the U.S	93
4-14 Gainesville ridership on RTS is improving	114

LIST OF ABBREVIATIONS

CEO	The Council for Economic Outreach
GTEC	Gainesville Technology Enterprise Center
KC	Knowledge Center
IG	Innovation Gainesville
IT	Information Technology
NIH	National Institute of Health
NSF	National Science Foundation
RTS	Gainesville Regional Transit Service
STEM	Science, Technology, Engineering and Mathematics
UF	the University of Florida
VC	Venture Capitalist

Abstract of Thesis Presented to the Graduate School
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Gainesville, FL, is in the midst of determining the future course of its economy. Global economic shifts in market conditions necessitate a reevaluation of the local economy model. For Gainesville to compete and grow in an increasingly specialized marketplace, alternative solutions that utilize the unique strengths of the area should be considered. This research examines the factors needed to establish and develop the Innovation Economy and ultimately how, or if it can be, applicable in the context of Gainesville, FL.

Gainesville can be classified as a small-to-medium-sized, knowledge-based community with an abundance of 'creative class' residents. Extracting lessons from life and social sciences, this paper explores the nuances of, and conditions for, high-tech industry agglomerations in creative communities. The availability of labor, proximate location of land and timeliness of capital are shown to have great effect. The symbiotic relationship between knowledge-based centers and their supporting industries has the potential for great achievement but the capricious nature of this economic model must not be understated. Generating positive feedback loops between industry, institution

and environment are the key findings of this research. Significant positive externalities may be generated to enable high-tech businesses to locate in high numbers with spatial concentration in Gainesville. By comparing and then applying the general guidance found in the literature review with the opinions and insights of local community leaders, it was determined that Gainesville, FL, does in fact possess the necessary qualifications for the adoption of the innovation economy.

CHAPTER 1 INTRODUCTION

Shifting Economic Geography

The landscape of economic geography is taking a powerful new direction as a number of forces, new and old, act upon it. The 'new economy' shaping our urban development is largely a response to the phenomenon called globalization. Learning to compete in this new marketplace requires an adept understanding of the forces behind the world's shifting economic geography. One implication is that the old models of business location in standard economies may not be enough to stay competitive in an increasingly globalized economy. More and more, the locations and regions that produce the highest levels of innovation and subsequent wealth are marked by advanced learning institutions enveloped by support industries. These knowledge centers (KC's) take their physical form by way of universities, research facilities, and hospitals.¹ One purpose of this master's thesis is to explain the relationship between proximity, availability of labor, and time as key components to the economic success of innovation economies and knowledge center communities. When analyzing proximity, the character of physical space and dynamic relationships formed between business, academics and other parties is of chief concern. The component of availability examines the quantity and quality of capital and labor, and more often, land. The element of time is discussed because often, in this dimension, ideas, inventions or

¹ Centers aggregating government, universities, and medical complexes provide the ingredients for incubating entrepreneurial activity and generating tech and biotech startups fed by research grants and academic talent. For communities to thrive, education and a cluster of talented firms, workers, government leaders, and local amenities are required. Not surprisingly, places with a high percentage of well-educated residents have grown the fastest and experienced less pain during the current recession. Unemployment in the highly educated metropolitan areas has averaged 2-3% lower than the national average and significantly lower than those communities with a less well-educated workforce. (ULI)

relationships either flourish or perish. The complex relationships and dynamic interplay between these variables in the context of the urban environment is critical to understanding the innovation economy.

One city that displays the characteristics of the innovation economy is Gainesville, Florida: a medium-sized university town. Although not particularly dense with innovative industries at the moment, Gainesville's potential to transition towards greater innovative economic activity has been directly cited by leading economists, urbanists (e.g., Richard Florida, Paul Krugman, and Edward Glaeser) and others. The University of Florida, Gainesville's host university, has matured into one of the premier research universities in the southeast U.S., specializing in biomedical research and engineering (Zuckerman, 2012). Currently, Gainesville exhibits positive indicators of land, labor and capital necessary for innovative growth.

In the innovation economy, the fields of science, technology, engineering and mathematics (STEM) are critical for initiating and maintaining consistent levels of innovation. Combined, STEM industry and knowledge centers often form symbiotic relationships, feeding and growing off the achievements of one another (Weldon, 2011). Identifying and analyzing the environmental factors that contribute to the growth of high-tech industry clusters in knowledge center communities like Gainesville, Florida is the basis of this research. The idea is to understand how the principles of the innovation economy succeed or flounder in different locations, with the hope that Gainesville, Florida can act as a model for other cities also wishing to make this transition.

The economic competitiveness of cities, regions and even countries may be determined by the places that pioneer new technologies and ideas (Schwab, 2011).

Humanity itself has all but become reliant on a myriad of technologies to support consumption-based economies and maintain a high quality of life. Our value systems reflect this dependence. The evidence manifests itself, at least monetarily, via global stock markets. Trailblazers of innovation and discovery advance civilization and those places actively involved, reap substantial economic rewards while attracting the next wave of innovators. Positive feedback loops facilitate a kind of innovative, 'perpetual motion' that is a consistent theme throughout the research.

Capital and the brightest minds are gradually coalescing into fewer places, and increasingly, these places are marked by high levels of innovation (Richard Florida, 2010). Existing urban centers wishing to remain competitive should cultivate a learning and living environment that responds to the needs of innovative businesses and the desires of their creative class employees. Helping high-tech business flourish and facilitating the interaction between people, products and ideas is critical for long-term success. Future economic winners and losers will be determined by those cities and regions that develop aggressive and clever means to achieve this end.

Applying innovation economy concepts to the regional context of Gainesville requires an examination of the factors that promote the development of STEM industries. Knowledge centers are of particular interest. This inquiry is challenging because the ideas of the new innovation economy model are relatively new and in some cases hard to quantify. Nevertheless, the resulting work attempts to encompass the question: What are the basics of the innovation economy and what economic policy guidelines might be implemented to achieve that end in Gainesville, Florida?

Justification for Research

Advances in technological applications and an emerging emphasis on regional economies allows for the exploration of new local-economy models. High-tech and, particularly, STEM industries, are at the forefront of many economic discussions as more technologies lend themselves to practical commercial applications.

Simultaneously, international competition in the manufacturing sector adds strain to traditional economic models, applying pressure to reform local economies (Harrison, 2011). These concerns and others should prompt communities to reevaluate their assets and form economic strategies using resources that are plentiful, proximate and renewable.

Presently, Gainesville experiences difficulty when relying on traditional economic models like manufacturing. This difficulty may be exacerbated if larger economic trends, such as outsourcing in the manufacturing sector, continue. The ability to reinvent or invigorate the local economy of Gainesville should be explored for the greater benefit of the community. Expanding the local economic base by using an economy model that benefits the community, the University of Florida, its student and faculty, and participating companies is the proverbial 'win-win' situation. An economy that relies heavily on intelligence and ideas – both in large supply in Gainesville – makes good economic sense. The anticipated positive feedback loops should benefit the university, students and faculty and community at-large, both directly and indirectly.

Finally, the selection of Gainesville, Florida as a case study for research was made for various reasons. The strength of the argument for the innovation economy was chief among them. Gainesville has received attention from proponents and detractors of the innovation economy theory, allowing for some direct references and

examples in the literature review. Also, the willingness of many public and private leaders to meet with the researcher provided credible and authoritative information on the subject. Finally, the practical limitations of choosing another case study location (i.e. distance, monetary resources, time) played a significant factor. For all these reasons, Gainesville, Florida was selected for research.

CHAPTER 2 LITERATURE REVIEW

Structure of the Literature Review

Each of the three components – land, labor and capital – is important to the innovation economy. The organizational theme of this research tracks these three components, applying their principles to the context of Gainesville as needed. Beginning with a broad view of economic and social trends, the three components become more complex as their relationship to the innovation economy emerges. These concepts build upon themselves, establishing linkages with the others. The research then focuses on the relevance of each principle to the innovation economy. The result is an overview of each basic component with a detailed understanding of the particular applications in an innovative economy.

The enabling factors that allow the formation of the innovation economy began with larger changes in the global marketplace. Before understanding land, labor and capital, exploring what catalyzes innovative economies is warranted.

Globalization, Regionalization, and Localization

The Death of Distance

Frances Cairncross, as cited by Harrison, described the phenomenon of globalization, “as the ‘Death of Distance’ ”, claiming that while the industrial revolution saw a drop in physical transportation costs, the twenty-first century will be marked by reductions in transporting, “ideas and information” (Harrison, 2009. pg. 5). Globalization has two peculiar and seemingly contradictory effects on the world’s socio-economic geography. First, it allows for a general expansion of industries and economies of all types by opening up additional areas for manufacturing, trade, resource extraction, and

other economic activity. At the same time, it encourages industries and people to concentrate in greater numbers to reap the benefits of efficiency and urbanization. This push/pull effect has interesting implications for the global economy. Although, “The world may be ‘flat,’ as Thomas Friedman famously concluded. . . the most salient spatial reality of modern economies is actually their ‘spikey’ concentration [Figure 2-1 and Figure 2-2] in a relatively small number of particular places” (Muro & Katz, 2010. pg.14).

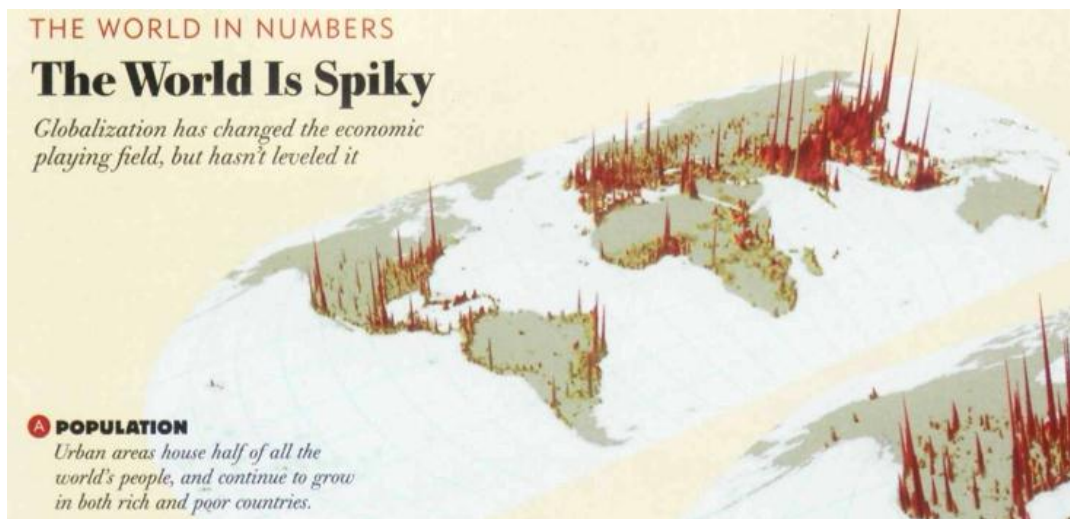


Figure 2-1. Location of world population. Reprinted by permission from Florida, R. (2005). Population. *The Atlantic* ©. Retrieved from <http://www.theatlantic.com>

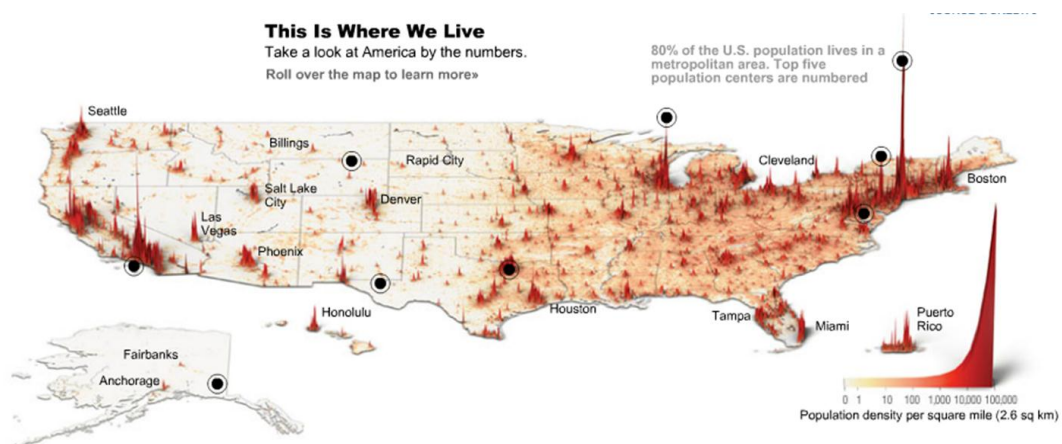


Figure 2-2. Location of American population. Reprinted by permission from Florida, R. (2005). *This is where we live. The Atlantic* ©. Retrieved from <http://www.theatlantic.com>

An Urbanizing World

Exemplified by the rise of mega-cities and regions all over the world, the spikiness of human habitation coincides with the more general emergence of urbanization. In fact, as of 2012, over 50% of all people are estimated to live in urban areas. That trend only shows signs of increasing. ("The World Factbook," 2012) An illustrative example of the transformation from rural homesteads to urban life over the past hundred years is found in the US census. In 1900, 38% of all Americans lived on farms, but as of the 2010 census, less than 1% of Americans did so; enough to remove the occupational category of 'farmer' from the census. Yigitcanlar (2009) posits that this evolution in the marketplace has polarized existing urban centers, increasing the demand for more highly-skilled labor. In fact, "in 2008, for example, the 100 largest metropolitan areas in America concentrated 74% of the country's college graduates, 75% of workers with graduate degrees, 82% of NIH and NSF research funding, and 96% of all venture capital funding" (Muro & Katz, 2010. pg. 14).

Bringing people, industry and institutions together like no other industrial revolution before is one of the hallmarks the information-age (Harrison, 2009) but a closer view into the, "U.S. economy [sees it] not only national but regional," in nature. Muro and Katz claim, "Regions are not part of the national economy; they 'are' the national economy" (Muro & Katz, 2010. pg. 14). The importance of creating a competitive regional economy relies heavily on macroeconomic trends. This thesis examines the potential application of a specialized, local urban-economy model, with reference to global and regional trends to understand how economies, industries and even companies interact with one another. As Muro and Katz point out, "because physical proximity and locally bounded exchanges matter so much to their workings,

[regional] clusters highlight the importance of geography, space, and regions in the structure of the national economy. Clusters, in that sense, make unavoidable the fact that locations matter. And the recognition of this fact is critical; as Michael Porter writes, '[t]here is no national economy. . . but a series of regional economies that trade with each other and the rest of the world' " (M. Porter, 1998; Muro & Katz, 2010. pg. 28).

The application of these regional economies as situated in the physical landscape manifests in the form of 'cluster developments' or concentrated areas of similar development. These clusters can be as large as cities or as small as research parks. For many innovative and KC communities, clustering industries can be powerful strategy.

Opposing Forces

Noble Prize-winning economist Robert Lucas comments on city and cluster formation and 'centripetal force' stating that, given the tenets of traditional economics, "[c]ities should fly apart. . . ." He adds that the, "multiplier effects that stem from such talent clustering [are] the primary determinant of economic growth," and while acknowledging the principals of land, labor, capital – Lucas concedes they would matter little if people had nowhere to combine them (Florida, 2008. pg. 67). Understanding the variables that produce a centripetal or centrifugal force in an environment is a cornerstone on which the validity of this thesis is built. Implementations in KC communities that are dismissive or ignorant of these forces are shown to have undesirable and potentially disastrous effects. Figure 2-3 shows the difference between centrifugal and centripetal forces in transportation networks. Basically, focusing the direction of activity inwards – a centripetal force – allows for greater efficiencies; promoting density and other related urban-initiatives.

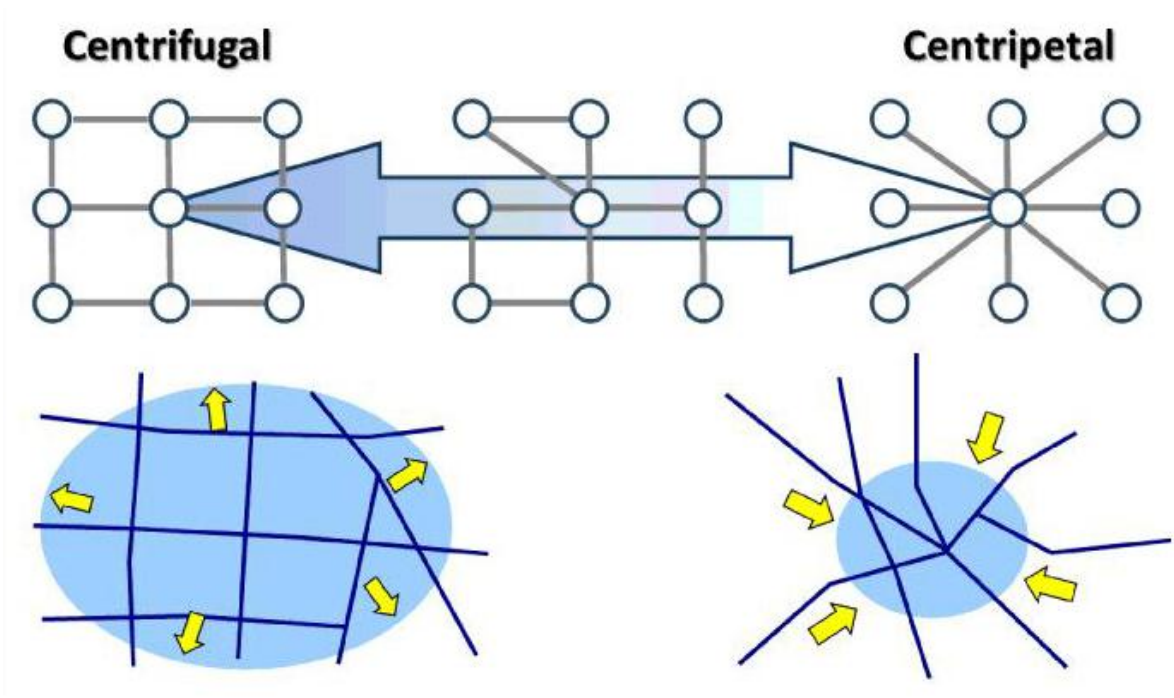


Figure 2-3. Centrifugal and centripetal forces. Reprinted by permission from Rodrigue, J. (2012). Centripetal and centrifugal networks. *The Geography of Transport Systems* ©. Retrieved from <http://people.hofstra.edu/geotrans/eng/ch1en/conc1en/centripetfug.html>

The general theories of location economics from the past combine with current ideas concerning the innovation economy. Broad topics like globalization and market location merge with particulars like social dynamics and new economic models. While the topics covered vary in both scope and scale, the literature review finds the incorporation of these principles essential to understanding and proving the validity of the Knowledge Center, Creative Class and Innovation Economy theories.

The baseline for the land component is now set; given the general effects of globalization on industry location, along with the basics of market formation and competition. On this foundation, the role of clusters in high-tech industries is furthered.

Combining Theories

The more ephemeral studies of social theory conclude that relationships between people and their urban environment are a key component in creating the supportive context that furthers innovative processes. This demonstrates the increasingly important role people have in shaping the inputs and outputs of capital. Changes in lifestyles, preferences and abilities are the most important factors discussed as the worlds' economic geography is increasingly linked to the habits and nuances of labor.

The exploration of the components of Land/Location, Labor and Capital and how they can influence the development of a local innovation economy is the primary purpose of the literature review. Interactions between land, labor and capital produce unique qualities that, when combined, demonstrate how innovation economies can form. Finally, new economic models and theories are built upon the combination of traditional economics and social theory. Achieving the necessary conditions for an innovation economy is twofold: first, by establishing the 'common denominators' between theories, and second, by focusing on their specific applications in the urban environment.

Land, Labor and Capital

Land

A sense of place

Land has character. The opportunities and constraints nature affords mankind shaped habitation patterns even before humans settled into cities. Productive forests and valleys were prized because they allowed early man to hunt and gather effectively. More challenging environments, with their lower carrying capacity, limited the ability of people to congregate for extended periods, much less found cities. Later on, the

development of agriculture promoted a baseline for density, as villages and towns formed in these advantageous places. Just as agriculture birthed and sustained humanity's formative institutions, (e.g. government, skilled trades and religion) similar developments occur today. Modern technologies and innovations increasingly rely on urban locations for the continuous creation and implementation of ideas, products and services. Simply put, good locations attract larger quantities of people, increasing the likelihood of labor and capital opportunities, both in quantity and variety.

Location matters, because "it is virtually impossible to understand how biology," or the study of anything for that matter, "works outside the context of environment" (Zeitgeist: MF, 2011, 9:50-10:00). For any economy, the idea of location concerns three principles: supply, the market, and the distance between them. Today, the factor of labor is increasingly intertwined with location. Many cities and, "Industries flourish in particular places because of rich endowments of minerals, fertile land, and, nowadays, well-educated workers" (Krugman, 1991; Cortright, 2002. pg. 5). Additionally and of significant note are the 'accidents of history' that sometimes allow particular locations an unprecedented role in economic and/or social development. For example, ever wonder why Boston, Massachusetts is so. . . Irish?

Although New York City received the bulk of the Irish emigration wave in the 1840s following the great potato famine, "Boston's Irish character is essentially a gift of its strength during the era of sail" (Glaeser, 2011. pg. 77). The overseas trip to Boston was cheaper and faster than the main port of New York City and, upon arrival, many poor and starving Irish families settled down rather than travel further. Thirty years later, the age of sailing ships was replaced by steamliners. The greater size and quality

of ports in New York City meant that the later waves of European immigration bypassed Boston altogether. This accident of history relies on the timing of both a great tragedy and great invention as it solidified the character of Boston, MA to this day.

In all, it can be said that the impact of location on industrial settlement is largely contingent on the presence of natural (and later-created, artificial) advantages comparative to other localities. Again, how companies or industries locate – the factors of location – largely contends with how local variables interact to provide advantages over other locations.

Factors of location

While some locations are preferable to others, not all factors of location are readily apparent. Because the aim of this thesis seeks the factors that enable or catalyze the development of (STEM) industry at a local level, the basic economic principles behind industry location must be examined. All economic models are built upon the premise of maximizing profits and utility while minimizing the costs and time required (Blanco, personal communication, 3/26/11). Generally, the factors of industrial location break into three strategies orienting around the efficiency of: 1) the acquisition or transport of resources and/or products, 2) the location/distance to the market or end-user and 3) labor or workforce inputs. The factors of industrial location rely on balancing the combination of these efficiencies to achieve maximum-profit equilibrium.

The first two strategies are really halves of a larger approach called ‘supply-orientation’, which is concerned with two models that all firms must consider: the need to locate near resources, ‘resource orientation’, and/or the need to minimize the distance or transfer costs from production to market – the so-called ‘market orientation’. The former factor of production, resource orientation, is best understood when thinking

about a firm that has a relatively high cost of transporting inputs as opposed to outputs (Blanco, personal communication, 3/26/11). Examples of this model are found in industries whose inputs are: 1) perishable, 2) fragile, bulky or hazardous or 3) weight-losing. For example, perishable inputs include the fruits or vegetables used in canning, fragile inputs include computer components for automobiles, and weight-losing inputs include a large piece of wood from which a baseball bat is made. In any case, the object of a firm that is resource-oriented is the shortening of the physical distance between input material and output products. Therefore, production facilities are built near resource-oriented inputs.

The opposite of supply orientation is the 'market-orientation' location strategy. A business whose export material exceeds the 'monetary weight' of its input is typical of this type of firm. One example is to consider a beverage bottling firm. Assuming a standard transportation cost based on weight, and that the output (i.e., the beverage) is more valuable than its inputs, (e.g., sugar, water) the firm would have a much greater incentive to locate near its final marketplace (Blanco, personal communication, 3/26/11). Most often, a firm will employ a combination of these locational factors to select a median location that maximizes the benefit, while reducing the cost, of each input. Certain types of production, like those often found in the innovation economy, see the traditional importance of locating proximal to physical resources or markets largely being replaced by the need to locate near highly-skilled, innovative workers. For some industries, this may be because input costs and market access are both very low. Given the basics of location strategies, the logical next step is evaluation how these firms locate in spatial terms.

Cluster development: strength in numbers

Often, high-tech firms will cluster close together to enjoy certain benefits of their concentration. Clusters of firms can form local or regional economies allowing for powerful concentrations of codependent industries. The mutual advantages to both industry and their host communities are magnified as a symbiotic relationship is formed. The primary reason why industries locate close to one another is due to the principle of 'economies of scale' that facilitates cost reductions. Economies of scale can either reduce costs internally, like a company benefitting from the efficiencies of increased production related to something it has direct control over, or externally, for factors over which it does not control. External economies, also known as agglomeration economies, on the other hand, depend on the concentration or 'critical mass' of industries (Blanco, personal communication, 3/26/11). In general, external economies can be either urbanized or localized. Urbanized economies, "arise from a large number of different industries in the same place," meaning they derive their competitive advantage from the overall size of the local economy (Blanco, personal communication, 3/26/11). Urbanized economies rely on the sheer size of the proximal economy and the subsequent large number of transactions taking place. Localized economies, which generate their advantage from a large number of similar or co-dependent industries, are of greater interest to this research and are explored in greater detail below.

Even in the late 1800's, "Alfred Marshall was noticing that firms in a particular trade tended to locate near each other in the industrial districts of England, and suggested this was because they could derive mutual advantage from such dynamics as labor market pooling, supplier specialization, and knowledge spillovers" (Muro & Katz, 2010. pg. 18). Mutual advantage derives from the idea of 'sharing' or joint usage

of inputs, labor pools, and knowledge (Blanco, personal communication, 3/26/11). The physical form of scale economies must mimic their function in the local marketplace. Often, this process manifests itself via several industrial clustering methods.

Hubs, incubators, research parks and others

The commercial settlement of an innovative economy relies largely on the clustering of economic activity. The clustering of activity in special places – in our case knowledge centers – leads to the development of relationships with the community and dialogue between companies. The form and function of these cluster developments reflect their purpose in the local economy, and are often referred to incubators, hubs, collectives, research parks and others. Incubators are often associated with housing small, original or spinoff companies needing further capital investment and time while their ideas develop and commercialize. Once mature enough to enter the market, a company may seek to locate in a collective, research park, hub or other cluster. The nature of the business will likely determine the appropriate destination. For example, a company focused on research and development might prefer a research park or collective. Such clusters tend to specialize in related products or services. By locating there, a company might benefit from the other companies in a supplementary fashion, using what is best described as horizontal integration. By amassing similar knowledge or skills, collectives and research park clusters offer like-minded companies a competitive advantage. Alternatively, a company which creates a unique or tangible product may want to locate in a hub where complementary services are offered; what is also known as horizontal integration. Hubs typically house a variety of companies with different skillsets. There, a young firm may be able to obtain legal, managerial or logistical services, allowing it to connect its product or service to larger networks while

also developing a well-rounded business model. The needs of a particular innovation economy will likely require a mix of cluster strategies but their roles are worth mentioning.

Often, in an institutional setting, innovation takes the form of a 'spin-off'. Scientists, professors and/or students will have formulated an idea that has commercial value. In an effort to protect intellectual property, a scientist may start a company to further develop his/her idea with the hopes of eventually bringing it to the marketplace. Involvement by that institution in facilitating this process makes the said institution function, "almost as venture capitalists by helping the individual find investors and experienced managers who could guide the firm" (Geiger and Sa, 2008; Block & Keller, 2009: 472). An incubator, which is organized by local economic development partners, is the prime sort of cluster development in that it facilitates the development companies harboring innovations by promoting access to legal, business and educational services and providers. Over time, a spin-off company may decide to enter the market and may locate in a hub or research park, surrounding itself with like businesses that benefit from shared knowledge and the advantages of mutual cooperation. Espousing the merits of local innovation and the networks they rely upon, "Sonn and Storper have determined that U.S. inventors increasingly use domestic knowledge more than foreign knowledge and knowledge from the same metropolitan area than knowledge from outside" (Muro & Katz, 2010. pg. 26). By focusing on the creation of a dynamic core of inter-related businesses, the inclusion of additional local parties can participate and benefit from local ideas. Communities that take advantage of a local, specialized knowledge network and build economies around them are called Knowledge Center communities.

The knowledge center community

Sometimes, special situations arise that tweak the traditional concepts of capital, land and labor into forming specialized cluster developments, resulting in a KC community. Throughout the course of history, many cities functioned as knowledge centers. Such cities and regions served as important hubs for trade and commerce, often straddling the boundaries of major civilizations. The blending of other cultures, ethnicities and religions in a dense setting sparked the formation of new ideas while also providing a reason and means to transmit them – trade. Famous cities, including the likes of Rome, Baghdad, Jerusalem, Istanbul, Alexandria and Teotihuacan are prime examples of knowledge cities from the past. They operated as crucibles for the ideas and innovations that formed the civilized world. Today, large urban centers function similarly as innovations in science and technology increasingly emerge from highly-specialized, local economies.

KC communities have been defined in many ways but SGS, an Australian firm, describes a knowledge center as a local or regional economy that exports high value products created through research and development. Knowledge centers also typically enjoy a high standard of living in tolerant and inclusive societies (Ovalle, Marquez & Salomon, 2004). The only element missing from this definition is the pre-eminence of a strong, local 'anchor institution' that acts as the backbone of the community. Oftentimes a robust, specialty industry forms alongside an educational institution, serving as the point of industry focus.¹

¹ "Marshallian externalities. . . captures the idea that an agglomeration is the outcome of a 'snowball effect' in which a growing number of agents want to congregate to benefit from a larger diversity of activities and higher specialization." (Fujita, and Thisse, 2002. pg. 8)

These conditions almost perfectly describe the American university system and by extension, the composition of Gainesville, FL, which hosts the University of Florida and Santa Fe College. KC communities often crop up around long-established university institutions as, “the essentially US-centric model of an innovation system hing[es] on research universities that are simultaneously centers of learning, the foci of basic and applied research, and the source of entrepreneurship. . .” (Hershberg, Nabeshima & Yusuf, 2007. pg. 933). Because institutions like universities are well-funded, committed to academic excellence and generate their own population base, they are ripe for further expansion if the private sector can capitalize on the products created there.²

In the current economic climate, universities and other institutions might be intrigued by the idea of reinventing themselves. One reason why concerns itself with a key difference between traditional economic models and those of the innovation economy. Conventional economies often experience decreasing-returns, the decreased efficiency of resources the more they are used (e.g. the additional effort required to extract fossil fuels in a given location, over time). The innovation economy model witnesses just the opposite, partly because its inputs are not based on exhaustible resources, but rather on the mind. Innovation economies often produce positive feedback loops that increase the utility of its source material – educated people. Our brains, much like our muscles, become stronger the more they are used. An

² “That the presence of research-oriented universities—public or private—can assist geographically proximate firms directly through the provision of educated workers and indirectly by way of myriad externalities is now reasonably well established. More controversial is the research which attempts to show that in a number of notable instances, research-oriented entrepreneurial universities have supplied the underpinnings of dynamic industrial clusters that are responsible for regional growth spirals” (Leiponen, 2005; (Hershberg, Nabeshima & Yusuf, 2007. pg. 932)

economy based on inputs that appreciate, instead of depreciating through use is one hallmark of the innovation economy. The emergence of, “knowledge-based opportunity has, in many cases, been accompanied by a concomitant decline in neoclassic industrial activity (Burton-Jones, 1999; Drucker, 1998). The replacement of physical commodity production by more abstract forms of production (e.g. information, ideas, and knowledge) has however, paradoxically, reinforced the importance of central places (cities) and led to the formation of knowledge cities” (Yigitcanlar, 2007. pg. 2).

Broadly, community leaders and planners that wish to develop KC communities focus on enhancing, “financial, intellectual, social and human capital systems. . .”, developing a high-tech society, improving infrastructure, and increasing the quality and variety of, “life and place” (Yigitcanlar, 2009. pg. 231). Knowledge city development has become a recent interest for urban planners as the requisite adaptations in urban form often mimic the ideals of those planning agencies. The, “focus on creating a high level of social amenity,” and community development that, “consider[s] creativity and culture as the providers of dynamic socio-cultural activities and infrastructure” resonates with the objectives of increased density, variety and experiences in our urban places (Yigitcanlar, O’Connor & Westerman, 2008. pg. 4).

Today, many cities face the reality that their, “urban economies are being radically altered by dynamic processes of economic and spatial restructuring. The result is the creation of ‘knowledge cities’.” (Graham and Marvin, 1996; Yigitcanlar, 2007. pg. 2). Some values necessary for advanced development have remained constant over millennia such as diversity, inclusiveness and higher-learning while other variables like

geographic distribution, corporate structures, and economic models have changed dramatically.³

The pre-existence of these elements are important as, “it is apparent that KC’s draw heavily upon the existing cultural and industrial foundations within a city as these act as attractors for knowledge workers” (Yigitcanlar, O’Connor & Westerman, 2008. pg. 2). The underlining theme is that the byproducts of scholastic achievement, technological sophistication and urban living rely on the active participation and endorsement of the people. The constituents of a place must value those ideals or the communal bonds that facilitate the processes and interactions of the KC cannot be realized.

The importance of being different

When considering the physical composition of the innovation economy, planners and officials should not go too far in attempting to recreate the character of other, successful innovation economies. Another prosperous innovation economy might offer some ‘lessons learned’ but, “for a sustainable competitive advantage that prevents imitations, cities should make the most out of their uniqueness of interconnected amenities, atmosphere, cityscape, and clusters of specific cultural industries” (Romein & Trip, 2008. pg. 14). The argument here is that differences of character and the context of original places allows for the occurrence of truly innovative processes.

³ “This latter refocusing of interest of the KC idea not only drew upon the information and knowledge economies but also stressed that vibrant socio-cultural activities associated with conserved rich natural environments, quality built environments, the presence of tolerance and acceptance of multiculturalism, democratic, transparent and visionary governance, and enriched human capital play key roles (Florida, 2005; Baum et al., 2006).” (Yigitcanlar, O’Connor & Westerman, 2008. pg. 1)

Analogous to industrial innovation is the biological process of speciation in which (along with isolation and other variables such as time) the species in question arises out of responses to the unique conditions found within its proximal environs. What this means for innovation economies, “is that the economy is not so much a Newtonian system with a predetermined equilibrium but more like an evolving biological system characterized by punctuated equilibrium and multiple possible outcomes, subject in part to chance” (Cortright, 2002. pg. 6). Finishing this link between economic development and biological processes, Cortright adds that, “variations in local tastes and preferences may be an important source of innovation, economy-wide. If we adopt, for a moment, the evolutionary view of economic change (Nelson & Winter, 1982), unusual or fringe environments (in our case, communities with different tastes) become the source of mutations—changes in business practices—that may give some businesses a competitive advantage. Species—businesses—that develop or thrive on the fringes may ultimately dominate the economy if the larger environment changes” (Cortright, 2002. pg. 8). The astounding prevalence of market behavior mimicking biological processes gives credence to the discoveries in the physical sciences which clearly have extensions into man’s governing institutions.⁴ By encouraging originality, some cities have met huge success when implementing innovation economy principles.

Consider Austin, TX, with its famous mantra: Keep Austin Weird. By focusing on the ‘weirdness’ or originality of its people and environment, Austin has become a leader

⁴ “National passions such as high-speed driving in Germany, gardening in England, or fashion in Italy produce local demand conditions that push producers to improve and innovate in ways that translate into advantages in international competition.” (Cortright, 2002. pg. 6) Local passions forge outstanding (quality, efficiency, etc.) local industries that can then better compete in larger markets.

in business, a destination for the brightest college graduates and a symbol of American creativity. The lesson here is that places ought to celebrate and revel in their distinctiveness. To flourish in an economy that values knowledge creation, diversity should be at the forefront of the innovative process. Although special parts of cities and knowledge center communities can be exciting places on their own, when these places and the people in them connect to form larger networks – the real power of KCs are understood.

Networks and connectivity

Unlike previous eras where products, technology or even information could be kept secret, today's connected world largely prevents the regulation of people, products and information from flowing. The very nature of knowledge is, "that it is extremely difficult, if not impossible, to maintain monopolies of information indefinitely" (Itzkin, 2000. pg. 5). Critical for the survival of innovation economies is the production, transfer and incorporation of new knowledge into their product and services. Standard economic theory might suggest that willingly sharing resources, labor and intelligence with similar or competing firms is bad for business. However, in the innovation economy, this sharing of information and eventual co-dependence among businesses is often necessary for long-term success.

The rise in 'technology alliances' among firms is largely because, "the information revolution has greatly increased the available knowledge from which new products and services can be developed. The huge array of technologies and applications has outpaced the ability of single firms to retain proficiency in the technology fields relevant

to their business”⁵ (Itzkin, 2000. pg. 9). Innovative companies are specialists, not generalists. They often require outside products and services to keep their businesses running and so the needs of professional, administrative and other services are likely to cluster nearby. Path dependence and a flair for entrepreneurship can encourage the chances for fortuitous ‘accidents’ of discovery.

Relationships between companies need to be more than just the sharing of intermediate inputs, labor forces and knowledge – it needs to be about dialogue and collaboration. Whether this trust comes from mutual necessity or marketplace advantages is up for debate. In a sustained innovation economy, “information or knowledge embedded in commodities, not the physical material from which they are made, becomes the main source of value” (Itzkin, 2000. pg. 5). No one firm can independently produce the technologies and information needed. Partnerships between industries and the community must be formed along with nimble and open-minded business models. One of the main lessons learned from innovation economies, “is the importance of having strong links and creating synergy and trust between all social actors, national and local government, universities, industries and society as a whole” (Ergazakis, Metaxiotis & Psarras, 2004. pg. 13).

The unifying principle behind innovative economies, explained by the, “spiral model of knowledge creation”, lists the primary mechanism of knowledge creation into tacit and tangible applications as the process of conversation (Dvir & Pasher, 2004. pg.

⁵ “The collaboration needed for innovation depends on social and cultural factors, not just on information technology. This applies not only to information sharing inside an organization but also to networks linking different organizations. It is above all trust and the norm of reciprocity to promote mutual gain that makes collaboration feasible. As Fountain and Atkinson (1998:3) argue, these shared values, or ‘social capital’, become a crucial enabler of innovation.” (Itzkin, 2000. pg. 10)

20). This physical, and often face to face, dialogue furthers the collective enterprise of innovation economies. Often, industries cluster around local institutions to provide them with cutting-edge technologies and bright minds as, “recent trends suggest that the drivers of growth are skill and, in many instances, research-intensive industries.” (Hershberg, Nabeshima & Yusuf, 2007. pg. 931). Firms and industries ought to be positioned carefully in the context of economic geography. Understanding the nuances that bind cluster developments concludes the component of land in land, labor and capital.

A summary of land economics

In summation, the prevalence of high-tech cluster developments in culturally rich, knowledge-based communities is of chief importance. Often, clusters of industries locate near one another to take advantage of their mutual connectivity and capital reductions. Also, the appeal of agglomeration economies may make them attractive to host cities due to their relative permanence. Exporting these jobs is difficult because cluster developments are anchored into the economic landscape by their interconnectedness with each other and their suppliers. Clusters arise and grow because the firms within them profit materially from the presence of powerful economic externalities and ‘knowledge spillovers’ that bring them important competitive advantages.

These advantages range between a highly-skilled labor force and a matured supply chain to the basic frameworks of sharing cutting-edge knowledge (Muro & Katz, 2010). Cluster economies are made possible and more powerful by the, “ongoing drama of shared experience and synergy – a kind of symbiotic empathy. . .”, which rewards those industries by improving externalities like comparative advantage,

economies of scale, and others (Minchin, 2008). Industries that share, cooperate and generally act in a unified manner, especially when bound by location, strengthen the legitimacy of the innovation economic model. Such clusters represent, “more a paradigm than a program, [as they] are neither a shiny new fad, a silver bullet, nor ethereal, but instead represent a grounded source of practical value to businesses, workers, and policymakers” (Muro & Katz, 2010. pg. 46).

The coordination required to orchestrate local cluster developments acts as a model for overall economic policy coordination. Because sustaining an innovation economy requires cooperation, the efficiencies gleaned from cluster interactions could help make increased returns on other capital investments a reality (Muro & Katz, 2010). While location is vital to the creation of an innovation economy, the next step to understanding the whole process examines how investments are made in these places. Capital, or the investment of money and material into a place, is what turns a good location into a thriving hub of activity.

Capital

Explaining capital

Capital is referred to as the amount of cash, machinery or other assets that comprise the input portion of a basic input-output model. The capital, for example, of a timber company would be money, timber-trucks and warehouses, and the output would be lumber. For our purposes, the examination of capital in the context of the factors of industrial location is minimized because capital is often so diverse in its composition, application and quantity. Capital is ever-changing and highly variable. Quantifying or comparing the worth of capital between industries or economies is difficult as many forms of capital are constrained by intangible characteristics like mobility, adaptability,

suitability and so on. Capital should be treated as an evolving entity that constantly refreshes, updates and modifies itself according to the context of its environment (Itzkin, 2000). We can consider capital to be a foundation of economic development but one that is largely maintained by private interests and as such, largely uncontrollable. One form of capital that serves the public interest are the investments made in transportation networks.

Capital investments

While the, "centripetal forces tend to promote spatial concentration of economic activity, centrifugal forces oppose such concentrations," by presenting incentives (e.g. lower transportation costs, rents) and other factors of production for businesses to locate elsewhere (Fujita, et al. 1999. pg. 9). The application of transportation investments, when considering agglomeration economies, must account for positive feedback loops in supply, production as well as the placement of industry along major transportation networks. Creating more centripetal, or inward force, is the goal.

Linking the aforementioned economics of agglomeration with the changing nature of global commerce, specific information concerning the role of transportation costs and infrastructure can be addressed. The applied ideas are localization and the reduction of transport costs and increasing transport options or modalities. It can be assumed that industrial areas geographically positioned along or near existing trade routes are given a significant comparative advantage. Fujita says the, "presence of a good harbor or access to a major waterway. . . explains in a formal way why ports and transportation hubs tend to become urban centers" (Fujita, et al. 1999. pg. 129).

Although historically it has been cheaper to transport by water than by land, today

water-based ports are not the only important means of transportation, and the principle of connectivity remains.

While municipalities may not have control of their geographical features, most often the transportation-based solution to increasing the range of locally created goods is to expand transportation connections such as railways, highways, seaports and airports - which serve an export function ⁶ (Fujita, and Thisse, 2002). 'External economies', a subset of which is agglomeration economies, choose to locate inside bustling locations, "first, [because] a geographically concentrated industry could support specialized local providers of input. . . and second, a concentration of firms employing workers of the same type would offer labor market pooling. . . and finally, [because] geographic proximity would facilitate the spread of information" (Fujita, et al. 1999. pg. 18). However, in the case of STEM industries many products are intangible and knowledge-based; of the exported goods, many are small, expensive and time-sensitive.⁷

The export of products should then skew heavily in favor of the fastest means of transportation – air and overland trucking. While the agglomeration of certain industries has been explored, just where they locate – the localization of a firm – is heavily dependent on transportation costs of intermediate and final goods. Reducing the costs

⁶ "Localization will tend to occur unless the costs of transporting intermediates are particularly low compared to those of transporting final goods. And a general reduction in transport costs, of both intermediate and final, will ordinarily tend to encourage localization rather than discourage it." (Krugman, 1991. pg. 56)

⁷ "The other characteristic of goods and services [in the innovation economy is] that a time-specific analysis shows to have unexpected analytical importance is a product's perishability or storability - its 'temporal mobility' - over the day or week or year." (Winston, 1982. pg. 6)

of transportation and export has two effects, localizing production where it is cheapest and concentrating that development in one place (Krugman, 1991).

Given that the market will ultimately be the deciding factor in localization, transportation policies recognize these market forces and plan accordingly to best capitalize on industry clustering. Also, transport costs not only value the movement of goods but the land actively facilitating it. Transportation is valued, "both an economic good and as the substratum for economic activities" (Fujita, and Thisse, 2002. pg. 11). That is to say, the market value of transportation investments should be considered for the benefit of trade and transit and as capital for further economic development.

The complex relationships, "between the decrease in transport costs and the degree of agglomeration of economic activities. . . happens provided that transport costs are below some critical threshold" (Fujita, and Thisse, 2002. pg. 4). That threshold is 'comparative advantage' and maintaining it is critical. Economic advantages that stem from cluster developments or other capital improvements are many. Of them, the idea of comparative advantage has been singled out for review due to its importance in localized innovation economies. The main reason firms cluster in the first place rather than give into the centrifugal forces of dispersion is due to the special benefits or advantages gained from co-locating.

Comparative advantage

The existence of shared inputs, labor and knowledge are needed for cluster formation. These and other inputs allow a localized agglomeration economy to maintain a comparative advantage or in other words, a special benefit that enables an industry to remain competitive in the larger marketplace. Comparative advantage can be created by shorter production times, cheaper inputs, or other supply/production advantages.

Reaching and then maintaining a comparative advantage, as far as the innovation economy is concerned, is the centripetal force and overall principle binding the land, labor and capital inputs in the first place. Without an advantage in the marketplace, clusters would not form.

How do old firms maintain their advantage against upstart companies? Similarly, how do new firms entering the market hope to accrue an advantage if there is existing competition for land, labor and capital? These questions are analogous to the timeless riddle, 'Which comes first, the chicken or the egg?' An interesting quandary exists when analyzing spatial locations of industry. Assuming textbook economics, producers wish to locate in areas with: 1) large markets and, 2) nearby supplies, where they can gain a comparative advantage. However these places have large markets specifically because they already have producers. Fujita claims these, "two advantages correspond precisely to the backward linkages and forward linkages of developmental theory", and are the basis for persistent economic activity (Fujita, et al. 1999. pg. 5). Although one might consider the presence of established competitors a deterrent for market entry, the overall benefit of locating near a large market with a specialized supply chain outweighs the negative effects of high competition. In fact, for some industries – STEM in particular – locating densely among the competition decreases supply costs (in terms of labor and capital) and increases the attractiveness of the market.

If an agglomeration economy is to survive and thrive it must be ready, willing and able to adapt to changes in the market. The importance of sharing and cooperation is essential to maintaining an agglomeration economy as, "competitive advantage and innovation are inextricably linked to the ability to learn. Learning and change are two

sides of the same coin” (Itzkin, 2000. pg. 2). Adaptation is fundamental to this economic model as the innovation process simultaneously creates new knowledge while outdating established technologies, attitudes and processes. The foundation of sustained innovation is maintained through a myriad network of partnerships called ‘collaborative advantage’ (Itzkin, 2000. pg. 4).

One major, “advantage of clusters is the specialized knowledge there. Craftsmanship is rightly appreciated, and knowledge is in the air. But what triggers the establishment of clusters? Part of the answer,” deals with the sharing of talent and information but another deals with the demand for the products created, both locally and for export (Cortright, 2002. pg. 2). If a product has demand in a variety of markets, it buffers itself from domestic or foreign economic turmoil better than a product dependent on a particular market. Companies that are keen to these developments will not only position themselves advantageously in the landscape and with the right tools, they will also seek out the critical component of labor to put these other elements to work.

Characteristics of successful industries

In the innovation economy, numerous small to medium-sized companies appear preferential. As the products of the innovation economy are often smaller, highly customized, and time sensitive, the normal advantages of larger corporations (such as mass production and a large resource base) are less of a priority in the innovation economy. However, the lack of speed and efficiency are not the only hindrances. Common in large companies is the reluctance to experiment with new business models and other internal, structural elements. The larger a company becomes, the more it invests in its organizational hierarchy. Smaller and perhaps newer companies might have, “flat organizational boundaries between departments, [a] low emphasis on

hierarchy, and perhaps even a loosely defined structure [that] increase[s] the chances that the organization will enhance, rather than inhibit, the generation, flow and leverage of ideas” (Dvir & Pasher, 2004. pg. 17). Creative people and companies are driven to succeed and less likely to remain trapped in ‘silo thinking’. A study done on innovative industries in Spain in 2008 revealed too that, “the technical qualifications of the employees, the propensity to export, and the company size (measured by the number of employees) have a significant and positive effect on a company’s attitude towards innovation” (Coronado, Acosta & Fernandez, 2008. pg. 1009).

By thinking ‘outside the box’, companies in the innovation economy are more able to adapt to environmental changes rather than just reacting to them. In the innovation economy the inability to alternate between or adopt new models indicates a kind of silo thinking that can handicap and eventually suffocate a business. The, “incentives that drive private-sector innovation are real-time, unforgiving, and essentially Darwinian – survival of the smartest” (Bainbridge & Roco, 2006. pg. 35). Further, the company structures that promote – and can thrive – on small batches of highly customizable products while also remaining efficient are primed for success in the innovation economy (Harrison, 2009. pg. 7).

Further consideration of the organization of innovation industry finds that market pressures and industry relationships may be the cause. The need for companies to be at, “the cutting edge of innovation is often [found] at the interfaces between organizations. The focus of innovation in industry is moving away from the centralized, prestigious laboratories of large multinational corporations to large numbers of smaller and medium-sized firms in their supply chains” (Fountain & Atkinson, 1998:1; Itzkin,

2000. pg. 9). This shift in focus to smaller, localized agglomeration economies is caused by the greater emphasis the larger markets place on quarterly earnings and other financial reports (Block & Keller, 2009. pg. 470). As research and development becomes increasingly expensive, many industries now focus on product development because, “after all, research is expensive and its contribution to the bottom line is likely to come long after the current CEO’s tenure in office” (Block & Keller, 2009. pg. 470). The need for firms to mobilize assets, alter business models and collaborate with one another appears paramount; effective communication inside of and between other companies is crucial.

Focusing on the land and capital needed for innovation is not enough to spark the innovation economy. More is needed and can be found in the element of labor. As mentioned previously, companies and industry-types are anything but immune from larger changes in the global economy. For a company or local industry to survive and thrive in the innovation economy it must be adaptable, connected, open-minded and zealous; all of which are preferable traits found in the last component – labor.

Labor

Work smarter, not harder

Last but certainly not least is the component of labor, often synonymous with ‘social’ or ‘human’ capital. This social capital is of great interest to this research as, “[h]uman labour has the peculiar ability to create more value than is used up in production” (Itzkin, 2000. pg. 3). In a world of dwindling resources and mechanized production, labor appears to be the one inexhaustible factor of development. While some older industries have all but seen the elimination of physical human labor, “[t]he lack of a negative impact of technology on overall employment, especially in the longer

term, is probably due to the way in which markets and economies adjust to new technology. As well as reducing the need for direct labour in the production process, technology increases output and reduces the cost of production” (Harrison, 2009. pg. 7). The reduction of importance of direct or manual labor in the developed world is just another example of turn-over in modern economies; they recycle and recreate themselves. In fact, the quality of life for those who would otherwise perform backbreaking physical labor has increased. Often these people leave the fields and factories for service sector jobs.

As the component of labor in our modern economic system changes, one important observation is this: our minds are clearly more valuable than our physical ability. This change marks an exciting developmental adjustment in the human species. Never before have we been so free to explore the potential of our ideas, passions and interests. Today, as part of a global, connected society, we have for the first time the critical mass of people, technology and ideas to truly revolutionize our function in the world. By utilizing our brains to greater extents, we have the ability to solve many problems ahead. Our, “social capital’ is as important as physical capital (plant, equipment and technology) and human capital (intellect, character, education and training) in driving innovation and growth. The stock of social capital is increased when a network of organizations develops the ability to work in collaboration to promote mutual productive gain” (Itzkin, 2000. pg. 10). Today, it appears increasingly important to combine the physical assets (capital) of industry with the more intangible assets of the mind (labor) for the future growth of economies in certain advantageous places (land). Capital and location are surely important but without the input of labor, the

operating component of industry, little to nothing would be accomplished. According to Richard Florida (2010), labor separates into three social classes or groups, based on their application of knowledge in workplace tasks.

Social classes

The access to increasingly important and scarce human capital is a vital component for firms wishing to cluster in a particular locale (Yigitcanlar, O'Connor & Westerman, 2008). Intelligent and creative people are becoming the focal point for many industries and, unlike the elements of capital and location, which are largely static, industry must actively attract and pursue talented people to remain competitive. One of the consequences of globalization is the increasing necessity of talented and intelligent people to invent and produce the technologies that make today's world possible.

The old model of industrialization that required tycoons of industry is less important today as their greatest contribution – the infrastructure and industrial base they created – facilitated the conditions necessary for the next step in industrial economies: the innovation economy. Indeed, “if the dominant figures of the past hundred years have been the entrepreneur, the businessman, and the industrial executive, the ‘new men’ are the scientists, the mathematicians, the economists, and the engineers of the new intellectual technology” (Bell, 1973. pg. 344).⁸

The needs of these people, both inside and outside of their working environment, reflect the interests, passions and lifestyle of a forward-thinking community and the

⁸ “Whereas hard commodities such as oil, steel, and coal were the building blocks of the last economy, the new economy will be based on innovation. . . . The new economic building blocks are bits, genes, atoms, and neurons. . . these are the ingredients of the Innovation Economy: knowledge products. Those that achieve primacy via intelligence, adaptation, and connectivity will define the Innovation Economy of the future.” (Bainbridge & Roco, 2006. pg. 37)

overall changing value structure of today's most educated citizens. Like all species, humans are more likely to settle in habitats that nurture them. Describing the basic necessities for comfortable living is easy, but if we wish to capture the best and brightest minds, the development of an environment that mimics the ideals of these people should be investigated. Richard Florida, the famous urban economist-theorist has much to say on the issue of city structure and social relations. He claims that the cultivation of a 'creative class', consisting of scientists, engineers, entrepreneurs and the like, is essential for persistent competitiveness in a variety of marketplaces and economy-types. The creative class can be contrasted with three other classes: the agriculture, working, and service classes.

Of the four groups, the 'agricultural class' is most emblematic of changes in today's economy from one-hundred years ago. As of the 1900 census, nearly 38% of all Americans lived and worked on farms (USDA, 2012). Today, less than 1% of all Americans are classified as farmers, emblematic of a huge shift in national settlement patterns. Agriculture allowed the founding of cities and it is the offspring of cities – technology – that has relegated the agricultural class to obscurity.

The 'working class' can be shown through scenes of hardworking men and women in factories, plants and office environments and conjure up the very image of the industrial revolution. According to Florida's definition, and as of the 2010 Census, 24.6% of Americans are considered working class. Today, technology like mechanized labor and economy-of-scale externalities favor massive factories that require less of the human element. Thus, like the jobs in the agricultural class, working class jobs are disappearing.

Over the years, the majority of labor from the agriculture and working classes reformed into the 'service class', the largest class of people, which comprise nearly 39% of US employment (Florida, 2010). The service class includes occupations in retail, tourism and other personal services such as dry-cleaning, gas station, drive-through restaurant and customer support operators needed to maintain a high quality of life today. While not the creators of innovation, the service class often applies and operates the technologies that run our modern economies.

Finally, it is the emergence of the 'Creative Class' in modern economies that Richard Florida and others tout as a major, potential source of growth for industry. He claims that the creative class acts as a 'force-multiplier' for the other classes both directly and indirectly. The rising number and influence of creative class workers through the last one hundred years is illustrated in Figure 2-4.

The products directly created from the creative class spur growth in the working class due to inventions that require new manufacturing and operation skill sets as well as by creating demand for new service class employees. Consisting of 35.6% of total US employment in 2010, the creative class ranks just behind the service class in occupational strength (Florida, 2010). Broken into two parts, the purely 'creative core' is 12% of the workforce and consists of scientists, engineers, artists, designers and others. The remaining 24% of the creative class is composed of 'creative professionals' working in fields like management, legal and financial operations, healthcare, technical and educational practitioners. While only still a small percentage of the total economy,

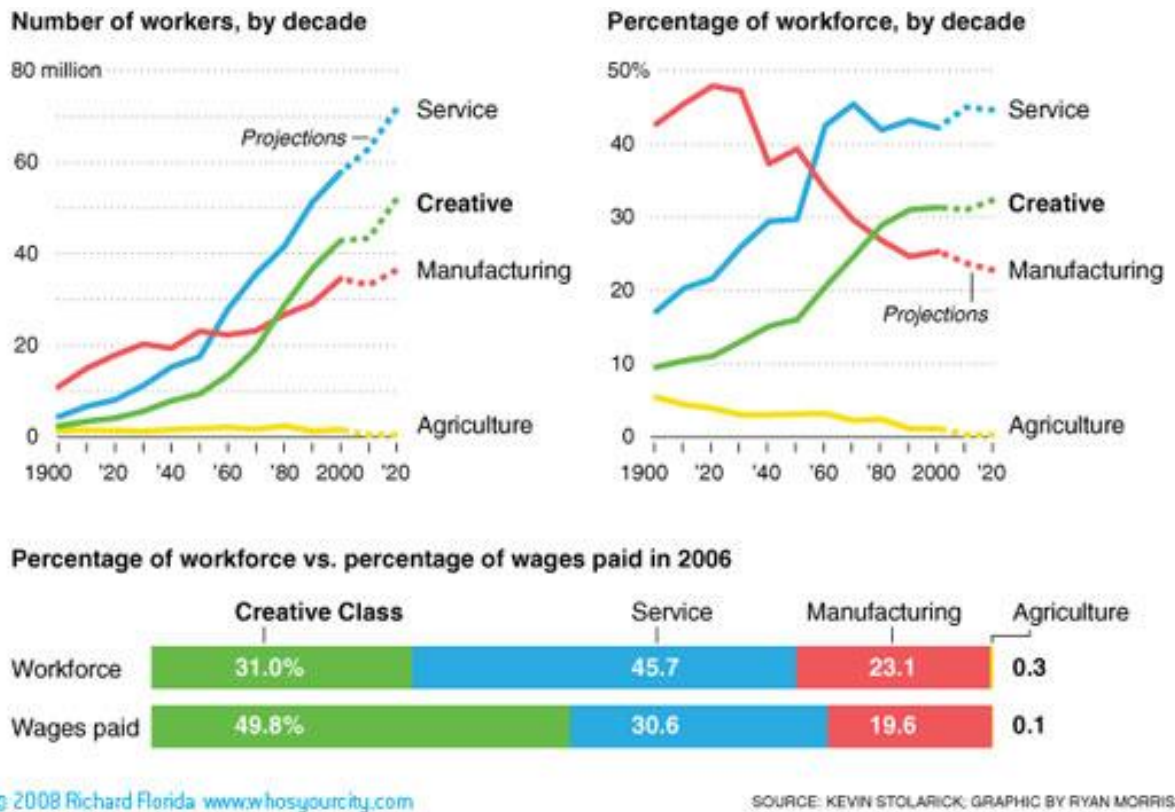


Figure 2-4. Shifting occupation classes in the U.S. Reprinted by permission from Florida, R. (2008). *Who's Your City* ©. Retrieved from http://www.creativeclass.com/_v3/whos_your_city/maps/FIG_7.1_Rise_of_the_Creative_Economy.gif

the creative class' contribution to the direct and indirect growth to the economy is substantially disproportionate to its size.

Creative class focus

In all, historical trends point to big changes in labor and class structure. The economy of the future favors labor that utilizes the mind rather than the application of physical ability or skill. The importance of skilled tradesmen to the last century are not being replaced by a new kind of worker, only now those trades in demand require less muscle and more brainpower. One of the aims of this research is to demonstrate the necessity of this brainpower made evident in the creative class. For instance, in the

manufacturing industry, labor is often the largest expenditure (DeRocco, 2009). Today, technological advances allow for almost fully automated assembly lines dominated by mechanized labor. In the U.S., manufacturing is thriving – just not manufacturing jobs – as seen in Figure 2-5.

Mechanization changed farming a hundred years ago and so too are technological innovations changing the working class today. But why focus on the creative class? The creative class is just one component of a city's population, but increasing their numbers directly and indirectly grows jobs, increases the tax base, lowers unemployment, produces a higher average standard of living and acts as a

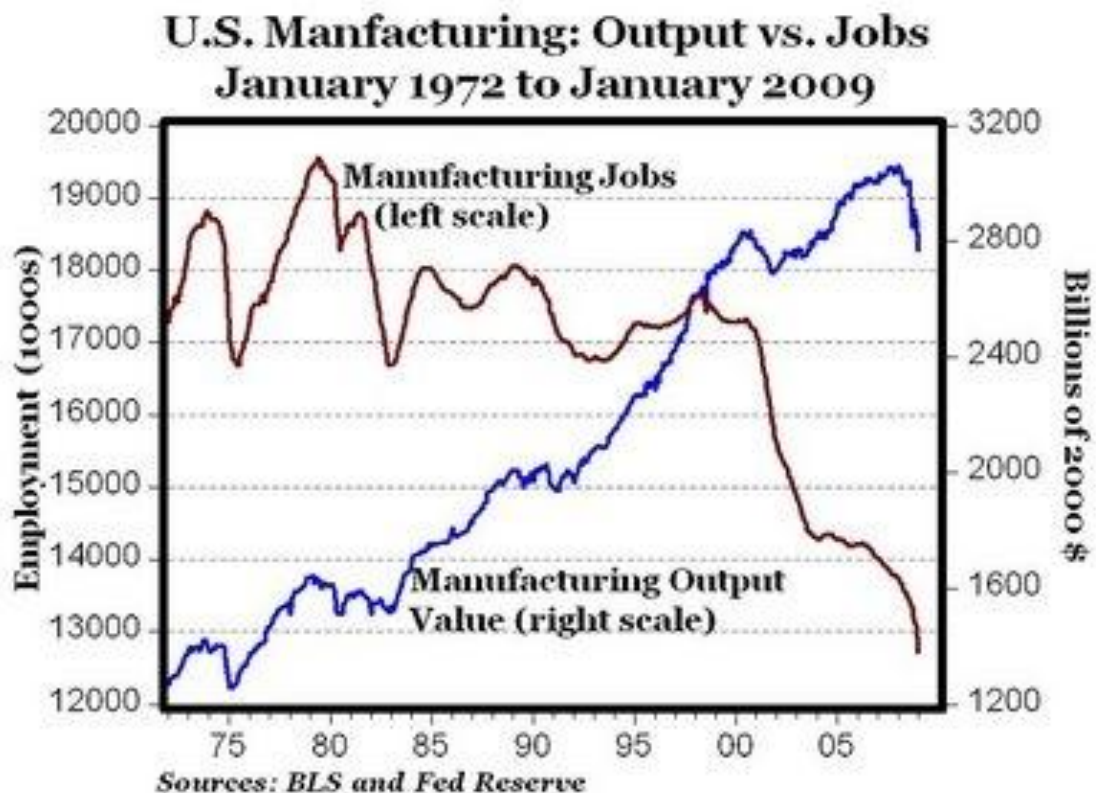


Figure 2-5. U.S. manufacturing output vs. jobs. Reprinted by permission from Intellectual Takeout. (2005). U.S. Manufacturing Output vs. Jobs, January 1972 to January 2009. *Intellectual Takeout* ©. Retrieved from <http://www.intellectuالتakeout.org/library/chart-graph/us-manufacturing-output-vs-jobs-january-1972-january-2009>

catalyst of innovation (Florida, 2010). Also, the creative class appears more resistant to economic change. While none of the occupational classes are immune to unemployment, in general the creative class is better able to weather market volatility. Nationwide unemployment in 2010 was near 10% but working class jobs saw an average of 15% total unemployment while the rates for the creative class were only about 5% (O'Conner, 2012). Also, the wages for the creative class are significantly higher. As of 2010, although the creative class was nearly a third of total US employment, it represented over half the total income reported in the United States (Florida, 2010). The creative class is dependent on the service class for basic goods and services and this transfer of wealth into the economy, especially the local economy, is important for sustained growth (Florida, 2010).

Not all places can succeed in creating an innovation economy. In describing these innovation economy models, it is implied that all the factors of production – land, labor and capital – are aligned to produce the right context for an innovation economy. For places without the right environmental context or capital investments, the presence of the creative class is not enough. For some places, the economic, social and intellectual capital is already established and what remains is the full utilization and commitment from that community to foster creative class growth. Adopting the innovation economy model by no means guarantees a successful outcome but for many communities, the upside is far more appealing than the long-term risks of maintaining their current model. The creative class contribution to a unique economic model, the innovation economy, is of great interest to those places that are positioned to benefit from the abundance of this human capital; places like Gainesville, Florida.

The innovative environment

The interaction between people and their environment has never played a bigger role in overall economic success like it does within the innovation economy.

Globalization of the world's economy has allowed for a greater variety and scale of production but at the same time produced a 'spiky world' where the most talented workers congregate in urban centers. Richard Florida's remarks about the composition of the creative class have already been noted above. However, further inquiry into what makes the creative class willing to settle an area and what results occur when they do are a pertinent topic for discussion. Stated in Richard Florida's, *Rise of the Creative Class*, one major tool used to determine a local area's attractiveness to the creative class is called the 'creativity index'. This index calculates a number of variables ranging from existing technical productivity and innovation to the number of gay couples and residents with college degrees. Surmised into what he calls the 'Three T's: technology (capital), talent (labor) and tolerance (labor/population), Florida has shown that the higher the cumulative score of a location, the general higher level of industrial innovation and creative class employment. Societies that are open to different lifestyle choices with an educated populace and technologically sophisticated infrastructure have the greatest chance of capturing the imagination of the creative class (Florida, 2008).

While the needs and wants of the creative class appear demanding, the scale and structure of their desired urban environment is actually a return to a previous era of urban design. The departure from traditional, urban-design practices stemmed from the 'suburbanization' of America following the Second World War. The automobile and invention of zoning are just a few factors blamed for the segregation of land uses and

general dispersion of economic activity. While home and car ownership boomed, the lack of concentration in urban areas and the dwindling variety of networks and interactions between them made for a homogenous and rigid (sub)urban environment. What the creative class and other urbanites clamor for today is a rich, dense and vibrant atmosphere where they can 'live, work and play'. As Susan Christopherson remarks, "Careful integration of knowledge worksites into the urban fabric can reinvigorate urban neighborhoods and downtowns. Creative economy oriented planning can contribute to the local economy by drawing tourists and attracting and retaining employers and a workforce who rank community quality of life high on their list of desirable characteristics" (Christopherson, 2004. pg. 1). Encouraging and enabling the exchange of people and ideas in a dense physical environment that blends many of life's activities in the context of urbanism is the goal when attempting to attract the creative class.

Increasing returns on investment

For many cities, the need to switch from a standard economic model to that of the new economy came, "in the wake of the recent recession [where the need] for a different kind of growth model that depends less on bubbles and consumption and more on the production of lasting value," could be achieved (Muro & Katz, 2010. pg. 4). The increased emphasis on sustainable production of wealth in economies by using a resource that did not become scarce or inefficient through continual use has eluded economists until now.

Opposed to traditional economic principles, "the main novelty of the knowledge economy consisted of the need to manage an intangible asset that, in contrast to material resources, does not depreciate through use but rather becomes more valuable the more it is used" (Laszlo and Laszlo, 2006. pg. 2). Traditional input-output models of

resource consumption for product creation are not staples of this new economy and novelties like increasing-returns found in the innovation economy threaten to undermine classical economic theories.⁹ Krugman follows up, noting the importance of 'technological spillovers' of information (which are easily transmitted over short distances) and comparative cost decreases that further entice the clustering of industry.

These benefits then extend beyond industry itself, radiating into the community and improving the strength of the labor pool by encouraging skillset diversity. Additionally, when these industries cluster, they amplify their overall utility and in a process called 'Super-linear Scaling', a form of increasing returns economics are rewriting the rules of economic geography¹⁰ (Krugman, 1991. pg. 36). Similar to the requirements of land and location to the innovation economy, the principles of density, diversity and connectivity are the three hallmarks of creative class environments and knowledge center communities. Effective policy investments in infrastructure, development and education ought to reflect this paradigm. As Cortwright explains the, "theoretical framework for understanding this process has been developed by a number

⁹ "Steadily and continuously in this century, Western economies have undergone a transformation from bulk-material manufacturing to design and use of technology—from processing of resources to processing of information, from application of raw energy to application of ideas. As this shift has taken place, the underlying mechanisms that determine economic behavior have shifted from ones of diminishing to ones of increasing returns. Increasing returns are the tendency for that which is ahead to get farther ahead, for that which loses advantage to lose further advantage. They are mechanisms of positive feedback that operate—within markets, businesses, and industries—to reinforce that which gains success or aggravate that which suffers loss. Increasing returns generate not equilibrium but instability: If a product or a company or a technology—one of many competing in a market—gets ahead by chance or clever strategy, increasing returns can magnify this advantage, and the product or company or technology can go on to lock in the market. More than causing products to become standards, increasing returns cause businesses to work differently, and they stand many of our notions of how business operates on their head." (Arthur, 1996. pg. 2)

¹⁰ "By modeling the sources of increasing returns to spatial concentration, we can learn something about how and when these returns may change, and then explore how the economy's behavior changes with them." (Fujita, et al. 1999. pg. 4)

of economists, led by Brian Arthur (1989) and Paul David (1985). Variouslly labeled increasing returns, positive feedback, or “QWERTYnomics,” their writings suggest that in many industries, particularly the high-tech, the combination of high up-front costs and low marginal costs, network externalities, and complementary investments produce a dramatically different marketplace from that found in conventional decreasing-return industries” (Cortright, 2002. pg. 6).

Such a new marketplace does not require a revolution in market structure but rather a reexamination of location investment opportunities. This new economy does not wish for the ‘reinvention of the wheel’ but instead plays on the greater strengths and externalities of the US economy and the local availability of labor and capital.

Clustering high-tech and other innovative industries together forms a feedback loop of mutual participation that benefits the overall economy. Already on its way, “the core of US competitiveness in recent years has been its ability to grow using innovations” (IMD, 2001). By swiftly taking the innovations of today to the marketplace or incorporating them into the creation of new technologies, the US has become the premier developer of bio-technology and information technology, just to name a few (IMD, 2001). Ideas and inventions propel human progress forward and the most valuable product made in the innovation economy is those thoughts.

The value of ideas

The most valuable commodity in the innovation economy is the ideas and innovations developed within them. This network of ideas is one of the crucial components of the innovation economy because the majority of marketable innovations stem from a collaborative process. The formation of great ideas usually requires the combination of a series of small ‘hunches’ developed by individuals. Over time, any

idea or innovation may mature on its own, but when those ideas collide in the rich context of a supportive and energized community, their development becomes catalyzed.

Ideas and the formative processes that create them should not be quickly discarded just because no current use for them exists. Often, “new ideas require exploration before their value can be demonstrated to others. Innovative organizations give people the freedom to use some of their time to explore ideas. . .” in the hopes that the compounding of multiple ideas will yield a viable application for them ¹¹ (Dvir & Pasher, 2004. pg. 18). The usefulness of previously outmoded or discarded innovations is another staple of the creative process.

One more important benefit of discovery and innovation is the concept of ‘lock-in’: the standardization of a technology that often follows the initial discovery. Lock-in can provide powerful incentives for additional firms to co-locate as they can quickly adapt to additional changes and otherwise benefit by proxy of the original innovation. Once established, “the advantages of standardization are reinforced by the concept of lock-in. Once a particular standard becomes established, consumers and suppliers of complementary products, such as films in Blu-Ray format, become locked into this format” ¹² (Harrison, 2009. pg. 12). Similar examples include the QWERTY keyboard,

¹¹ “The development of technology is often an iterative learning process, where one innovation is followed by others over a period of time as new discoveries are made and new applications found. This is frequently the case with the discovery of new drugs or medical techniques.” (Harrison, 2009. pg. 10)

¹² “Regardless of whether the system turns out to be the most effective, the initial decision creates lock-in effects which favour continued use of the system even when the technology is becoming outdated – unless relatively low-cost upgrades are available. Markets for technological products and services are often characterized by high fixed (sunk) costs in the form of set-up and switching costs, which help to reinforce the advantages of standardization, whereas the variable costs of producing multiple copies of films or software in a standard format are low.” (Harrison, 2009. pg. 12)

standards in railway gauges, computer operating systems, and many others. Innovative economies have greater opportunities to influence the 'path dependence' of technology and innovation because they are usually the originators of said technology.¹³

Finally, a distinction exists between the form and function of knowledge. Just because an idea is applied in the workforce does not make it revolutionary. A distinction exists between tacit and explicit knowledge and its application in the workplace. Numerous, "empirical studies confirm that there are technology gaps between regions even in advanced economies. A key reason for these knowledge or technology gaps stems from the distinction between explicit and tacit knowledge. Although explicit knowledge can be written down and transmitted. . . tacit knowledge, or know-how, derives from experience and relies on innate judgment and common sense and cannot easily be communicated" (Caniels, 1996; North, 1990; Cortright, 2002. pg. 5). That technical 'know-how' or the ability to create ideas and innovation is the ultimate goal of the innovation economy whereas simply following a recipe for the replication of existing technologies or products is akin to a standard manufacturing economy. The value of ideas in society should be apparent to all. Aiding the advancement of technology and innovation are vital for the continual relevance of an innovation economy.

¹³ "In a world governed by instant communication, exploding knowledge and speed to market it becomes a case of 'collaborate or perish'. First mover or close follower behavior becomes a survival strategy." (Berry, 2005. pg. 387)

Criticisms of the Literature Review

Creative Class Criticism

The largest target for criticism, made evident by the number of articles discovered, concerns itself with the creative class. A rather nebulous definition of a social group, the creative class is sometimes difficult to quantify. According to Richard Florida, the creative class is not designated by the blue or white of a workers collar or of the products of their trade, but rather by how that worker uses knowledge in their occupation. The degree to which knowledge is applied in an endeavor can often be very complicated to ascertain. With such a wide definition of the 'creative economy' and its constituent members, the 'creative class', Chatterton states these terms are, "little more than a rhetorical device which can placate the hearts and minds of local councilors and politicians that they are actually doing something whilst doing hardly anything at all" (Chatterton, 2000. pg. 392). Defining the creative class is hard enough, but what should be apparent to all are the obvious risks of disproportionately allocating real value investments towards one group over others. The issue of equity among people and places in the innovation economy is poised to be a recurrent theme in the years to come. By embracing the creative class too tightly, we risk alienating the other members of society; hardly a democratic ideal supposedly valued by the creative class.

Equity and Social Imbalance

On the subject of Florida's class relations, one author claims that focusing on the attraction of creative class workers may negatively affect the crucial working and service classes. In the physical landscape, the result is called 'gentrification'. Gentrification is best described as the effects created when relatively wealthy people acquire property in otherwise low income or working-class neighborhoods. Gentrification effects,

“generally, lower and moderate income earners, working in key service occupations—nurses, transport workers, police officers, teachers—may not be able to access housing they can afford, even though they have permanent full-time jobs that are vital props to an efficiently running knowledge economy. These ‘key workers’, so-called, may effectively be priced out of the housing market, undermining the functional efficiency of the urban economy and reducing its attractiveness to the creative class” (Berry, 2005. pg. 389). The effect raises housing costs and eventually other costs follow suit.

Displacing less affluent people away from their communities is especially hard on those affected because now they must spend more time and a greater percentage of their already earnings on transportation (Blumenberg, 2003). Finding the right balance of ‘classes’ and distributing them equitably ensures that the feedback loops necessary to the innovation economy can function properly in a community. Implementing thoughtful urban development through good planning and vetting ideas through public think-tanks like Community Action Committees is a good start. Unless significant changes to property rights arise, the free market will ebb and flow in the housing sector. Wherever value is perceived, investment is likely to follow. Ultimately, the role of planning may include a kind of ‘phased gentrification’, where by artificial means, the inhabitants of an area are given extended time to adapt to local conditions or relocate: sink or swim.

Diversity in Education

Another worry about the innovation economy is the overreliance upon the traditional staples of reading, writing and arithmetic in education. STEM industry/education, which is the mainstay of innovation economies, demands priority in the classroom. While certainly important for any student, the pressure to skew academics in favor of the ‘hard’ sciences will mean less activity in other educational

areas, notably in recreation and the arts. If diversity is a staple of the creative class and STEM industry, then what we need is more variety in education. As Albert Einstein once said, 'Imagination is more important than knowledge'. Students, especially young children, need a range of experiences in their education, especially ones that do not involve looking at a book. They need regular and diverse opportunities to exercise their mental development. The arts and sports excite children; keeping them interested in school and providing an outlet for creative energy. Anyone can remember feeling the same way. After all, at its base level, art is the expression of one's self and at the very heart of what it is to be human. By narrowing the focus of children's mental development, we risk losing or at least degrading our cultural richness and the very essence of what it is to be human (McLaughlin, 2012).

Innovation Economy: Adaptability and Academia

The innovation economy model is the next object of debate. Innovation and the innovative process are different things: just because a scientist, engineer or businessman has an innovative idea does not automatically mean the successful translation from concept to market. Also, what evidence is there that any one university is or can be successful in the private market? The processes that operate in academia vs. private industry may prove un-reconcilable (ex: tenure, for-profit systems, worker expectations: research vs. earnings, shareholder opinions, etc.).

Universities and other special institutions usually form the backbone of the innovation economy as they are the sources of raw knowledge and a skilled workforce. However, we should, "beware of ivory towers. It is not enough to nourish the academic excellence of the university," as we must also consider their function in the innovative environment (Dvir & Pasher, 2004. pg. 24). All universities are unique and serve

different roles in their communities. The question to be asked is, “how well do they play this role? How good are their ‘outputs’,” in terms of graduates, discoveries and patents? (Dvir & Pasher, 2004. pg. 24). And most importantly, how well do they turn these innovations into realities?

Business Concerns

In the innovation economy, we should be careful not to force the issue of cluster development. A cluster development like Progress Park in Alachua can be created because of the local supply of workers and technology and the local demand for created products. Generally cities should, “[not] try to create clusters. Clusters can’t be created out of nothing, and cluster initiatives should only be attempted where clusters already exist. The preexistence of a cluster means that an industry hotspot has passed the market test” (Muro & Katz, 2010. pg. 9). Clusters cannot be manufactured without the support of the market and the special externalities previously discussed.

There is much to be said about the dangers of being too successful with respect to business practice. Becoming locked into a successful business model or method of operation has the danger of making oneself complacent or dismissive of the eventual necessity of change. Initially, “success can easily result in a kind of tunnel vision which is focused on, and reproduces, existing activities and knowledge within an organization, with little cognitive openness to new knowledge in the environment” (Itzkin, 2000. pg. 2). By first refusing and next becoming unable to adapt, companies eventually consign themselves to obscurity. Though the ‘importance of being different’ is a hallmark of the innovation economy, “the risk in celebrating the distinctiveness of today is that it may tend to lead to the ossification of tomorrow. Economic development policies should encourage innovation and adaptation to change” (Cortright, 2002. pg. 15). Larger

companies that have invested much into their corporate structure are, 'highly inertial' and often fail to notice the larger changes going on around them, preferring instead to carry on doing 'what they do best', clinging to obsolete technologies or business practices (Itzkin, 2000. pg. 2).

Patent Trolls

Finally, the dark side of the innovation process must be addressed. Globally, between countries, many inconsistencies exist and no clear consensus exists on topics like intellectual property rights, piracy, generic substitutes and ethical business practices. U.S. courts have seen an increase in the number of 'patent trolls'. Sometimes, patents are filed but then purposefully hidden and not disclosed. Sometime later, usually after another entity has investigated significant amounts of time and money into a parallel effort, the patent holder will suddenly emerge, demanding royalties or damages.

In conclusion, the criticisms of the creative class, business practices and worries over the long-term effects of STEM prioritization in education do provide poignant topics of discussion. Clearly, large forces are at work. What it all means for class relationships and economic modeling remains to be seen. By addressing these issues seriously we can help either avoid or at least minimize the negative effects.

Literature Review Conclusion

Today's leading economists and urbanist-authors (such as Fujita, Krugman, Venables, Glaeser, Winston and Florida) postulate that people and the industries they operate comprise the most valuable input in today's economy. As the structure of the corporate world shifts along with the demands of an increasingly influential class – the creative class – cities and regions scramble to attract the talent and capital necessary.

Emblematic of this shift is the location strategies used by STEM industry as they often take positions around these knowledge centers. Meanwhile the reinvestment of power, influence and wealth become more concentrated in these knowledge centers and the innovative industries that fuel them. Drennan and Saltzman (1998) argue against the magnitude of this change, and others like Susan Christopherson (2004) claim that other factors, like the restructuring and redistribution of assets, are more indicative of the larger shift in location economics. As time passes the debate will resolve itself as to the specifics of attraction and retention techniques exhibited by cities and by firms on their employees. The composition and intricacies surrounding the spatial location tendencies of resident firms as initiated by cities is complex and evolving. Ultimately, the cause of this shift in economics is mute because the end result remains the same: innovative firms locate where they can best compete; and they compete best when staffed with highly intelligent people. Such people can often be found where they learn; near universities and other educational institutions.

Knowledge centers, especially those related to STEM industries, often exhibit a few consistent physical traits. They are small, and they are dense. They form economies of scale in agglomerate patterns, and they are typically localized instead of urbanized economies (Blanco, personal communication, 3/26/11). Policies to attract the workers and companies of this new economy should reflect the needs, desires and opportunities present in these communities.

From the bazaars of the Middle East that bridged civilizations and the Parisian salons that nurtured the enlightenment, to the coffee houses of the Netherlands that dreamed up lucrative trade routes right down to the ale houses in New England that

fomented revolution; each of these places typify the vibrant and exciting atmosphere where people, products and ideas can collide. Fortunes were won, discoveries made, revolutions staged and fascinating technologies shared. The world would not be the same without these places. Now, as the world economy restructures, new opportunities emerge which utilize mankind's greatest asset – the mind.

In all, the literature review explains the economic foundation and social changes driving the location strategies of high-tech, innovative industries. Given the information above, the concepts of KC and the creative class will be applied to Gainesville, Florida using interviews with actors in innovative professions to understand the effectiveness of their efforts.

CHAPTER 3 METHODOLOGY

This thesis is a qualitative case study of Gainesville, Florida, performed to determine the city's ability to adopt an innovation economy. The primary data collection method was accomplished by conducting a series of in-person, semi-structured interviews with open-ended questions and answers. This cross-sectional study included interviews of roughly a dozen prominent members of the Gainesville community who were chosen based on their knowledge of the innovative economy. The goal was to discern the nature of the city's structure to determine the viability of incorporating the innovation economy model.

Using a snowball sample, participants were selected that were knowledgeable of the subject and who hold or held prominent positions in public office and/or private practice. In particular, the research contacted public and private economic/development professionals, community leaders, and elected public officials. Additionally, professionals such as economists and academics were interviewed. A full list and short biography of each interviewee is listed in Appendix B. Participants were given, via email, a list of open-ended questions one week before the interview. It was made known to each participant that additional questions may be asked as the interview progressed. Interviews took place during regular business hours and lasted no longer than 1.5 hours.

The primary data collection method was made by recording the interviews and taking additional notes during interviews. Interviews were conducted during the month of August, 2012 and were recorded via audiotape. The information obtained was then personally transcribed and the tapes deleted as per the IRB protocol.

Results generated from the interview process were assembled into categories and further into opinions of specific topics. The findings are ordered according to their topic and referenced in a similar manner to the literature review. That is to say that the findings are displayed in a general-to-specific nature, with potential Gainesville-specific applications being voiced at the end of each chapter.

This non-experimental study is retrospective in nature. The retrospective portion regards past lessons and trends that are examined and then applied when making assessments to the viability of Gainesville's adoption of the innovation economy model.

This research design was selected due to the availability and willingness of expert witnesses to speak with me. Time constraints and lack of monetary funds were also a factor.

The strength of this research design is in the abundance of qualitative data and literature on the economics and sociology of the creative class, knowledge center community and innovation economy. The number of participants, the overall quality of their testimony and their relevance to the topic at hand are also a benefit. Also, some quantitative data, mainly in the form of labor and population statistics are included. Comparisons are then made between Gainesville and other communities with similar innovative economy models, real or proposed.

The limitations of the research design mainly concern the data collection method which is mostly qualitative. The potential bias of those questioned is also a factor. Also, recent trends and events, local or abroad, may shape the opinions of those interviewed.

CHAPTER 4 FINDINGS

Profile of Gainesville, Florida

The profile of Gainesville, FL is that of a typical university town. Gainesville is situated in Alachua County, in north-central Florida. According to the 2010 Census, the population inside the city limits is 124,354 covering 61 square miles (U.S. Census Bureau, 2010). Although initially a hub for railroad activity, the university has since redefined itself as a premier research city. Landlocked, the city relies on Interstate I-75, which connects the Southern-most region of Florida all the way to the industrial centers of Chicago, IL. This is the major transportation network through the community. Gainesville also has a small regional airport that is served by four airlines – Delta, US Airways, American, and Silver Airlines with direct service to Atlanta, Charlotte, Miami, Orlando, and Fort Lauderdale.

In socio-political terms, Gainesville can be considered relatively progressive community; consistently voting for liberal candidates, (Supervisor of Elections, 2008) developing its mass transit system (RTS) and actively promoting a variety of cultural events throughout the year, the bulk of which are offered free of charge (Schlenker, 2006). As of the 2000 Census, 5.25% of Gainesville residents biked to work, one of the highest rates in the country (Bureau of Labor Statistics, 2000). Active living is supported by the area's abundance of recreation opportunities, and in 2003, Gainesville was awarded as 'The Healthiest Community in America' by the Wellness Councils of America (Wellness Council, 2003). As seen in Figure 4-1, a high percentage of its residents hold or are pursuing a college degree. Gainesville is also a relatively young city, as seen in Figure 4-2. Currently, the major industries are based on education,

healthcare and real estate, (CEO, 2010) and the University of Florida itself contributes more than \$8.7 billion to the state of Florida (Mulkey & Hodges, 2011).

Gainesville's Residents are Educated

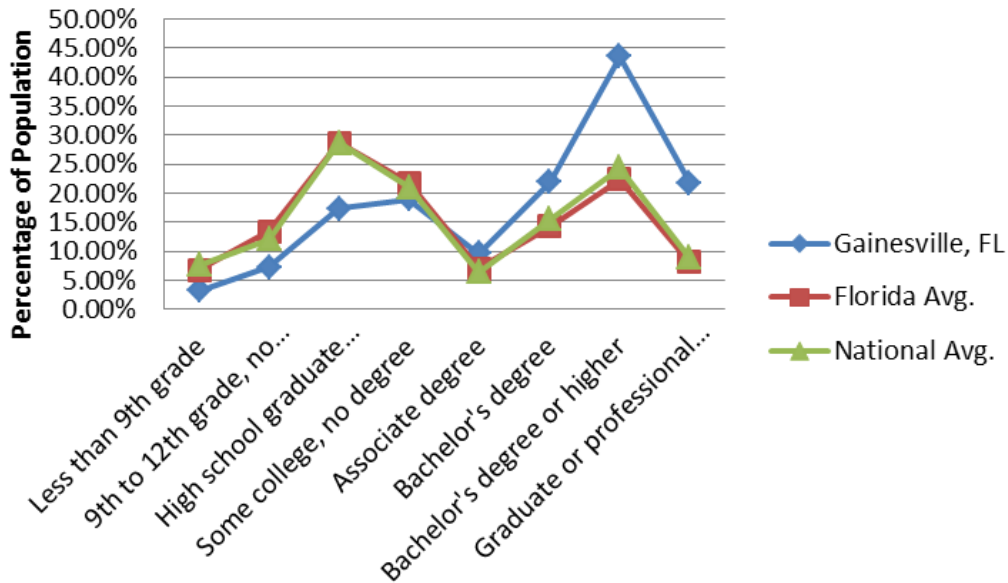


Figure 4-1. Gainesville's residents are educated. Source: Bureau of Labor Statistics, 2010

Gainesville has Many Young People

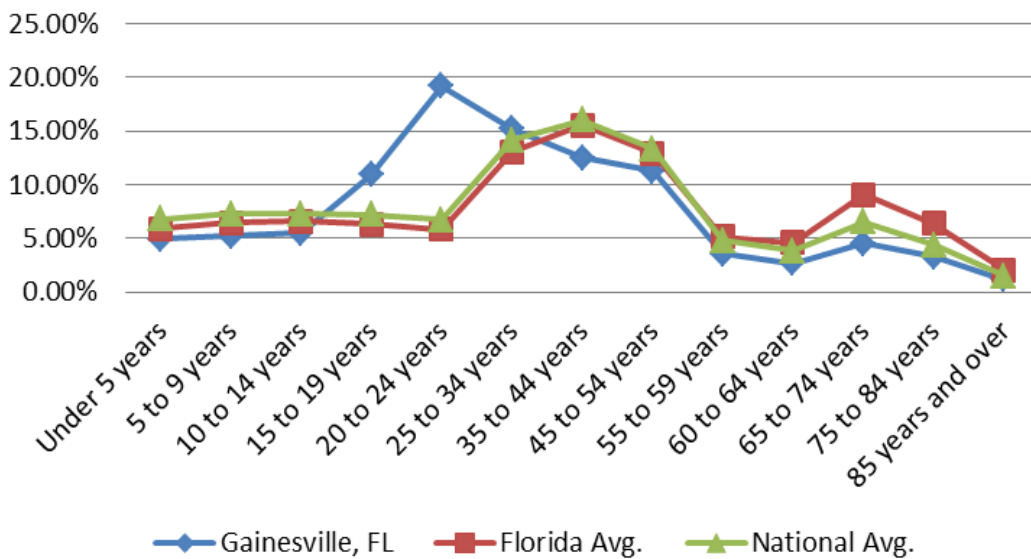


Figure 4-2. Gainesville has many young people. Source: Bureau of Labor Statistics, 2010

Gainesville's Economy

Vested Interests

Many of the vested interests, both public and private, want to see the development of the local economy that focuses on creating high-tech jobs that offer comparatively high wages. Gainesville could capitalize on the abundant opportunities created between the University of Florida and Santa Fe College, local community and businesses. Today, the cooperation between these parties has, as many say, never been better. Several large and ambitious development projects in the area are also underway. These projects could have the ability to permanently and significantly alter the social and economic dynamics of the city. The leadership in Gainesville is motivated to accomplish these and other projects and the desire of the community appears concurrent with the innovation economy.

First, on the subject of land, labor and capital as the foundation of any economy, Gainesville appears well-positioned. Gainesville, as shown in Figure 4-3 is seen to have large amounts of land available for development, especially outside the city limits. Also, with a population of approximately 32,000 undergraduate students and 16,000 graduate students Gainesville could supply the innovation economy with an abundance of skilled labor (University of Florida, 2012). Also important is the ability of Gainesville to staff service positions with semi-skilled labor. The availability of capital, the supportive element funding the early stages of innovation, is of the greatest concern. Because Gainesville is a relatively small city, its venture capitalist enterprises and other related lending institutions are currently undersized to meet the demands of a developed innovation economy. As this economy-type grows, increasing capital investment in the area is expected.

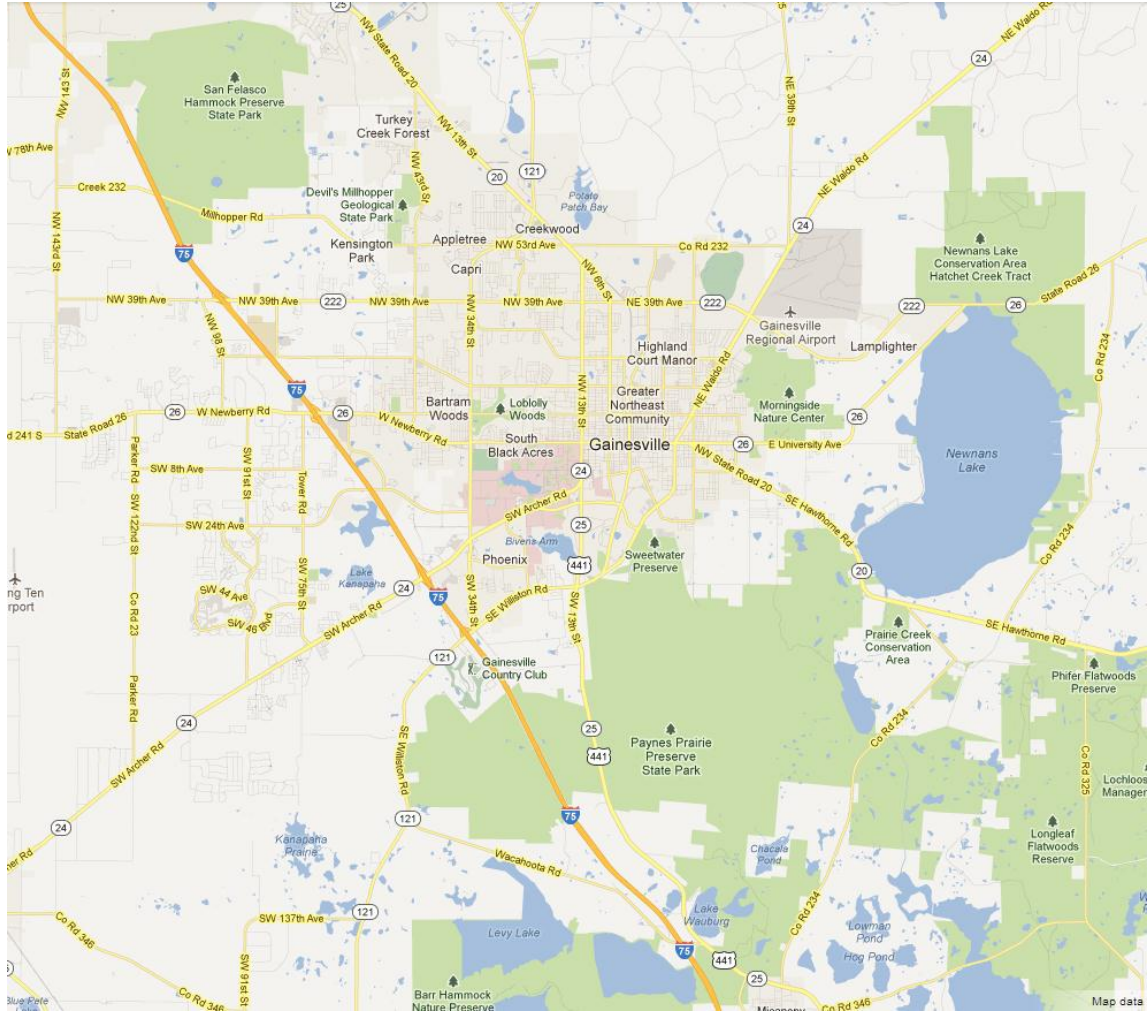


Figure 4-3. Overview of Gainesville, FL. Source: Google Maps™, 2012

What potential industries might become established in Gainesville? Fortunately, the specialized industries and supportive institutional framework of the city are already established and well-known. Figure 4-4 highlights the basic characteristics of the community. Of particular note is the high rate of patent citations and the high number of available medicine-related employment opportunities.

gainesville, florida

Gainesville is the largest city and county seat of Alachua County, home to Florida's largest and oldest university, and is one of the state's centers of education, medicine, cultural events and athletics. Known for its preservation of historic buildings and the beauty of its natural surroundings, Gainesville has received numerous awards for its desirability as a place to "live, work and play."

University of Florida

Founded: 1906
Students enrolled: 50,000
Acreage: 1,385

Source: University of Florida

Alachua County Public Schools

Graduation rate: 78.6%
Students eligible for free or reduced-price school lunches: 48.5%

Source: Alachua County Public Schools

Top Employers in the Region

EMPLOYER	NUMBER OF EMPLOYEES
University of Florida	14,723
Shands Hospital	12,588
Veterans Affairs Medical Center	4,317
Alachua County School Board	4,299
City of Gainesville	2,200
Florida DCFS	2,319
Publix Supermarkets	2,056
North Florida Regional Medical Center	1,700
Nationwide Insurance Company	1,300
Alachua County	1,120

Source: Council for Economic Outreach

Notable High-Tech Companies in and around Gainesville

RTI Biologics	HyGreen, Inc.	AxoGen, Inc.
Exactech	Nanotherapeutics, Inc.	InterMed Nuclear Medicine
Info Tech	Prioria Robotics	Grooveshark
Phillips Invivo	Sinmat, Inc.	Banyan Biomarkers
Sage Software	Applied Genetics	
	Technology Corporation	

Source: Council for Economic Outreach

Number of Patents Assigned to Gainesville Persons/Companies (1976-present): 1,646

Patents Per Capita: 1 FOR EVERY 76 RESIDENTS

Source: United States Patent & Trademark Office, PBC, Inc. independent research



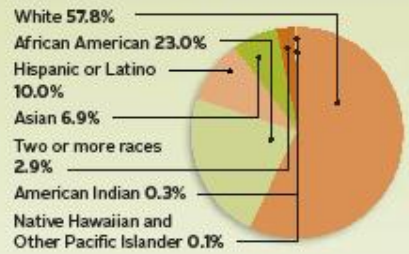
Photo: University of Florida

Population (2010 US Census)

Gainesville: 124,354
Alachua County: 247,336
Florida: 18,801,310

Source: 2010 US Census

Gainesville Demographics*



*Percentages do not total 100% because respondents could identify two or more races.
Source: 2010 US Census

"Brain Hub" cities boast a large concentration of highly-educated workers, especially scientists, engineers and business entrepreneurs holding bachelor's degrees or higher. They are home to at least one major research university. Brain Hub cities become magnets for venture capital from local and national firms that identify and invest in university-related spin-off companies and business incubators.

Figure 4-4. Gainesville, Florida characteristics. Reprinted by permission from Plum Creek (2012). *Envision Alachua: Brain Hub Cities*. *Envision Alachua* ©. Retrieved from http://www.envisionalachua.com/files/managed/Document/206/EA_Vision_Ma%20_2012_web-AppenA.pdf

The University of Florida is a top-tier research university specializing in bio-medical research and related applications. Aside from the College of Medicine, many other departments are well-regarded such as Engineering, Business, and Law (Zuckerman, M., 2012). High-tech and STEM industry companies wishing to locate in Gainesville have comparatively high chances to attract highly-skilled labor into their workforce. The potential for high-tech startups or established companies to profit from skilled labor and cutting-edge technologies derived from the University of Florida is enticing. Gainesville can be considered supply-oriented in terms of its labor inputs. Also, it could be described as market-oriented because its products and services generally have local and export demand. Furthering this advantage is Gainesville's location directly adjacent to the major transportation conduit of I-75. Companies in Gainesville, Florida have direct access to markets in Tampa, Orlando and Jacksonville and flights to Atlanta and Charlotte among others. Although the industries and markets in these other cities vastly overshadow that of Gainesville, complimentary products and services could be of great interest and value to them.

Contextual Structure

The structure of Gainesville's overall economy is essentially a poly-centric city in a core-periphery region. The layout of the city's core areas of productivity seen in Figure 4-5 demonstrates the existence of many activity clusters. While Progress Park is seen to be isolated, the new and expanding GTEC and Innovation Square projects offer more suitable locations for innovative industry. This decentralized structure, at the moment, disallows the self-sustaining benefits of a 'critical mass' of innovation but also allows for a variety of cluster locations. Of primary interest is the Innovation Square development, seen in Figure 4-6, which will be examined later.

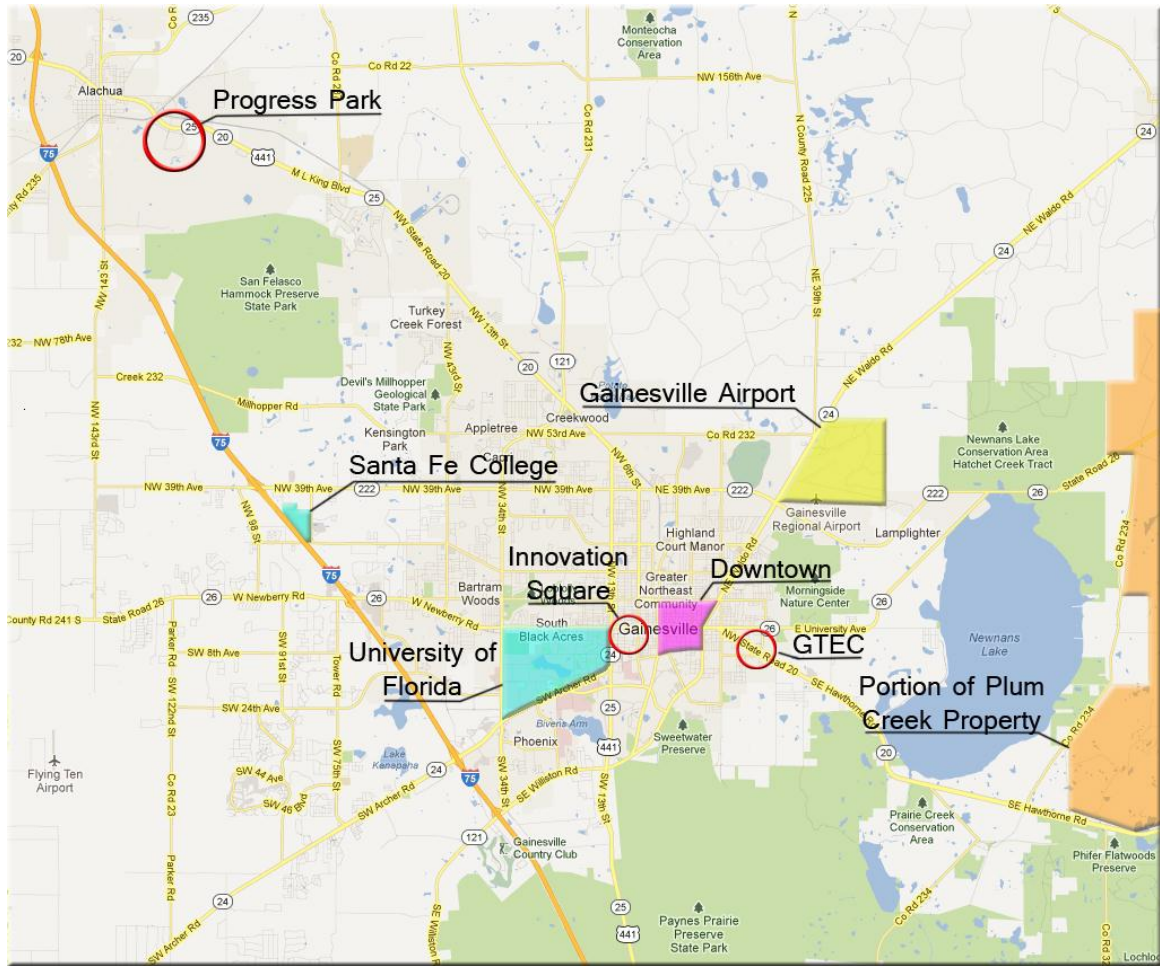


Figure 4-5. Activity centers in Gainesville, FL. Source: Google Maps™, 2012

Gainesville's position in the larger context of economic geography sees it at the center of a core-periphery region. Simply put, Gainesville is like an island – there are no nearby cities of equal or greater size. The nearest major cities are, clockwise: Atlanta, GA to the North, Jacksonville, FL to the East, Orlando and Tampa, FL to the South, and Tallahassee, FL to the west. Each of these destinations is, with the exception of Atlanta, two hours driving-time away while Atlanta and Miami are approximately five hours away, in opposite directions. Gainesville's sphere of influence is largely unchallenged in the region (hence a mono-centric region), somewhat reducing

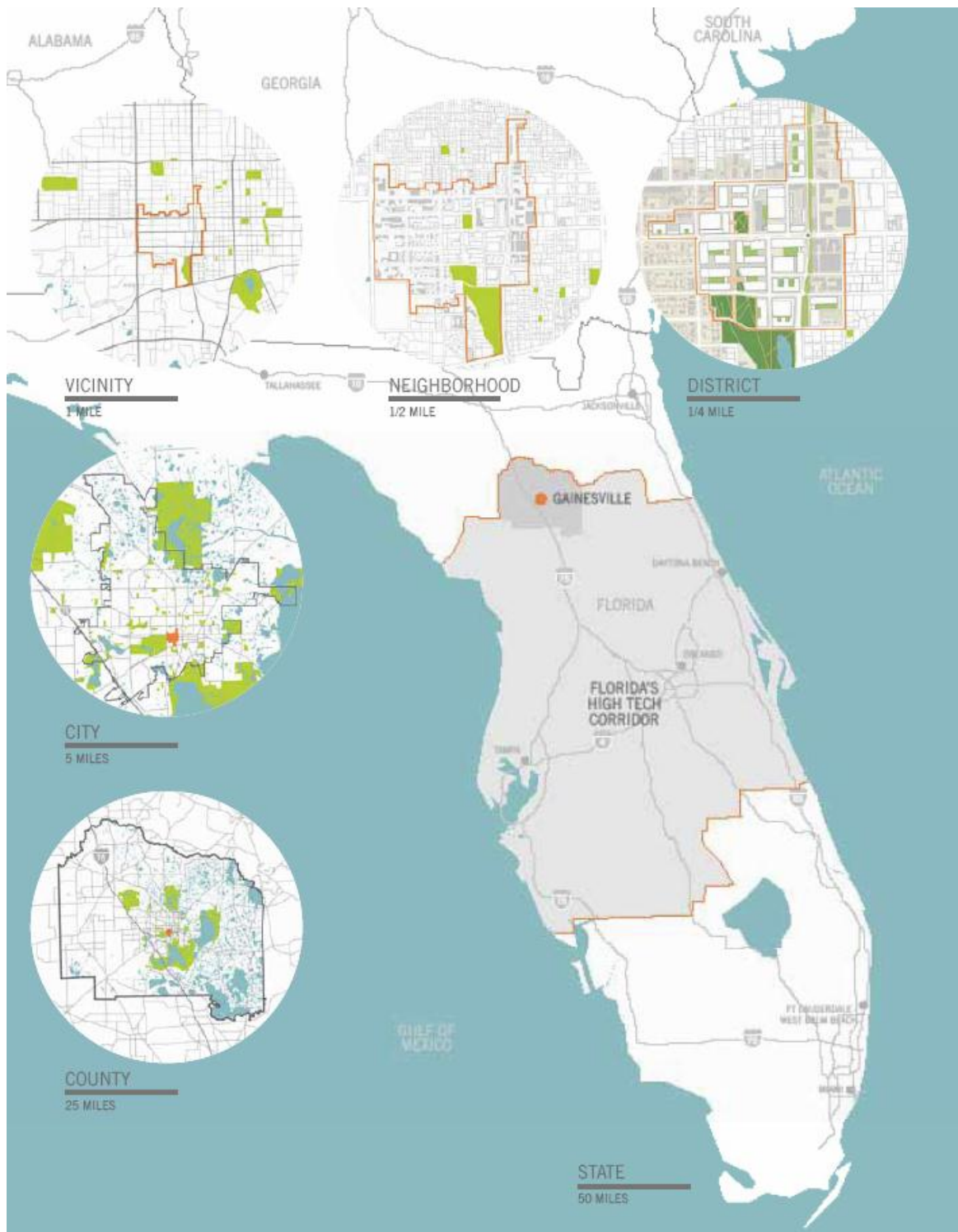


Figure 4-6. Innovation square context. Reprinted by permission from Perkins+Wills (2012). Innovation Square – University of Florida. Perkins+Wills ©. Retrieved from <http://worldlandscapearchitect.com/innovation-square-university-of-florida-gainesville-florida-perkinswill/>

competition from outside localities and generally focusing energy and activity inwards. Different development opportunities in the city and the benefits of relative, regional isolation ensures the focus of attention remains firmly on Gainesville.

Capital Investments

Effective and efficient modes of transportation around Gainesville are taken seriously by advocates and researchers at the University of Florida, (TRC, 2012) city planners, councilmen and city residents. Although efforts to expand the scope and scale, like the \$9M BRT maintenance facility expansion, (Smith, 2011) of Gainesville's transportation networks have met considerable opposition (Ruane, 2012; Cunningham, 2012; Cunningham, 2012; Bottcher, 2012) the plans are forward-thinking and likely inevitable. Long-term plans for the city of Gainesville include considerable densification of land uses between the university and downtown. Parking restrictions are likely to become more stringent in the future. The city hopes that alternative transportation methods and good city planning will make car ownership unnecessary in some parts of town. By providing most of a person's daily consumer needs without requiring them to use an automobile, Gainesville can remove cars from some of the densest parts of the city and enable more space for people and exciting places. This vision and the current efforts to reach it are on-track with many of the aspects of the innovative economy and creative class ideals.

Culturally Creative

Gainesville has just the type of cultural diversity and progressive attitude that authors like Richard Florida say are critical to developing the creative class. According to Florida's 2001 book, *The Rise of the Creative Class*, Gainesville is listed as the second best metropolitan area in the country for creative class growth. Later, in a 2010

article titled, “Where the Creative Jobs Will Be”, Florida listed Gainesville as the number one metro area for having the largest creative class job growth between 2008 to 2018, standing at 17.7% (Florida, 2010) [Figure 4-7].

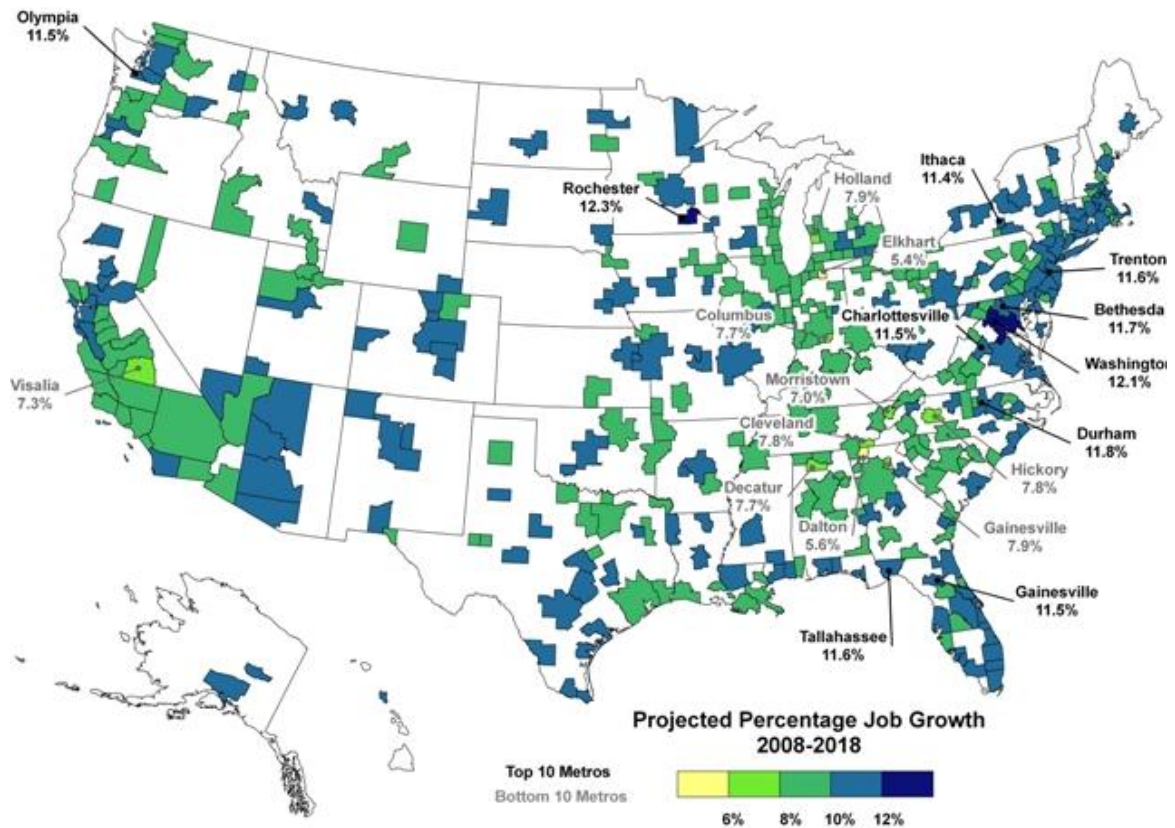


Figure 4-7. Projected creative class growth between 2008 and 2018. Reprinted by permission from Florida, R. (2010). *Where the Creative Class Jobs Will Be*. *The Atlantic* ©. Retrieved from <http://theatlantic.com/>

Gainesville Mayor, Craig Lowe, in his 2012 ‘State of the City’ address said: “We are leveraging the unique quality of life in our community to gain a competitive edge in the 21st century. Already we are moving forward — forward with renewable energy, forward with mass transit and forward with an innovation economy.” Mayor Lowe said Gainesville is in competition with other cities and regions around the country for, “high-tech, high-paying jobs” and that Gainesville can harness, “what sets us apart”, as a

major advantage: The University of Florida, a "thriving arts community," a diverse populace and as the, "home to unique ecosystems and species." Mayor Craig Lowe ended by saying that, "things that have always been our strengths match up perfectly with the demands of the moment." Now, "It is our moment" (Smith, 2012).

Gainesville is a bright 'blue' square in the middle of a very 'red' portion of the state. The city is socially progressive, tolerant of alternate lifestyle choices, forward-thinking in terms of policy and open-minded to new ideas regarding its future economy. The level of density and transit connectivity may not be optimal at the moment, but is steadily improving. As seen from 2000 to 2005 – Passenger trips are up 5.2M to 8.2M; Service area population rose from 137k to 149k and the number of RTS Employees grew from 133 to 254 (RTS, 2008) [Table 4-1, Table 4-2, Table 4-3, Table 4-4].

However, there is little doubt that, in the context of social issues, Gainesville meets the demands and expectations of the creative class – the workers necessary for the creation of the innovation economy. 'Live, work, play' options are readily available and the cultural base of the city is well developed. The uniqueness of the area is complimented by a range of natural ecosystems, a diversity of academic, recreation and sports-related activities, and a number of locations and lifestyle choices that improve the overall quality of life.

Table 4-1. Performance. evaluation of existing transit service.

Indicators	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	% change 2000- 2005
Service Area							
Population	137,665	139,950	142,273	144,164	147,036	149,173	108.4%
Passenger							
Trips	5,180,872	6,302,952	7,185,018	8,103,120	8,146,496	8,152,989	157.4%
Revenue							
Miles	1,855,587	1,960,692	2,147,281	2,408,321	2,661,644	2,668,090	143.8%
Revenue							
Hours	152,474	161,144	188,956	212,034	233,158	235,765	154.6%
Total							
Operating							
Expense	\$7,279,463	\$8,458,929	\$9,462,631	\$10,917,692	\$12,608,960	\$13,823,592	189.9%
Total							
Maintenance							
expense	\$1,244,586	\$1,415,157	\$1,938,381	\$2,379,754	\$2,600,006	\$3,559,156	286.0%
Total							
Employees	133	150	163	198	212	254	191.0%
Maximum							
Vehicles in							
Service	72	82	83	105	105	105	145.8%

Source: RTS™. Performance. evaluation of existing transit service. June, (2008)

Table 4-2. Effectiveness measures. evaluation of existing transit service.

Indicators	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	% change 2000-2005
Rev. Miles Per Capita	13.5	14	15.1	16.7	18.1	17.9	132.6%
Passenger Trips Per							
Capita	37.6	45	50.5	56.2	55.4	54.7	145.5%
Passenger Trips Per							
Rev. Mile	2.8	3.2	3.3	3.4	3.1	3.1	110.7%
Average Age of Fleet							
(years)	11.7	9.2	9.4	10.4	11.5	10.4	88.9%

Source: RTS™. Effectiveness measures. evaluation of existing transit service. June, (2008)

Table 4-3. Efficiency measures. evaluation of existing transit service.

Indicators	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	% change 2000-2005
Operating Expense Per Capita	\$52.88	\$60.44	\$66.51	\$75.73	\$85.75	\$92.67	175.2%
Operating Expense Per Passenger Trip	\$1.41	\$1.34	\$1.32	\$1.35	\$1.55	\$1.70	120.6%
Operating Expense Per Revenue Mile	\$3.92	\$4.31	\$4.41	\$4.53	\$4.74	\$5.18	132.1%
Farebox Recovery Ratio	30.70	30.80	43.70	50.50	50.30	52.00	169.4%
Revenue Hours Per Employee	%	%	%	%	%	%	169.4%
Passenger Trips Per Employee	1,146	1,074	1,159	1,071	1,099	1,086	94.8%
Average Fare	38,954	42,020	44,079	40,295	38,441	37,571	96.4%
	\$0.43	\$0.41	\$0.58	\$0.68	\$0.78	\$0.88	204.7%

Source: RTS™. Efficiency measures. evaluation of existing transit service. June, (2008)

Table 4-4. Level of service. evaluation of existing transit service.

Fiscal Year	Vehicle Miles	Revenue Miles	Vehicle Hours	Revenue Hours
2000	1,942,538	1,855,587	157,257	152,474
2001	2,129,984	1,960,692	170,544	161,144
2002	2,332,684	2,147,281	199,978	188,956
2003	2,710,565	2,408,321	229,444	212,034
2004	2,806,894	2,661,644	242,692	233,158
2005	2,820,508	2,668,090	245,795	235,765
% Change 2000-2005	45.20%	43.80%	56.30%	54.60%

Source: RTS™. Level of service. evaluation of existing transit service. June, (2008)

Cluster Developments

The centripetal force, or outward directional energy, exhibited increases the chances of localization agglomerations, a few of which already exist (Progress Park, GTEC, GRU power district, Innovation Square, Downtown 'information district'). Knowledge spillovers are likely due to the interplay of companies in an already specialized biomedical support industry. The, "Sid Martin Biotechnology Development Incubator, including the McKnight Brain Institute, and the Gainesville Technology Enterprise Center. . .has generated 28 biotech spin-offs since it was founded in 1995"

(Archer, 2006. pg. 7). And, “In 2003, the U.S. biotech industry consisted of 1,473 firms that employed 406,000 people, generated \$64 billion in output, and spent \$17.9 billion in research and development” (Archer, 2006. pg. 7). It is also worth pointing out that this study underestimates the impact of Biotechnology as the study is six years old and the data is from nine years ago. Figure 4-8 shows the overall growth of the biotechnology market between 1999 and 2005. Gainesville’s signature industry, biotechnology, is poised to play a major role in regional economics.

By utilizing this existing interaction and market structure, other industries could gain a similar comparative advantage and co-locate among existing firms. The advantages of increasing this economy of scale should be beneficial to all parties; helping them decrease costs, share new knowledge, and generally help create that ‘critical mass’ of people, ideas, and industry that are required for a self-sustaining ‘chain reaction’ of innovation.

The externalities from economies of scale should increase as more companies enter the market. Likewise, the multiplier effects of talent-clustering on job growth and higher wages should become stronger if the innovation economy is realized. Mentioned earlier and explained now, the ability of firms to survive in cluster developments in Gainesville has already been well documented.

The first case to be examined is Progress Park, which was built in 1990, twenty minutes North of Gainesville in Alachua, FL. This was the first attempt by the University of Florida to coordinate the construction of a research park that clustered industry-specific companies together. Since that time, Progress Park has expanded multiple

Biotech Statistics: 1999-2005

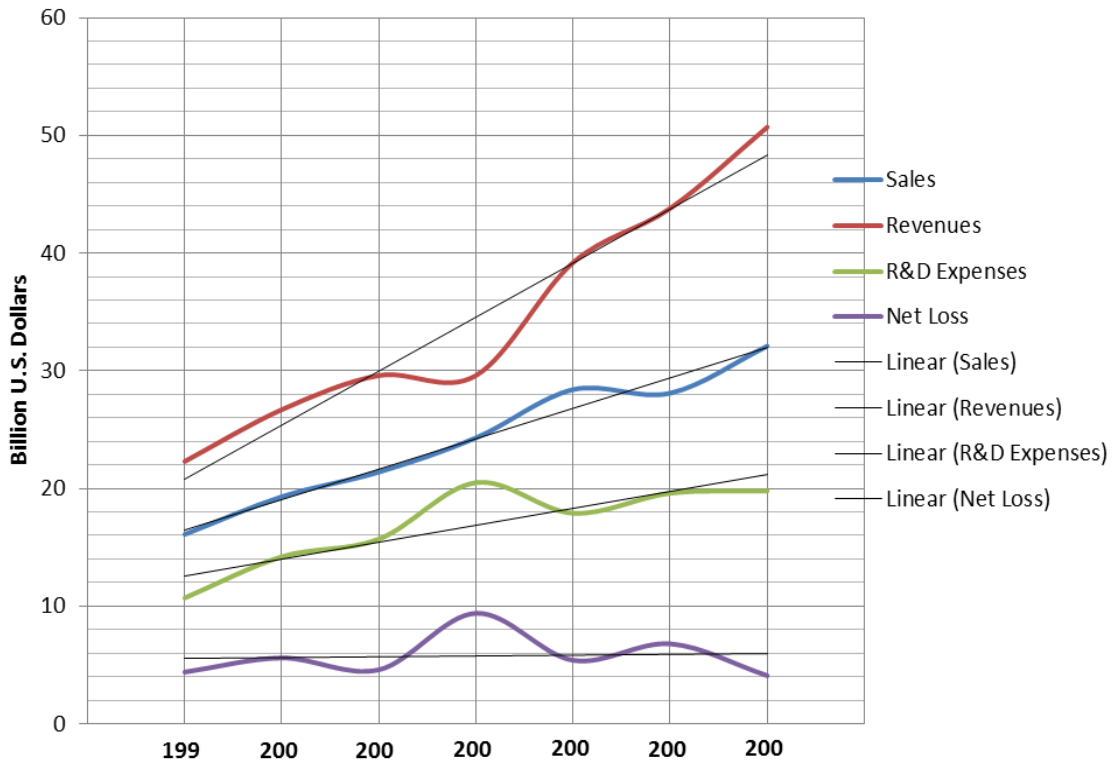


Figure 4-8. U.S. biotech statistics from 1995-2005. Source: Kevin Archer (2006)

times, going from 200 acres in 1980 to 480 acres in 2012. As of 2012, Progress Park accommodates 30 companies in 18 buildings, employing 1,200 people. Eighty percent of those employees work for companies that are direct spinoffs from UF (Clark, 2012). Progress Park continues to be a source of important innovation and also dramatically enhanced the relationship between Gainesville and the community of Alachua. Similar, smaller cluster developments have cropped up in the following years around Depot Road, GRU Power District, and Downtown Gainesville. While good trial-runs for the validation of the innovation economy, the most impressive cluster development opportunity is taking place now in Innovation Square. [Figure 4-9]

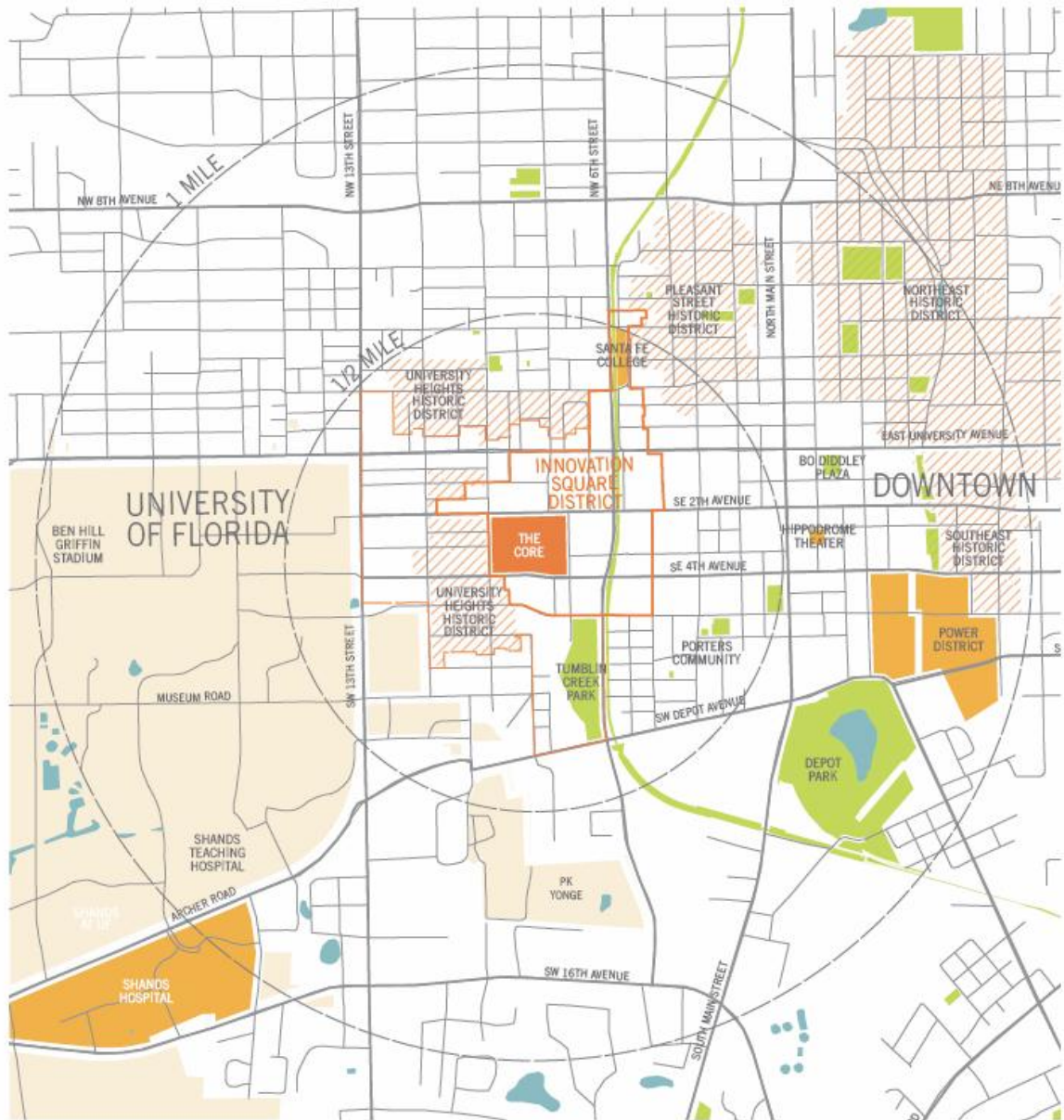


Figure 4-9. Innovation square context. Reprinted by permission from Plum Creek (2012). Innovation Square: Development Framework. Perkins+Wills ©. Retrieved from <http://www.lulu.com/shop/perkinswill/innovation-square-development-framework/paperback/product-18704565.html>

Innovation Square is the product of many collaborative efforts over the years. It seeks to physically bridge the gap between the business elements downtown with the research capabilities and brainpower of the University of Florida. The old site of the Alachua General Hospital was cleared in 2009, providing 5 acres of contiguous land just east of the city's geographic center. Plans for a research park to be located there were the product of collaboration between the University of Florida, Shands Hospital, The City of Gainesville, and Tri-mark Properties. Since then, one building has been constructed – the Innovation Hub – and several more have been planned. Completed in 2011, the Innovation Hub is a 48,000-square-foot high-tech incubator housing several startup companies and related firms. This development was synchronized by a general redevelopment plan that reclassified the surrounding area into an 'enterprise zone' that is geared to facilitate other, similar developments in the area. Innovation Square was awarded two state awards by the Florida Redevelopment Agency (University of Florida, 2012) and the national Donald E. Hunter Excellence in Economic Development Planning Award by the American Planning Association (Gainesville Chamber, 2012). The Florida chapter of the APA, "was impressed with the project's high quality, establishment of a vision that is not only aspirational but implementable, and the collaboration of wide-range of stakeholders" (San Felasco Chapter, 2012). Figure 4-10 shows how the urban form of the neighborhood surrounding the Innovation Square compares to other, competitive cluster developments in Atlanta and San Francisco.



Figure 4-10. Innovation square as related to other cluster developments. Reprinted by permission from Perkins+Wills (2012). Innovation Square: Development Framework. *Perkins+Wills* ©. Retrieved from <http://www.lulu.com/shop/perkinswill/innovation-square-development-framework/paperback/product-18704565.html>

A Knowledge Center Community

Gainesville fits the description of Knowledge Center community based on a number of criteria. A strong institutional backbone anchors the city while clear specializations have arisen in medicine, engineering and other STEM industries. Shands Hospital, and The Colleges of Medicine and Engineering act as the specialty driver for biotech research. Some cluster developments exist while others, like Innovation Square, are expanding. Specialized suppliers and spinoff companies have arisen to support and contribute to the overall level of innovativeness, creating agglomeration clusters in multiple places and generally meeting success. Also, the aforementioned projected growth of creative class jobs bodes well for the community's aspirations as a Knowledge Center. In Figure 4-11, an association between job growth and the presence of the creative class exists, with Gainesville circled in red.

Figure 4-12 displays some of these local creative class jobs.

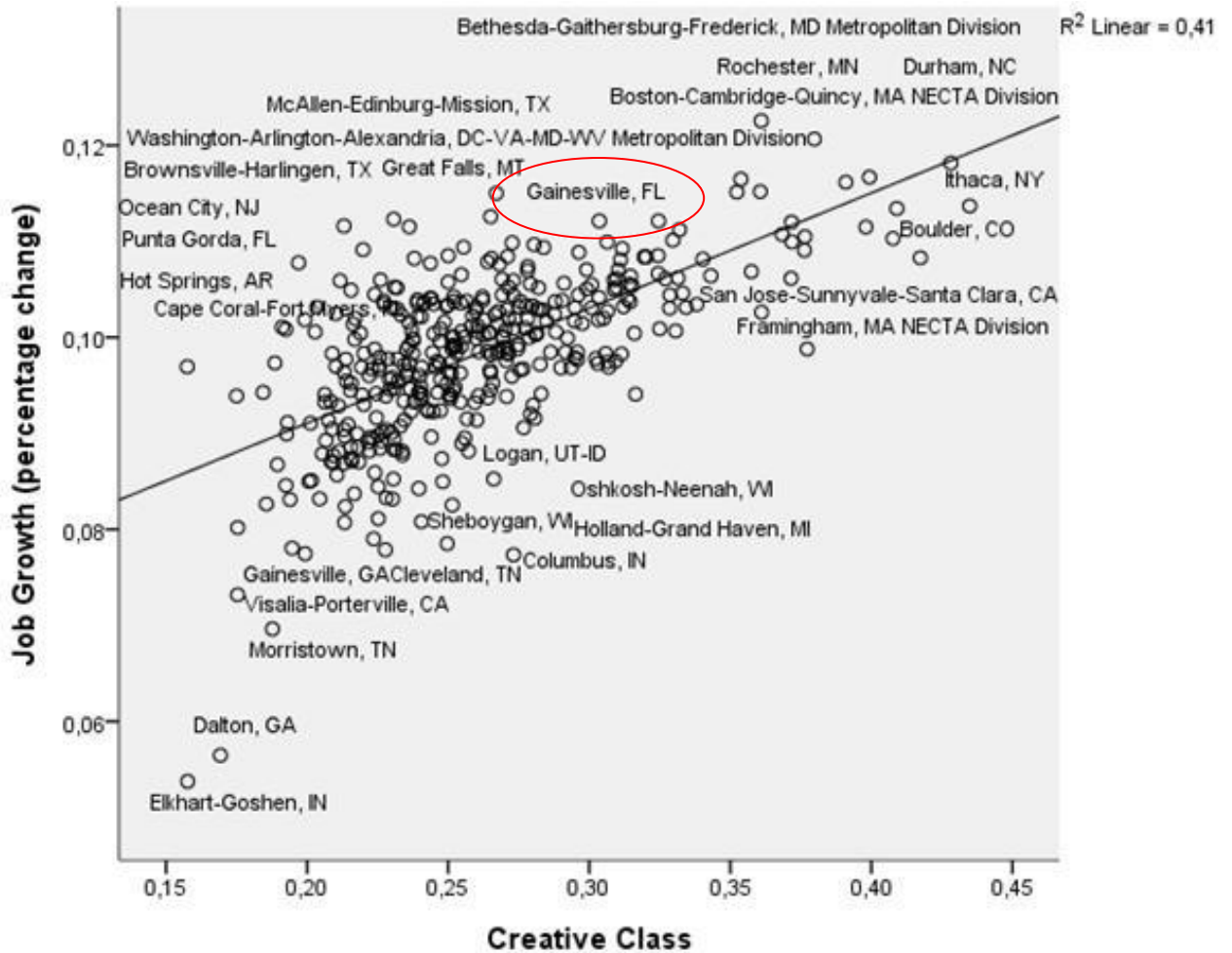


Figure 4-11. Association between job growth and the creative class. Reprinted by permission from Florida, R. (2005). Job Growth and the Creative Class. *The Creative Class* ©. Retrieved from http://www.creativeclass.com/_v3/creative_class/2010/08/18/where-the-jobs-will-be/

In all, nearly every criteria or determinant for the creation of the innovation economy can be found in existence or in progress in Gainesville, FL. The following section will describe the feasibility of Gainesville’s transition to an innovation economy in the words of many influential public and private actors in the local economy.

Gainesville Creative Class Jobs - 2010

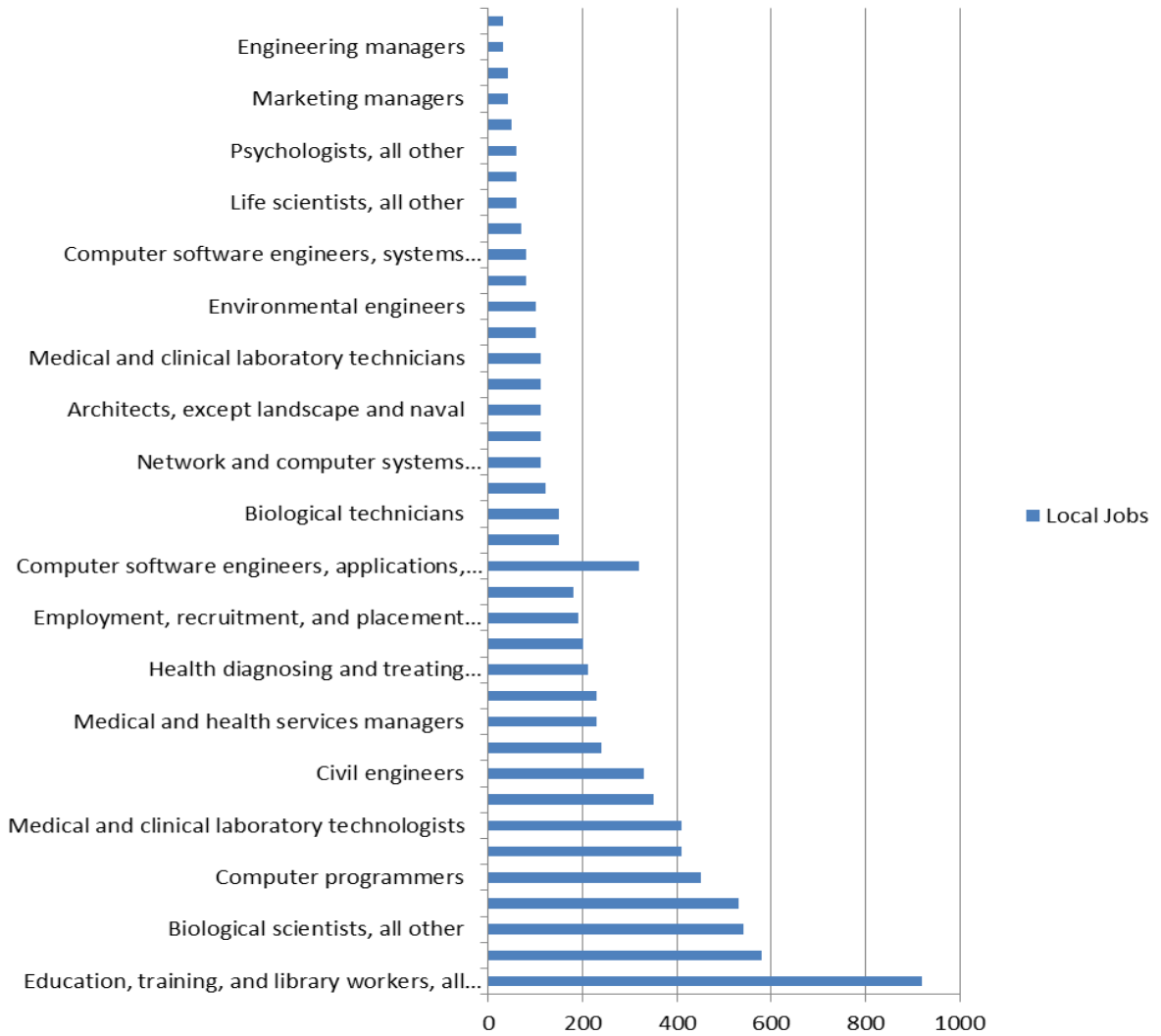


Figure 4-12. Some of Gainesville’s creative class jobs. Source: Bureau of Labor Statistics. (2010)

Gainesville’s Opportunities to Reinforce the Innovation Economy

The structure of these findings considers broad trends of global activity then narrows down to specific, local applications. When possible, responses from multiple candidates are grouped together to demonstrate the consensus of a particular issue. Differences of opinion, priorities and perspectives are equally important and are also explored, usually in the concluding remarks of each chapter/subject heading.

Broad Implications

When asked about the nature of globalization and its effect on local economies, most respondents were quick to point out that speed and scale are of utmost importance. Joelle Smith, a MindTree representative in Gainesville thinks, “we need to be more productive, with less people, over a shorter amount of time – across the board. Whether you’re building software, cars or whatever it is; our learning curve is shorter, at least in the realm of technology” (J. Smith, personal communication, 8/22/12).

Compared to other countries, our great advantage in the United States is the history and experience of developing creative and intelligent minds while also modernizing our civilization and infrastructure. Although other countries are, “hungrier, scrappier and they’ll find a way [to compete] . . . our advantage is that we’re cautious because we know what risk versus reward is and [because] we’ve gotten burned before.” We, the U.S., have picked ourselves up and we’ve graduated from these struggles where as these other countries, “may not have a full appreciation of such learning’s” (J. Smith, personal communication, 8/22/12).

Countries needing the experience that comes from such learning’s will likely get the chance as adapting to changes in the world market is critical for any economy’s long-term success. Still, larger implications loom for the US economy. While the collective experience of America’s up-and-down market history counts for something, it should be recognized that new and creative ways to capitalize on the proximal resources of our environment is necessary for global competition. For many places like

Gainesville, Florida, that means analyzing the strengths and weaknesses of the region and reevaluating the goals and objectives of the community¹ (Florida, 2010).

Renowned economist and retired UF professor David Denslow said when you, “look at what causes cities to exist, there has to be some kind of natural agglomeration. It started with agriculture and has matured today in the form of information or technology” (D. Denslow, personal communication, 8/22/12). For Gainesville, Florida, that natural agglomeration took the shape of a higher-learning institution with a comparative advantage in biomedical research and development. The support industries that sprung up around the university over time formed the basis of the local economy.

Referencing the book, *The Medici Effect*, by Frans Johansson, Brad Pollitt, Vice President of Shands Hospital Facilities, conceptualizes the main argument. He states that, during the renaissance in Florence, Italy, the powerful Medici family, “had so much power and brought so many people together that they [sparked] a collision of ideas. One of the concepts or metaphors gleaned from that book was that, typically when you improve a product, “it generally is a linear process” (B. Pollitt, personal communication, 8/27/12). In relation to that concept, Pollitt used the example of Microsoft going from Microsoft 4.0 to Windows to Vista, “but if you want to really create something new” he

¹ “As an emerging field of study and practice, knowledge-based urban development (KBUD) principally is about processes of knowledge production, and their reflection on the urban form and functions, which provides a new perspective for the development of creative urban regions (Yigitcanlar and Velibeyoglu, 2008). KBUD is considered as a new strategic development approach in tough global economic competition. KBUD involves contemporary understanding and management of value dynamics, capital systems, urban governance, development, and planning. And the main promise of KBUD is a secure economy in a human setting, in short, sustainable urban and economic development.” (Yigitcanlar, 2009. pg. 230)

says, “you need a collision of two or more of these linear strategies”² (B. Pollitt, personal communication, 8/27/12).

Today, growing the Gainesville economy must account for the larger trends in global economics which stresses regional specialization and talent/labor retention. Because, “What now really seems to be the driving force of production is the exchange of ideas,” and importantly, “the cities that have lots of college graduates have been prospering and growing and the cities that do not have remained stagnant” (D. Denslow, personal communication, 8/22/12). David Day, the Director of the Office of Technology Licensing at the University of Florida said, for the sake of, “the competitiveness of ourselves and future generations. . .” we must, “use the complexity of our minds to seek innovative solutions. . .”, to life’s problems (D. Day, personal communication, 8/15/12). And apparently, Gainesville need not look far when considering how to profit from this shift in global trends towards innovative thinking.

Gainesville appears sufficiently supplied with two of three requisite factors needed for continual, innovative development. First, an exciting, diverse environment – both natural and manmade – exists that enables a rich variety of personal and place-based interactions. Second, Gainesville has a wide range of intelligent people in an academic atmosphere that promotes the exchange of ideas. How Gainesville meets the need of innovative industry, in the capacity of labor, was a topic of much discussion with those interviewed.

² See: <http://www.youtube.com/watch?v=NugRZGDbPFU>

Labor Force Characteristics

Along with the City of Gainesville, the University of Florida is also seeking creative ways to grow the economy as it struggles with state budget cuts. Not only in the business of creating talented people, the University of Florida must now consider ways to profit from some of them. Similarly, UF graduates are also struggling with monetary concerns of their own due to potentially low job availability. By working together to harness the potential ideas from these people, the innovation economy might have accidentally provided an outlet that allows both students and the university to prosper from one another. As David Day exclaims: “A recent epiphany for me is not just growing [the] technology business but growing undergraduate-led businesses out of the university. We graduate 9,000 kids a year and send almost all of them out of this community. Of those 9,000 that graduate each year, how many startup companies could come out of that? How many can’t find jobs and are unemployed? The university is not presenting them with a startup alternative and a startup is a career alternative. We start 15-20 businesses a year out [at Progress Park] . . . when we could be having these students start up a hundred businesses a year or more” (D. Day, personal communication, 8/15/12). Ed Poppell, Vice President for Business Affairs and Economics Development for the Innovation Hub, could not agree more, saying, “we have over 300 inventions every year [in Gainesville]. In fact, we had 324 inventions last year: that’s 324 discoveries that we need to get to market. We had 15 spinoff companies. We’re the number one producer of intellectual property. Nobody does it better than UF. [We sit] on a hotbed of intellectual property” (E. Poppell, personal communication, 8/23/12). David Ramsey, Vice President of Economic Development for Gainesville’s Council for Economic Outreach, said Gainesville and the University of

Florida, “not only wants to keep the talent created here, but also wants to recoup the investments made in the form of grant money and other tangible products as well” (D. Ramsey, personal communication, 8/12/12). This community was founded and operates as a center for higher learning, and the products created here by its students and faculty only further its prestige. The University of Florida is, “a \$600 million dollar research university, a third of the research in the state of Florida [happens here] and [it’s] one of the big three research universities in the southeast and the [home of] 3,000 scientists. . .”³ (D. Day, personal communication, 8/15/12). Fierce competition between Gainesville and other communities for the best and brightest minds necessitates that the city use all its resources to attract and retain top talent.

Erik Bredfeldt, Gainesville’s Economic Development Director, invoking an air of greater obligation to the U.S. economy notes that on a larger level, “Gainesville needs to be on the cutting edge for the development of this part of the [American] economy” (E. Bredfeldt, personal communication, 8/24/12). Pollitt adds, “[Gainesville has] the infrastructure to make this work and we are unlikely to become a manufacturing economy. [Also] we already have a pretty strong service base and governmental base. The basics of looking at where we are. . . the best we can do is to expand on something we are already making: which is essentially bright people” (B. Pollitt, personal communication, 8/27/12). Referencing the economist Edward Glaeser, and the need for growth, Bredfeldt states, “If you want your area to have higher population growth and higher income growth, the really two tried-and-true ways to do so focus on the number

³ (2012 total of 1,960 scientists, just including ‘Life, Physical, and Social Scientists (“May 2011 metropolitan,” 2011)

of adults in the community that 1) have college degrees and 2) have industrial diversification” (E. Bredfeldt, personal communication, 8/24/12). Previous figures and tables project the growing number and rate of creative class jobs in Gainesville.

However, one might question Bredfeldts formula for population growth. Gainesville already has a high rate of educated people per capital, but its growth rate and population, compared to other biotech universities, Florida and the U.S., is below average. [Figure 4-13] Also, the other part of Bredfeldts equation, industrial diversity, is a point for further investigation. Gainesville’s industrial diversity or lack thereof, might be the reason the community has a slower growth rate. Increasing this diversity is another part of current city leaders’ efforts to grow the innovation economy.

Comparative Population Growth

Data Provided by U.S. Census Bureau

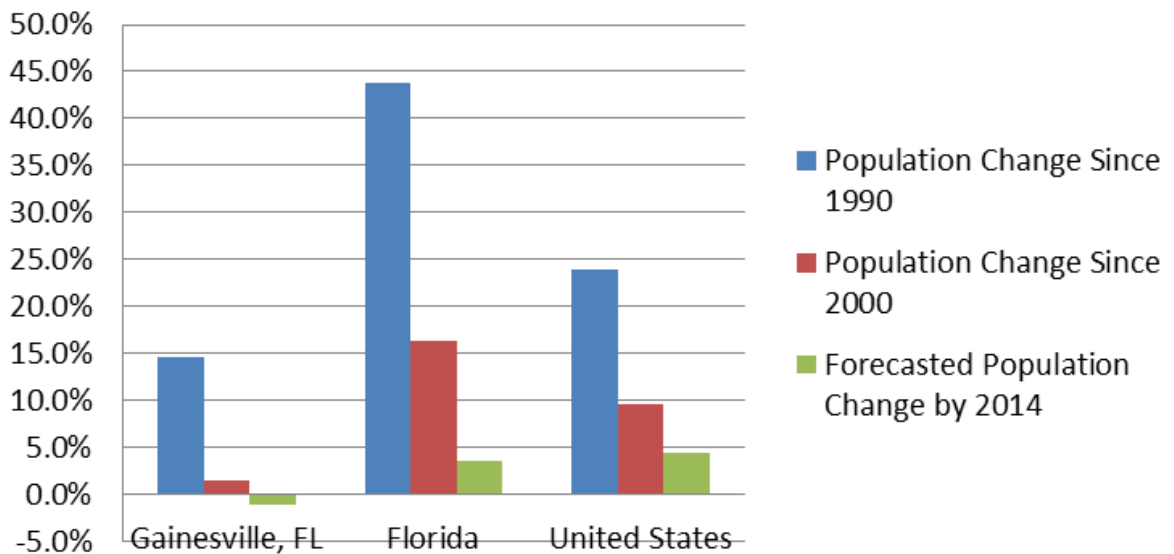


Figure 4-13. A look at population growth in Gainesville compared to Florida and the U.S. Source: U.S. Census Bureau. (2010)

Right now, “the community is targeting high-tech, life sciences, logistics, healthcare. . . [and] more creative design firms that make apps and programs. These are the companies that provide the products services that help run modern life” (D. Ramsey, personal communication, 8/12/12). By ‘retooling’ the economy to include a diversity of industries, Gainesville can better balance its economy.

Just because Gainesville is straying a little from its traditional biomedical roots does not require it to develop a whole new economic approach. The application of knowledge and innovation to the workforce does not call for the abandonment of traditional economies and their principles, just the need to ‘work smarter, not harder’. In speaking of the new opportunities in town, Ed Poppell comments about the current ignorance of these developments by the student population by admitting, “That’s another thing we have to change. Now that we’re creating this ecosystem to attract companies, like MindTree, we have the jobs. This fall, you are going to see a huge marketing campaign saying ‘Gainesville is the place to be’ ” (E. Poppell, personal communication, 8/23/12).

Global trends necessitate adaptation in the marketplace, but those changes need not be drastic. The idea in Gainesville is “not to change the character of the school [and community] but to grow it” (D. Day, personal communication, 8/15/12). By emphasizing the development of marketable innovations, this tactic seeks to enhance the capabilities of the already outstanding research facilities by encouraging real-world applications derived from raw knowledge. The degree to which implementing the innovation economy is a success to the community is based on, “a symbiotic relationship between industry and the university. They are complimentary to one another in that the

successes of one are likely to transfer over and positively affect the other” (E. Bredfeldt, personal communication, 8/24/12). This feedback loop could be like a self-sustaining ‘perpetual motion machine’ but the initial push begs the proverbial question: ‘which comes first, the chicken or the egg’? Developing that feedback loop to the point of perpetual motion is important but, in Gainesville, the point is mute: the starting material is the university and what is needed in greater abundance is more industry.

On the point of needing to draw more business, at a League of Cities meeting in early 2000, Warren Nielsen, then a Gainesville city commissioner visited the Yale University campus and took note of developments in that city. He and his team discovered something impressive there as, “[Yale] had figured out how to translate [their] technological creativity and translate that into the marketplace”, without the use of business parks, which were far away from the university. With careful planning, “Yale located their market activity from public to private labs into what they called a ‘5-minute walk’ ” (W. Nielsen, personal communication, 8/11/12). By shortening the physical distance from the centers of knowledge and the centers of business, Yale had increased the success of their public-private ventures. The concept of co-locating related industries is not new but often difficult to accomplish in built-up communities due to the amount of contiguous land required for development. At this point, Gainesville ‘s Progress Park was established but it too could be accused of a proximal disconnect; located roughly twenty minutes from campus. The idea gleaned from the League of Cities meeting was that finding places where business can be successful was just as important as knowing which businesses to include. Learning from this, today,

“Gainesville offers any type, any scale, any co-location and any package that [a business] might be interested in” (B. Pollitt, personal communication, 8/27/12).

On the surface, it appears that the Gainesville community has a number of incentives – some tangible and others the byproducts of the academic environment. Opportunities are available for innovative companies to locate according to their needs and the city appears interested in facilitating that process. Whether importing successful business or starting local companies, Gainesville appears to have some comparative advantages in the marketplace. Echoing this point, many respondents wished to elaborate on these advantages.

Business Opportunity

Typically, when businesses contemplate relocating or forming, they consider the special benefits they might enjoy when locating in a community. Some are motivated by the abundance of available resources, close location of nearby markets or even the amount of cash incentives offered, just to name a few. But in Gainesville, “private industry gets, as an advantage to [locating here]: superb talent, and secondarily. . . access to top-notch facilities, collaborative efforts. . . and the culture of being in a southern college town” (D. Ramsey, personal communication, 8/12/12). The competitive advantage of locating in Gainesville can be understood, “when you step back and look at science and technology, [and that] it’s changing every 3-5 years – where they’re reinventing themselves. [Companies] can’t afford to invest in research anymore like they used to. They have to get close to the minds, to the research universities, to shorten that timeframe to stay up with technology. They have to get close to our talent. You, the graduate, that’s what they want” (E. Poppell, personal communication, 8/23/12). In business, especially in the STEM fields, “there’s not many

places where you can find these kind of people and these ideas that come in and can change your entire strategy” (B. Pollitt, personal communication, 8/27/12). Access to fresh minds, unaltered by years of exposure to corporate conditioning, can be powerful new sources of innovation. If you want to have, “a successful business model, everybody needs to have new entrance into your organization. Having that influx is critical for any business. . . I don’t care what you’re doing, if you don’t have fresh, new thoughts, injected into your business model, you’re going to flounder” (J. Smith, personal communication, 8/22/12).

Bruce DeLaney, Assistant Vice President for Real Estate at the UF Foundation, Inc., said that right now, the University of Florida is, “producing more intellectual property than schools like MIT”⁴ (B. DeLaney, personal communication, 8/16/12). While smaller and less dense than other, similar, competing cities, what draws companies like MindTree to the area are the aspirations of the local community to be like one of those great communities. It’s no secret that, “a lot of these high-tech companies are looking for the next Austin [TX] but not the Austin cost. . . it’s extremely expensive” (D. Ramsey, personal communication, 8/12/12). MindTree representative, Joelle Smith adds that, “[the company] saw Gainesville as trying to be the next Austin and that really inspired us” (J. Smith, personal communication, 8/22/12). Still, companies like MindTree might chose Gainesville over other cities with comparably intelligent workforces because of special comparative advantages. We should, “not forget Raleigh-Durham, let’s not forget the competitive advantage we have here. Once

⁴ This claim is unsubstantiated. The researcher found that although competitive on a consistent, yearly basis, over the last 3-10 years, UF does not produce more patents that MIT

the costs [of doing business] go up you've lost your competitive advantage. In order to be sustainable, we have to continually offer [businesses] talented people, exciting places and controlled costs" (D. Ramsey, personal communication, 8/12/12). In speaking of the relationship between Gainesville and its southern competitors, Smith comments that, "The one amazing thing about Gainesville [in comparison to the other cities under consideration] was the collaboration from all aspects of the community" (J. Smith, personal communication, 8/22/12). The Raleigh market was already cornered by the pharmaceutical market and generally, "the first major employer of this [innovation economy] type would be in firm control of the labor market" (J. Smith, personal communication, 8/22/12). Market domination of a single firm is clearly not what the Gainesville community has in mind. This was made evident to Joelle Smith with MindTree because when speaking of Gainesville's business philosophy, "it wasn't about getting the first big fish in the door – it was about proving the model and continuing the growth", of the community (J. Smith, personal communication, 8/22/12). That and, "no other area in the entire US. . . suited our needs better. We wanted to have a territory that was 'ready for the picking' but wasn't quite picked yet" (J. Smith, personal communication, 8/22/12).

Inherent to the innovation economy and the resulting cluster agglomerations, the topic of networking and building connections was important to many interviewees. The interdependent relationships – and the nature of those affiliations – between companies, the university, and the workforce was a major topic of discussion. Key to understanding the overall concept is the encouragement of promoting social interaction between race, class, occupation, and other social categories. Gainesville has grown by 20% in total

population from 1980-2000. Over that time, the percentage growth (and number) of the 'non-white' demographic has consistently outpaced the average of 20%, with a sizeable increase in both the Asian/Pacific Islander and Hispanic populations. Of particular note was the large increase, of all minority groups, that are foreign-born and living in Gainesville. As of the 1990 census, over 50% of all non-white residents are foreign-born, with 38% becoming naturalized U.S. citizens (Bureau of Labor Statistics, 2012). Although this research did not examine the real or perceived changes, if any, in the relationships between racial classes, Gainesville, Florida is experiencing continual increases in racial diversification – both in number and rates of change. Whether or not the city of Gainesville is a friendly and tolerant place for ethnic minorities is up for debate. There is a noticeable level of racial segregation between the east side and west side of the city. Representatives of the predominately African-American east side have voiced concerns over equitable development initiatives that often bypass that economically under-privileged part of town. Because innovation economy initiatives target capital and resources into specific places (cluster developments and supporting industries), concerns over east Gainesville disenfranchisement may arise.

Ray Oldenburg, a retired sociology professor and acclaimed author had much to say about community relations. Encouraging a mixture of ideas helps avoid a kind of 'silo thinking' that can mire a company, industry or even a city by limiting innovative ideas. Ignoring such advice prevents the combination of 'small hunches' into those 'great ideas' and inhibits a fuller, deeper respect for humanity and community (R. Oldenburg, personal communication, 8/13/12). Fortunately for Gainesville, "in general, the business community, the university – even the city government. . . will tell you that

they've never seen the business relationship as good as it is now" (D. Day, personal communication, 8/15/12). By and large, all respondents agreed. The explanations varied from 1) decreased business application and permitting times, 2) the installation of business-friendly commissioners, 3) public-private collaborations, or 4) a unified vision of community. Regardless of the reasons why, all interviewees displayed an increasingly positive outlook for Gainesville's economic future, due to enhanced relationships between the public, private and University systems. And, "It's not unusual, nationwide, for the university and the community relations to not be so good" (D. Day, personal communication, 8/15/12).

Before concluding the remarks of the needs of innovative businesses in Gainesville, it is worth exploring a different dimension of the Gainesville economy. Stated earlier, one of the major industries and vested interests of the community is the real estate market. Many large landowning or managing companies like Tri-Mark, Paradigm, Bosshardt and others have a significant impact. Real estate sales and managers totaled 730 local employees, a figure that does not include real estate appraisers and brokers or office support staff. These findings could not ascertain the number or size of for sale/lease properties, but it should be stressed that the local real estate market is heavily invested in this community. The real and tangible assets they control are significant. Until recently, these property giants were comfortable following a traditional real estate market focused on student and single family housing. Today, the market appears ready to expand into commercial holdings (B. DeLaney, personal communication, 8/16/12). Since WWII, the amount of student and resident housing

steadily increased. Initial, post-war booms in housing were following by steady increases in the student and resident populations (“U.S. Census Bureau”, 2010).

Today, the reality is different. It appears that the University of Florida has effectively capped the student population number at about 50,000 students, slowing the demand for student housing (D. Day, personal communication, 8/15/12). This has forced, “the real estate people. . . to put their investments [toward] growing technology companies. That’s where they’re trying to start making money, where they’re trying to deploy their resources” (D. Day, personal communication, 8/15/12). A change in the variable conditions – say that of land management away from residential and towards commercial – does not necessitate an overhaul of a company or industry. But, “if you take [or reduce the student housing] economic driver out of the equation,” you run into the problem of having to create new revenue for the same stakeholders, the property giants (DeLaney, personal communication, 8/16/12). DeLaney continues, noting the accomplishments of major stakeholders like TriMark, who diversified their business model to provide land for tech companies.

Real-estate companies, just like the larger economy of Gainesville, have altered their strategies to remain competitive and profitable. Just like the two former examples, no unimaginable shift or devastatingly large correction to their role in the economy was necessary. TriMark and the other ‘property giants’ will continue to play a meaningful role in local affairs. In fact, now that the dialogue has increased between these companies, the city, and the university – the real-estate industry may be better positioned to anticipate, rather than react to Gainesville’s future development plans.

The bottom line and common consensus with all the interviewees was that business location in Gainesville favors companies that need access to an abundance of creative, intelligent people and premier research facilities. Whether or not the Gainesville community can or even wishes to become the 'next Austin, Texas' is debatable, but for now, everyone seems to be pleased with the real and upcoming opportunities. Landing a big company like MindTree was the proof of concept. Also, evident to this researcher was the importance of cohesion and communication between the leaders and major stakeholders of a community. Whether it be multi-year, public-private collaborations like Innovation square that forced cooperation or city commission 'field trips' to similar innovation economy communities, the vested interests must all work together.^{5 6} Sharing a similar vision of community is likely to accelerate development initiatives.

By working towards a common vision and demonstrating competence and adaptability, Gainesville appears attractive to startup and relocating companies. Indeed, "the flexibility of a town," in being able to accommodate, "whatever your [business] is going through is more enticing to me than an actual cash incentive. Money makes the world go round but throwing money at problems doesn't actually do anything. We need the solutions [to those problems] and sometimes those cost money and sometimes they don't. Knowing that you have a partner in the community. . . is

⁵ "The Chamber has a vision to be a national hub for green and health technologies and to become a city known for innovation and entrepreneurship," he said. "Gainesville has an opportunity going forward to be part of this group of the next great American cities that will have vibrant economies." (Clark, 2012)

⁶ "The recommendations from these trips [to Madison, WI, and others] fueled a committee examining Gainesville's policies and regulations, spurred the creation of a marketing plan for the city and played a role in the genesis of a proposed master plan for southeast Gainesville." (Adelson, 2005)

sometimes more important, I think, than the incentives” (J. Smith, personal communication, 8/22/12).

Using a variety of incentives is important to attracting the interest of firms. But once interested, Gainesville must offer equally attractive business locations. Knowing how and where to optimally locate an innovative business is crucial. In the Gainesville community there are numerous locations good both for business and for the development goals of the city. The opportunities of this town, in regards to the innovation economy, is the ability to grow, the presence of large land owners and the diversity of natural and business environments.

Opportunities and Constraints of the Physical Environment

First, the community, as based on its geography, is certainly able to grow laterally if it chooses to do so. New opportunities for development exist to the north by the Santa Fe campus, west by Interstate 75, out in East Gainesville, and in the outlying communities – with great potential highlighted by the future Plum Creek development. Development in these outlying areas would be careful to avoid sprawl and cluster their development patterns, but the pressure to build is not only at the edges but in the interior. If the needs of innovative businesses rely on the proximal advantages of the University of Florida and the collision of ideas, urban infill and increased densification of the urban core is highly likely.

While much of the land surrounding the city is physically available, nearly all the interviewees had similar thoughts on the need to concentrate development, one piece at a time. The goals and direction of the community are, according to the experts, to gravitate inwards. Although, “everyone has their favorite part of town. . . detaching the emotions that might limit our vision of the city is quite important. If we take a scatter-

gun approach, rather than concentrating resources to achieve a critical mass that would then sustain itself”, we would lose the initiative (B. DeLaney, personal communication, 8/16/12). Echoing the sentiments of increased density and prudent timing is the opinion of Erik Bredfeldt. He advises caution and patience saying that, “the City [of Gainesville] doesn’t have the land resources like some outlying communities do. We just don’t have large quantities of connected land in the city. I think right now we have sufficient land, we just need to wait and see what we grow into” (E. Bredfeldt, personal communication, 8/24/12).

While the most exciting developments are taking place in clusters like Innovation Square, we should not ignore other significant plans to develop on the fringes of Gainesville. Plum Creek, a juggernaut landowner of conservation and timberland, has plans to develop a massive piece of land on the east side of town. Located about 12 miles from the heart of Gainesville, the Newnan’s Lake development proposal spans 65,000 acres. The total of acreage of Plum Creek holdings in Alachua County spans nearly four-times that number. Plum Creek is the, “largest and most geographically diverse private landowner in the nation” (Plum Creek Timber, 2012). The implication of this development sends powerful signals to the local and regional economies. As Nielsen, Bredfeldt, Denslow and others previously explained, the opportunity to help shape the development of a large, contiguous body of land in or near your community represents a significant opportunity. The reason, “this matters and whether that distance [from the university] is important or not is that the next big piece of land you have is that huge 65,000 acre tract of land owned by Plum Creek. . . and man, that is one heck of an opportunity.” The biggest problem community’s face when planning such ambitious

development projects is, “assembling the land. Because of the fallout from the Kelo case, (Maxam, 2006) in Florida. . .”, restrictions meant to prevent takings have strengthened.

The beauty of it – the huge advantage [Gainesville has] is that the land has already been assembled. You don’t have to go through a kind of Kelo process” (D. Denslow, personal communication, 8/22/12). On the question of ‘whether or not Gainesville has enough land or the right kind of land use designation strategy’, Ramsey cautions that, “We have to be absolutely sure what we want to attract, before we start saying ‘do we have enough land?’ I’m pretty sure I know what we want and who the players are” (D. Ramsey, personal communication, 8/12/12). For one, “Plum Creek is a fantastic example. If we didn’t have a partner in Plum Creek, we would be at a serious disadvantage. That is the next wave of development in this county,” set to coincide with the final development stages of the innovation hub (D. Ramsey, personal communication, 8/12/12). “Do we have enough land? I think yes. The bigger question is, ‘do we have enough vision’. . . that’s what we need” (D. Ramsey, personal communication, 8/12/12).

While Plum Creek’s eventual development brings optimism to the conversation of growth and development in Gainesville, Ed Poppell, Vice President for Business Affairs and Economic Development for the Innovation Hub insistently reiterates his focus on current objectives, dissuading a ‘scattergun approach’ to development. On the subject of Plum Creek he believes that, “[it] will be a great compliment to our efforts here, but Plum Creek is a vision – Innovation Square is a reality. We have to make sure this is successful and if we get distracted by everything that sparkles, we wouldn’t get anything

done. Plum Creek is good stuff, just not right now” (E. Poppell, personal communication, 8/23/12).

The needs of innovative businesses appear to be met in Gainesville. Access to proximal land near the University of Florida and other locations are available today in a variety of cluster developments. Also, large tracts of land to the northeast are scheduled to be developed in the future. Some physical constraints do exist, like the inaccessibility of land near the university, but working around them or waiting for the right opportunity to use them seems feasible. It appears that the opportunities for locating in Gainesville, at least from the perspective of land accommodations in the present and future, look promising.

Innovation Square and Other Cluster Developments

While the, “real innovation in Gainesville first happened in Progress Corporate Park,” the major development project on everyone’s mind in Gainesville is Innovation Square (D. Ramsey, personal communication, 8/12/12). The new idea is to put these innovative clusters as close to the source as possible as, “research parks typically – in the old days, like Silicon valley – [were] about fifteen, twenty, thirty miles outside the university [because of the abundance of cheap land]” (E. Poppell, personal communication, 8/23/12). But the problem with that scheme was the disappointing rate of successful companies as many could not thrive; much less survive, in that environment. The difference between Innovation Square and those far-away office parks in Silicon Valley – even somewhat evident in Progress Corporate Park – is the proximity to the University.

Now the talk of the town, public opinion wasn’t always so keen on the development of Innovation Square. When Shands and UF decided to shut down

Alachua General Hospital (AGH) – the former occupant of Innovation Square – initially, “[the city] had a public relations nightmare,” on its hands (E. Poppell, personal communication, 8/23/12). Tempers have cooled since then and now, Mr. Poppell jokes, the same people who vehemently opposed the transition of AGH to Innovation Square are quick to praise the new development. Shands, working with UF, transferred land over for development and where, “we used to birth babies, now we birth companies” (D. Ramsey, personal communication, 8/12/12). The loss of AGH was especially sensitive to members of the East Gainesville community but now, “I’m so excited about Innovation Square and the [nearby] ‘power district’ [cluster development] because, as I’ve told several community leaders in East Gainesville, this is the most important economic development for East Gainesville in my lifetime” (B. DeLaney, personal communication, 8/16/12). After all, “what’s the spinoff of creating 3,000 new tech jobs down there: the service sector and other support industries” (B. DeLaney, personal communication, 8/16/12).

The creation of innovation square, other nearby cluster developments and emergence of the Newnan’s Lake development may help to solve the issue of equity in Gainesville Society. The location of these developments, largely due to luck, presents a substantial opportunity for east Gainesville residents. Large-scale development will mean greater and more proximate job opportunities. Transportation and other infrastructure improvements are also likely to follow. While many of East Gainesville residents may not benefit directly from innovation economy jobs, the upside will be the job-multiplier effect, as more service industry jobs are created to support high-tech industry. Semi-skilled labor, often in the form of repair technicians, maintenance crews,

and other more traditional service sector jobs will provide long-term, steady employment at livable wages.

Although the Innovation Square is in its infancy, the people and processes that enabled its creation are the real story. The cooperation between public and private entities and the unity of vision exhibited by the leaders of the Gainesville community indicate much larger possibilities. Bredfeldt notes, “that’s really the whole benefit of the Innovation Square because it’s really made the whole city organization. . . [come together and] set a new template that should ultimately not just benefit Innovation Square but also other areas in the city. It’s really a whole new way to look at problem solving,” on a city-wide level (E. Bredfeldt, personal communication, 8/24/12).

All this talk of companies locating or forming here would mean little without the critical input of human capital. It is the scientists and engineers, the creators of our modern technologies that need the opportunity, tools and environment to create the innovations of tomorrow. Also, “there tends to be innovation hubs sprouting up around these academic super-stars, these people at the top of their field” (D. Denslow, personal communication, 8/22/12). Creating the opportunities for the best and brightest only magnifies their potential. Although not at the pinnacle of any one field, “the one thing the University of Florida does have going for it is the size and comprehensive nature of the university. The question now is, ‘How strong are the network effects?’” Do the departments work together to create the next wave of innovative products? The answer appears to be yes (D. Denslow, personal communication, 8/22/12). Let’s say, for example, “You created a widget. . . [and] if you wanted to commercialize it, then the next step would have been to protect your intellectual property. Typically [this kind of]

researcher is an expert at what they do but they are not experts in running a business. You need help and so you came to an incubator where somebody helped you until you got on your feet. [And then] you take it to market – that’s the ultimate goal” (E. Poppell, personal communication, 8/23/12).

Take the story of Banyan, a local startup in Gainesville which is a leader in developing diagnostic products and services for the detection of traumatic brain injury (Hayes, 2010). The founder of Banyan, “really knew cerebral spinal fluid. . . and the changes in it after a blow to the head.” With the participation of, “the medical schools, [where] you can get the samples from the people who have collided with something, say on their motorcycles.” Spinal fluid is almost always tainted with blood, something that you would expect after a traumatic injury, which requires someone to, “pull out the million proteins that are in blood so [it] can [be] analyze[d]. Well, then you need a blood specialist and UF has one. . . and then you need someone to do the DNA blots and – as it happens – we have here a center for protein analysis” (D. Denslow, personal communication, 8/22/12). When you put all the pieces of this equation together, you have the potential for a whole new company or patent. And, roughly speaking, this is real-world example of how the innovation economy can operate in Gainesville, Florida.

The University of Florida, “created these research parks to attract companies that could foster this [innovative] development so that faculty could say, ‘hey, if I come up with this, there’s an environment here to help me market this’ ” (E. Poppell, personal communication, 8/23/12). Co-locating next the University of Florida and downtown Gainesville is seen as the most advantageous location for innovative businesses to cluster. Proximity is everything and these companies cluster together for a mutual or

shared competitive advantage because, “where did they really want to be? They wanted to be on campus. And that’s what Innovation Square is designed to do – get these startup companies as close to the university as possible. Being three blocks from downtown was just added benefit,” and arguably, an accident of history (E. Poppell, personal communication, 8/23/12). Around the university, “proximity matters, time matters; it’s physics, it’s chemistry. The tighter things are together the more interactions occur – the hotter it gets” (D. Day, personal communication, 8/15/12). The description of the innovation economy paralleling processes found in the physical sciences was one of the most consistent themes between interviewees. Whether this is by accident – a repeated analogical theme – or indicative of something greater, this researcher finds comfort and humor that the strengths of the ‘new-economy’ mimics the fortes of the university seeking to adopt it.

What about the Creative Class?

If you look around the United States and indeed around the world, “you will see that the major technology clusters are always located around research universities, powerful institutions or otherwise brilliant people” (D. Day, personal communication, 8/15/12). Citing research from economists Fujita and Krugman, Denslow remarks that, “studies have shown that employers and workers find that a thick labor market,” one in which workers frequently change jobs and even skillsets over their lifetime, “are advantageous and another [idea] that they think is probably most important is the exchange of ideas” (D. Denslow, personal communication, 8/22/12). While Denslow argues that ‘network effects’ need better researching, the exchange of ideas through networks of interactions is one of the great hopes Gainesville has in regards to its

creative class citizens.⁷ All the talk about businesses, the university and the city would be mute if the people required to operate the innovation economy were absent.

Thankfully, Gainesville has an abundance of them. Ramsey exclaims, “Bar-none, hands down, the greatest economic benefit this town has is talent – the workforce” (D. Ramsey, personal communication, 8/12/12). The creative class in Gainesville is alive and well and growing.

The creative class in Gainesville, “want[s] to know about quality of life, cost of living [and] what their employees could expect.” When MindTree initially proposed the idea to their employees, “they were thinking ‘how are [we] going to convince [our] employees to move to Gainesville?’ What they didn’t anticipate. . . were employees saying, ‘can I move to Gainesville? I want to go there’. We have a gem here and that’s what we’re doing today – we’re selling our story” (E. Poppell, personal communication, 8/23/12). And that story includes a foundation of academic excellence, layered with past successes and topped by recent, energetic plans for the future development of the economy.

When asked, many interviewees simply stated they were well aware of the presence of highly-skilled and intelligent people in Gainesville. The need to elaborate that point was not one of their priorities. Others were unfamiliar with the term ‘creative class’ but their remarks on the general characteristics of desirable employees were synonymous with the term. Another commonality between those interviewed was the

⁷ Saxenian found in her 1985 paper, ‘Silicon Valley and Route 128: regional prototypes or historic exceptions’, that vertical integration in innovative companies is disadvantageous. She argues that the success of Silicon Valley in Santa Clara is due to interdependent relationships of small to medium-sized companies. Saxenian argues that a ‘culture’ of social and economic relationships allowed participating companies to react quickly to market shifts better than their larger, insulated competitors. (Saxenian, 1985)

need for the quick transportation of people to major activity nodes that also efficiently used urban space.

Transportation

Another commonality between those interviewed was the need for the quick transportation of people to major activity nodes that also efficiently used urban space. While most were pleased with the direction or vision of the local transportation initiatives, some were dissatisfied with current conditions – namely parking. All were humored by scooters. Also, an unprecedented and spirited discussion about the scale and function of Gainesville’s Regional Airport (GNV) ensued with a few respondents.

Despite the researcher asking for further elaboration, most interviewees either had little knowledge of, or interest in, the component of transportation on the establishment of the innovation economy. While recognizing transportations’ importance in helping densify the environment, which facilitates ‘innovative encounters’, the researcher noted that respondents thought transportation problems were less important. Nevertheless, the following are the most notable responses of transportation issues in regards to the formation of the innovation economy in Gainesville, FL.

The implications of the ‘auto-centric city’ presents modern obstacles to the development of an innovation economy in Gainesville.⁸ A gap of about thirteen blocks

⁸ Older cities, especially up north or out west, were, “built on the bones of past capitalist systems.” They were company towns and densely located around the, “textile or logging businesses that had their centers there and these cities had their infrastructure built around,” this model. (B. Pollitt, personal communication, 8/27/12) We are aware of these ‘accidents of history’ that spawned the creation of these cities but we should also pay attention to the other contextual variables at work. The period in which these cities developed and especially their cultural context – like major neighboring cities – should be noted when analyzing the structure and in particular – the dense and vertical nature of these places. Whereas Gainesville received its major building boom after the second World War and modeled itself after less-dense southern cities, these other examples were created on the role models of major northeastern cities which were built before the major transformation that the automobile had on city development post-WW2.

separates the University of Florida from the center of downtown Gainesville. There needs to be a, “strong[er] physical link between the university and downtown, whether that’s a trolley system or something like BRT where cars aren’t needed and where a person can easily travel from the university to downtown in a hurry” (B. Pollitt, personal communication, 8/27/12). Considering that the Innovation Square will be directly between these locations, “transportation is [going to become] a huge issue. . . How can we accommodate the [number] of cars if the Innovation Square is projected to have four-times as much square footage as the Newberry mall?” Considering that the Newberry/Oaks Mall has roughly 901,000 square feet, Nielsen explains that when it comes to apportioning parking spaces, “[t]hey can’t! You can’t build enough parking garages” (W. Nielsen, personal communication, 8/11/12).

Therefore, it appears that for the future of Gainesville, “excellent transit is more important than a regional road network” (B. DeLaney, personal communication, 8/16/12). Gainesville has met success over the years by expanding the RTS system and improving the level of service, seen in Figure 4-14.

Today, RTS Routes to the East side of Gainesville are becoming an issue. UF and Santa Fe students make up nearly 75% of all RTS ridership, an estimated 10.7M rides annually, and pay a large share of the operating costs. Budget cuts have forced RTS managers to make tough decisions and routes to east Gainesville are expected to be reduced or eliminated altogether. Also, it should be noted that some places may end up being purposefully excluded, at least via transit, from the innovation economy clusters. Although no specific examples are given, “There are some areas of our community that are prime for redevelopment, but it doesn’t mean that we should

necessarily link them with our plans for the innovation economy. . . some just aren't right for that" (B. DeLaney, personal communication, 8/16/12). Again, by consistently focusing attention on areas critical for the success of the innovation economy and not becoming distracted by 'everything that sparkles', transportation initiatives can make the most of their resources.

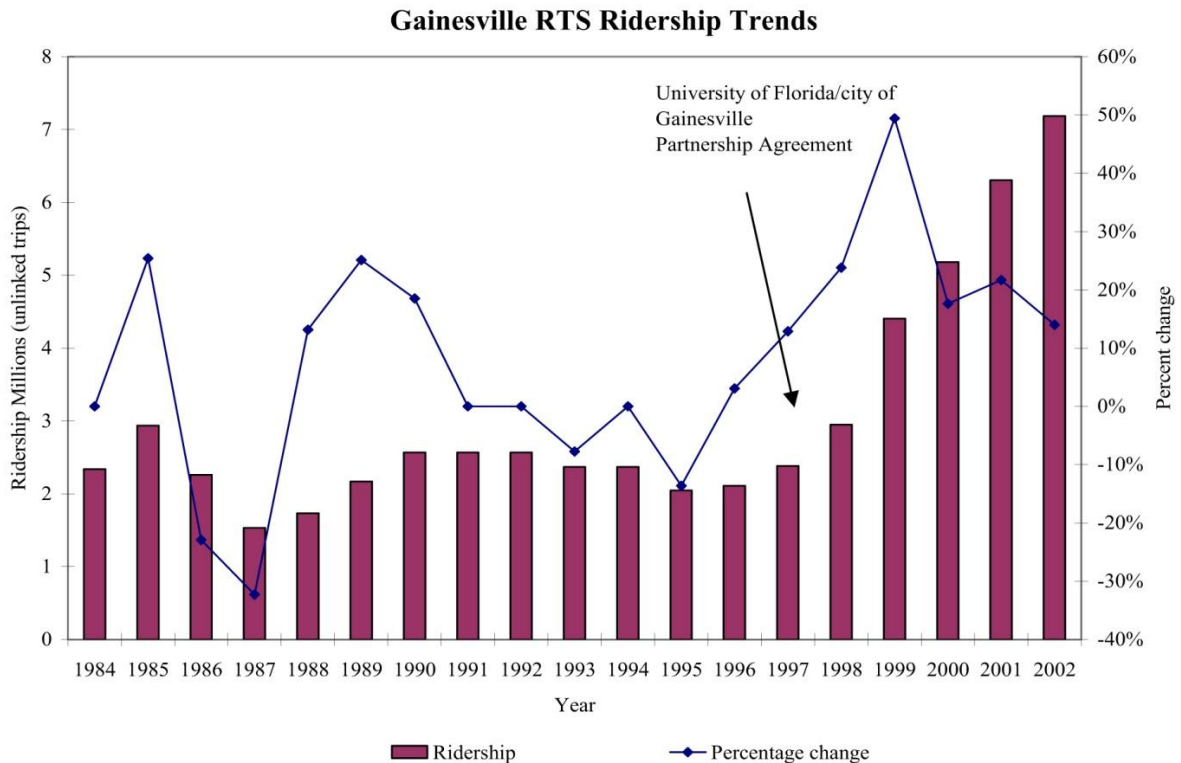


Figure 4-14. Gainesville ridership on RTS is improving. Reprinted by permission from Deborah Buchacz Sapper & Oliver Page (2004). Analysis of Florida Transit Bus Accidents. *Gainesville RTS Ridership Trends* ©. Retrieved from <http://www.nctr.usf.edu/pdf/527-11.pdf>

While many of the people interviewed did not have well-formed opinions on transit, several commented on the limitations of the Gainesville Airport. Central to this discussion is the availability of direct flights to cities with strong venture capital resources. Part of the reason why the university is so aggressive in marketing itself is because, “UF has a disadvantage, with respect to some [nearby universities like USF or

UCF], because there's a lot more business and flights in Tampa and Orlando" (D. Denslow, personal communication, 8/22/12). The airport, "needs direct flights to New York and Dallas [because] they are the hubs to the rest of the country. More direct flights and more carriers. . . [are needed] because 90% of the venture capitalists are in New York, Boston and San Francisco" (D. Day, personal communication, 8/15/12). This is because, "a VC (venture capitalist) guy likes to fly in, take care of business during the middle of the day, and then fly home for dinner – and you can't leave Gainesville and connect in Charlotte or Atlanta or Miami and be home in New York City for dinner" (B. DeLaney, personal communication, 8/16/12). Denslow says that the ridership of the Gainesville airport could increase 25% with a 10% increase in local population. He calls for, "more diversification in transit, more subsidies for the airport and a greater emphasis on urban density" (D. Denslow, personal communication, 8/22/12). Denslow hopes to see Gainesville grow in size to the point where greater connections to other metro areas can be made on direct flights but acknowledges that Gainesville, "will probably never get to the point where the airport could be a useful asset" (D. Denslow, personal communication, 8/22/12). Speaking matter-of-factly Ed Poppell said, "There's nothing magical that's going to change the [nature of the] airport. We are a regional airport and nothing much is going to change that" (E. Poppell, personal communication, 8/23/12).

Although the findings from this thesis on the issue of transportation are sparse and erratic, the necessity of a good transit system for the future of Gainesville's innovation economy is apparent. While not adequately covering the subject of transportation, it is neither the focus of the research nor the object of attention for many

of those interviewed. The adaptation of the innovation economy will contain important components of transportation in the physical landscape and should be a topic for later study.

The Role of Government

To the respondents the function of government was definitely a topic that elucidated a wide range of opinions. The subtopics of the role of government covered issues like the facilitation of business via incentives and the degree of government intervention. Although a difference of opinion between respondents was assumed – as it appears everyone has an opinion regarding government – the underlying message was consistent. Government, especially when operating in an innovation economy, needs to be just as flexible and adaptive to the needs of business as business is towards changes in the market. The willingness to adapt and the ability to quickly do so was the ‘common denominator’ in conversation. Investments by government into the innovation economy can target things like infrastructure development and (especially broadband capability) early research and development efforts, regulatory means that support the innovation economy, and, “collecting the raw components of innovation such as government data” (Chopra, 2012). Historically, the role of government in facilitating innovation used these three components, jump-starting innovations from, “machine tools to railroads, electricity transmission, transistors, lasers, the internet, GPS, and every aspect of energy exploration and development” (Bernstein, 2011).

As for the university, the roles are slightly different but no less important. It is the goal, or duty, of higher learning institutions to push students to succeed and faculty to research and write. Many universities choose to specialize in certain fields for which they have a comparative advantage. Also, universities may seek out alternative

programs and measures to fully utilize the resources and talent on campus. Primarily, the role of the university to use the talented student and faculty bodies (labor) along with advanced equipment (capital), to explore and extend the frontier of knowledge. Regardless of their role, both the university and the government should, and often do, work together to achieve this goal.

First, when thinking about the operation of the innovation economy in Gainesville, “you have to have a governmental structure that would be supportive of the business cycle. There’s no way you can work as business,” without this structural framework (B. Pollitt, personal communication, 8/27/12). Gainesville’s local government was historically cautious towards growth and copious on regulations. However, the events of the latest recession and new ideas (and people) might have spurred a greater interest in cooperating with business on economic growth. Ed Poppell, “would venture that the economy, unemployment, competition and outlook of the community,” forced those interests to work together, “because [after] see[ing] the university budget being cut, [government] realize[d] the university can’t be the heart, soul and pocketbook of the community. And innovation square,” and related development is seen as a supplement to the economy (E. Poppell, personal communication, 8/23/12). Regardless of the reasons why, the attitude of government in Gainesville today exhibits far more enthusiasm for growth, especially in the urban core, than previous administrations.

On the idea of monetary incentives, “the old model of subsidizing a company – giving away the farm – is anachronistic. What happens today, largely, is that companies coming into the community are basically looking for the best opportunity to get themselves up and running. All the factors that need to come into play to make that

happen, like smooth codes enforcement and approval, utility components, communications. . . all of that needs to be in place so that they can. . . get up and running” (W. Nielsen, personal communication, 8/11/12). The case made here was obvious to the research team: startup or relocating companies are much more interested in succeeding with their product than they are in taking a handout. Fitting into the environment and operating long-term with other businesses moving in the same direction appears vital (W. Nielsen, personal communication, 8/11/12). Joelle Smith of MindTree reinforced this perspective when she said, “Money makes the world go round but throwing money at those problems doesn’t actually do anything,” when what you need are solutions and, “a partner in the community” (J. Smith, personal communication, 8/22/12). Typically, in Gainesville, we use incentives to, ‘get the ball rolling’, because someone needs to be the initial investor. . . and they need to make a profit (E. Poppell, personal communication, 8/23/12).

Instead of one big incentive, “Gainesville has a package of incentives,” allowing business options to choose which ones they would like to pursue. “If you look at the MindTree deal, there were over 8 different incentives used to bring them to town. . . giving [the prospective company] the ability to go after some diversity and richness,” of incentive combinations (B. Pollitt, personal communication, 8/27/12). “When [in the past] we first started giving incentives for people to build some new stuff – our design standards bar was thrown down to nothing” (B. DeLaney, personal communication, 8/16/12). Adding his comments, Nielsen states that, “the old idea that a community is there to get companies to come in and just ransom the[m] . . .for handouts is outdated

and not constructive for this – or any – community” (W. Nielsen, personal communication, 8/11/12).

While acknowledging the necessity of incentives to stay competitive, most respondents cited the business opportunities, and the advertisement of them, as central to how Gainesville publicizes itself. Because, “in the end, whoever it is, has a big Excel© spreadsheet somewhere, with a whole lot of stuff [on it] that we can’t do anything about: the price of concrete, steel and so on. So let’s focus on those lines that we can do something about, like utility costs,” permitting and review times, and other controllable variables (B. DeLaney, personal communication, 8/16/12). David Ramsey makes the final point on the subject of incentives. Echoing the words of the Florida Secretary of Commerce, “‘Incentives don’t make a bad deal good, they make a good deal better’. The first thing when a prospect calls. . . I want to hear about opportunities, about people, buildings and places, and then we start talking about incentives. Incentives should only really be used in making the final sell. They should not be used in the primary conversation” (D. Ramsey, personal communication, 8/12/12).

As for the role of government, the respondents were mixed. Bruce DeLaney is, “not sure about how much of a role the government is supposed to have in business formation. . . [because] there’s a limit to how much speculation the government can do with taxpayer money.” He says that rather than interfere with business formation, government should – and Gainesville is – there to promote business expansion because the majority of businesses fail in the first year. He explains that, “you have to get to first base [before] . . .they’re going to help you double or triple your business” (B. DeLaney, personal communication, 8/16/12). Similar thoughts on the creation of

opportunities were made by Brad Pollitt who thinks that the role of government is, “to help you get over hurdles, . . . help you get along with your neighbors sometimes, manag[e] transportation and roadway networks, and mak[e] sure the city is clean and safe. It comes down to being all about environment. Government creates the environment we live in”, and should stay within its means (B. Pollitt, personal communication, 8/27/12). Gainesville, “can be a very important partner in making sure that all the things that the city does well. . . [like] creating conducive environments. But a lot of the time the city doesn’t have the resources to make these things happen” (E. Bredfeldt, personal communication, 8/24/12).

Businesses are looking, “for a community that understands how they operate. . . that knows they need access to capital [and] talent. . . They’re not looking for bureaucracy; they’re not looking for regulation” (D. Ramsey, personal communication, 8/12/12). While it’s true that few companies want to be told by outside entities how to run their business, the role of, “Government should be facilitating the development of business and not in the business of development. If GTEC (Gainesville Technology Enterprise Center) is going to be a government program then I don’t believe it’s going to ultimately be successful. It has to be the means to an end and not the end in itself” (E. Bredfeldt, personal communication, 8/24/12).

Hurdles to Overcome

Perhaps the most important lesson gleaned from the interviewees was the expanse of false or outdated perceptions of the community. Many respondents quickly and emphatically wished to express that the relationships between local government and business have dramatically improved over the years. Gainesville has, “for a long time had the reputation for being business unfriendly. . . but there appears to be a new

sea-change there and that gives this [innovation economy] idea some hope” (D. Denslow, personal communication, 8/22/12). The refrain from all interviewed sounded something like: “In general, the business community, the university. . . even the city government. . . will tell you that they’ve never seen the business relationship as good as it is now”⁹ (D. Day, personal communication, 8/15/12).

Brad Pollitt calls it, “the ‘Echo Effect’”. Gainesville has this no-growth, business unfriendly reputation but if I stand here and look [around], I see growth and things taking place. One of the issues is the [perception of] the bureaucracy that has developed over time is this image that the city is unfriendly towards business and development. . . and it’s simply not the case,” nor the reality on the ground (B. Pollitt, personal communication, 8/27/12). Pollitt claims he has “never seen [the city and private industry] work better together than they have like this Innovation Square project” (B. Pollitt, personal communication, 8/27/12). Businesses coming in recognize this and are energized because they know the city is, “there to help them succeed, rather than just being the community regulator and tax collector. . . And it’s not unusual, nationwide, for the university and the community relations to not be so good” (B. Pollitt, personal communication, 8/27/12) Bringing in desired companies and industries has, “more to do with relationship building than anything else. Like with the case of MindTree, it’s all about connectivity. Let’s say, if you were to invite somebody to your house on Christmas Day; the best thing you can do for that person, that visitor is to make them

⁹ “Historically, the first time there was friction between the city [of Gainesville] and the University [of Florida] was back in the 1800’s. . . when the university built it’s fist six buildings and landscaped them. Florida, at that point, was an open-range state – that is to say that the cattle could go anywhere they wanted to. . . and someone’s cattle came over and ate the Universities ornamental shrubbery. The argument then was: who has to pay for the fence to keep the cows out? That began the argument or if you will, the relationship.” (D. Day, personal communication, 8/15/12)

feel like family. . . like your family operates well and takes care of one another. You talk together, work together and generally act as a unit. So, when recruiting someone like that. . . we have to have this kind of relationship. That's the first thing you do – you get your house in order. . . and hav[e] a unified front” (D. Ramsey, personal communication, 8/12/12).

If perception is reality than according to David Day, Gainesville residents all live in an alligator infested swamp. In talking about the image of the city, David Day states that Gainesville needs to work on its marketing on the internet and especially on search engine results. That is because, “people don't know what our community is really like. Sixty percent of the decision of some new faculty getting a job here depends on their spouse”. According to Mr. Day the, “second biggest fear for people moving here was ‘alligators’. People thought that they might be walking down the street and an alligator might jump out and eat their dog. . . [It's] just incredible how out of touch our image is with reality” (D. Day, personal communication, 8/15/12). Coming back to the need for better search engine results, “with everyone utilizing the web when making decisions on where to move, we really need to put some money into search engine work on how we are viewed (D. Day, personal communication, 8/15/12).

In all, it appears that Gainesville has a little work to do on correcting the perceptions of the community both from the outside-looking-in and by its own residents. By admission, the attitudes of this research team were ill-informed – prior to conducting interviews – on the subject of city-business relationship. As proof, although residing in Gainesville for nearly ten years, the ‘Echo Effect’ produced on the research team led to a similar ‘business unfriendly’ bias that was only recently corrected. Whether rectifying

the perception of the city-business relationship or the prevalence of large reptiles, the image of the Gainesville community needs improving. By attracting new companies or helping start its own, Gainesville will have the chance to demonstrate its true character as it seeks to adopt the innovation economy.

Criticism and Warnings

Innovation economy concerns

Finally, it is the criticism of the innovation economy and the general warning of its zealous application that concludes these findings. While all respondents were optimistic, a few were careful to point out the flaws or general overestimations of the innovation economy. The impact on the region might not be all that is desired or, more likely, the shakeup of entrenched ideas and powers might prove difficult to overcome. This criticism starts with the general reproach of the innovation economy, progresses towards issues of community and ends with specific, local challenges.

If the basis of the innovation economy centers on networks and connections, how exactly can those be measured for effectiveness? Just because industries ‘talk’ to one another does not imply a correlation between dialogue and success. David Denslow argues on behalf of the economist, Paul Krugman, who, “has said that the problem with this [innovation economy] concept is the exchange of ideas. While that we can easily track the flow of goods – with input/outputs matrices. . . the flow of ideas is more ephemeral and much harder to track. People have made attempts [to track this] through patent citations [and] joint article authorship. They are beginning to look now at which industries collocate. . . what kind of job skills collocate. . . and there’s some progress being made on that front” (D. Denslow, personal communication, 8/22/12).

Not enough evidence exists to date on the effectiveness of network connections and the innovation economy.

STEM industry deficits

Also, focusing on the innovation economy often implies a greater emphasis on STEM industries and, concurrently, STEM education. David Denslow thinks that, “if you’re going to move the university in the direction of STEM, [then] you’re going to meet a lot of faculty resistance.” The case in point is Larry Summers who, “got fired from Harvard for trying to emphasize STEM while he was president there (among several other indictments of misconduct). It’s going to take a really tough guy who puts in a strong Provost,” to make the University of Florida dedicate more resources to STEM education (D. Denslow, personal communication, 8/22/12). Critical of the existing core undergraduate requirements at the University of Florida, Denslow argues that all students should at least be ‘scientifically literate’ in biology, chemistry or physics and not given the option to fulfill ‘science credits’ with courses like, “Age of Dinosaurs”, “Plants, Plagues and People” or, “Man’s Food”. Ensuring that students receive a well-rounded experience will likely benefit them in the future, may lead to additional insights and discoveries and will certainly broaden the comprehension of the world. Conveying the importance of ‘scientific literacy’, the famous astrophysicist Neil DeGrasse Tyson says, “If you’re scientifically literate, the world looks very different to you. That understanding empowers you to first, not be taken advantage of by others who do understand it, and second, there are issues that confront society that have science at their foundation. If you’re not scientifically literate, you are disenfranchising yourself from the democratic process – and you don’t even know it. Science literacy is a vaccine against the charlatans of the world that would exploit your ignorance” (Tyson, 2011). In a final word

though, Denslow concedes that that making the curriculum tougher, at least in terms of core requirements, is unlikely. “It all comes down to finances,” and the main point is do, “not get too optimistic about all this because state funding for this university is not very promising” (D. Denslow, personal communication, 8/22/12). Because of financial worries, it may be the case that the STEM fields necessary for the innovation economy do not receive additional funding. For now, the University of Florida will have to make do with what it has. And, given the role it plays as a leader in biotechnology and other STEM fields, it should manage to create innovative businesses from the raw materials – land, labor and capital – found in Gainesville.

Innovation should not rely on external inputs

If the local innovation economy isn't self-sufficient, it may not be a net-positive for Gainesville. What irritates David Day about current plans to expand the innovation economy, “is that we spend so much time trying to recruit businesses from outside. . . when what we should be focusing on is incentives to help startups right here – where we know what we have and we know how to help them grow. Our real advantage here is starting new companies from university labs and university students. That is our big advantage and it is to our disadvantage to go out and buy companies and move them here” (D. Day, personal communication, 8/15/12). The point made here speaks for itself. If the innovation economy is really going to be innovative, it should be able and encouraged to generate its own companies. Rather than compete with other cities and offer handsome incentive packages to established companies, perhaps greater emphasis should be placed on local startups. While bringing in ‘the first big fish’ ‘proves the concept’ and feasibility of the local innovation economy, importation of companies should probably not be the primary mechanism of innovation. As expressed by more

than one interviewee, local government investments should target the inputs and mechanisms of the innovation economy, not the importation of fully developed companies. In Gainesville, that means upgrading the internet connection speeds, further expansion of the RTS bus system, and perhaps other upgrading utility services. Among them, an interesting requirement for more 'clean energy' was expressed. There is a desire for refined energy that does not carry in it the inconsistencies between frequencies and amplitude. Such energy is required for advanced and sensitive laboratory equipment.

Infrastructure

Gainesville's technological infrastructure is adequate but upgrades will only make it more attractive. Although there are many premier high-tech laboratories in the community, the real issue lies in the level of service they can be provided. Internet connectivity is a major concern for Gainesville as, "some of our tech companies will tell you that we are 'bandwidth challenged'. . . and that does impact the ability to deliver gaming and social networking competitively (D. Day, personal communication, 8/15/12). Local companies like GrooveShark, Neuronet Learning, Prioria Robotics, and ADP (Automatic Data Processing) all completely rely on fast and uninterrupted internet connections. To remain competitive in the marketplace, Gainesville needs to significantly upgrade its internet connection speeds in the core areas. According to David Day, "Amazon will tell you that Gainesville is the 6th best read city in the U.S. (Amazon, 2012) – there's a lot of smart people here – but if we want to be competitive – we need to get 'gig speed' out. That is to say, one-gigabyte per second speed around the core of the city is required by these firms" (D. Day, personal communication,

8/15/12). If the community wants to attract more technology firms, Gainesville must have the urban cluster blanketed with 'gig-speed.'

Community and equity

Finally, on the subject of community, Ray Oldenburg had much to say – and rightly so. Oldenburg spent his career as an urban sociologist examining the relationships between people and their environment. For Gainesville, he expounded not only upon the need of 'creative collisions' between people but on the environments that enable them. Oldenburg claims many of these important 'collisions' occur in 'Third Places' – the public or semipublic places where people congregate when not engaged in their occupations. 'Third places' take the form of coffee houses, street markets, restaurants and bars. It is in these places that dynamic interactions between different people and ideas often take place. The point of the, "third place' was the proximity to a goodly number of people. It was the proximity that brought them there and then they discovered that well, not everybody agrees [with one another] . . . But that wasn't the point, it was that people were engaged and [after] you get used to this – the exchange of ideas," can occur. The fear is that now, "we've gone from that to self-selection and the problem with electronic information, as I see it, is. . . when you seek out people who agree with you, your world gets smaller" (R. Oldenburg, personal communication, 8/13/12). Indeed, in Gainesville, "we found through iG (Innovation Gainesville) that we don't know each other. We have a lot of 'silos' of people and if we could get more connectivity, more interaction, [in a] shorter time – we could achieve those hotter conditions that make things happen" (D. Day, personal communication, 8/15/12). To Oldenburg, "the great tragedy is that community is such an undervalued resource", today, partly because of the myriad variables needed to measure it but also perhaps

because of our inability to comprehend life outside of it (R. Oldenburg, personal communication, 8/13/12). Environmental awareness and participation in it should not wane just because technological improvements allow us to reach anyone on the planet. Some would argue that you don't need to go far to see how disconnected we really are: "How well do you know your neighbors or the store owners in your neighborhood?" Oldenburg asks (R. Oldenburg, personal communication, 8/13/12).

In terms of community, of equal importance are the neighboring towns and communities of Gainesville. Expecting those people to directly participate in the innovation economy may be unrealistic but perhaps explaining to them the indirect benefits might help gain public support. Helping to shape a positive opinion of Gainesville's innovation economy in the outlying region may foster new relationships and accrue additional economic benefits. Still, these residents may have no interest in engaging in Gainesville's innovation economy. They may even see themselves as competitors.

One reason that residents of Alachua County outside of Gainesville may have a negative view of new development has to do with taxes. Brad Pollitt explains that the county collection of transportation-related taxes is often skewed against regional residents. Because they are far away, such residents may not have access or a need to use the Gainesville Regional Transit bus System (RTS). How do we, "engage these neighboring communities and convince them to support density and travel reform in Gainesville," if they feel they can't benefit from it? (B. Pollitt, personal communication, 8/27/12).

To get these people engaged and excited about the innovation economy is to explain how development in Gainesville will translate into outside opportunity. One way is to narrate a story of such opportunities. People, “respond to stories but it’s not enough to run a story in the newspaper. What we need is a message, a consistent approach that will,” help change the people’s hearts and minds about this development (B. Pollitt, personal communication, 8/27/12). For example, “Newberry has identified their strengths, some of them being in recreation, and if you’re a new company coming in, sure – you’re going to be looking for talent, for a building and incentives but – what is there to do around here? Is this a good place to live? What do my employees want to do?” (D. Ramsey, personal communication, 8/12/12). That example might continue to tell how the softball and archery complexes in Newberry might see increased use as Gainesville’s new scientists enroll their children. The point is, by helping identify these outlying communities’ strengths; we can help demonstrate how they can be a part of the activity. Gainesville can also help demonstrate the lifestyle choices offered by these distinct, satellite communities as a benefit to those looking for an alternate standard of living. Finally, all of these communities are connected to Gainesville and none of them are too distant a commute.

Criticism summation

Overall, the challenges and criticism of the innovation economy seem pertinent but solvable. It’s adaptation in the Gainesville community and the potential requirements or side-effects might be a cause for concern but are overshadowed by the numerous benefits expected. Respondents expressed their concerns in a way that explored specific topics and examples but none seriously doubted the ability of the

innovation economies success. Still, their concerns were valid and could be the basis for continued study, perhaps for another thesis.

Summary of Findings

Weaving together the narratives of the major vested interests, these findings suggest that Gainesville, Florida is ready, willing, and able to initiate and expand the innovation economy. This city is ready to grow its economy, excited and energized by the possibilities and equipped with the competence and resources necessary to do so. There will certainly be challenges along the way but that is part of the adventure in the innovation economy. It is the intrinsic nature of innovation to promote and even force the clever adaptation of 'means' to reach their desired 'end'. And as long as the desired image of the community remains one of exciting people and places in a high-tech community making the most of their intellect and ambition, Gainesville will prosper.

For the innovation economy to thrive, it will take the continued cooperation of public and private entities and the thoughtful development and application of land, labor and capital. The physical opportunities in terms of land may not be as expansive as some communities, but where available, they are ideal for innovative development. The prospect of huge tracts of land opening up in the future are also a welcome sign in the community. Opportunities for business are found by clustering together in close proximity. Innovation Square, GTEC, and the Power District areas accommodate those needs. The creative class is alive and well in Gainesville but accommodating them with adequate transportation will likely become a priority as the city grows. Luckily, the community appears to be heading in the right direction as a variety of transportation modalities are being introduced or expanded. The role of government is likely to remain a topic of debate but now, with a common vision of the community, local government

appears receptive to business growth. With the continued partnership of business, the university and government, a common vision with the city can be created. Gainesville can help shape its image both inside and outside of the community by sharing stories of success and demonstrating its commitment to a larger vision, despite the criticism or doubts of some.

By paying special attention to the availability of labor and capital for development, the proximity of close land to the university, and the timeliness of government interaction and approval – the researcher concludes that Gainesville, Florida is ready, willing and able to establish and nurture an innovation economy model.

CHAPTER 5 DISCUSSION

Global Trends

While globalization increases overall economic activity – something many refer to as the 'centrifugal force' – a less apparent and opposite reaction occurs. Richard Florida remarks that many, "higher-level economic activities such as innovation, design, finance, and media cluster in a relatively small number of locations" (Florida, 2008. pg. 19). Global trends encourage regional specialization and in turn, localized economies. The natural resources, technical aptitude and cultural identity of a place (or land, labor and capital) all factor into how a locality specializes. The externalities generated by these components tend to push or pull industrial location. For innovation economies, the clustering of industry maximizes the 'pull' effect. This effect is widely termed the 'centripetal force' and can be witnessed in the clustering or agglomeration of highly specialized industries in particular locations. Although Adam Smith pointed out that specialization of labor was the key to *The Wealth of Nations* and David Ricardo formulated the concepts of 'comparative costs', both men regarded nations as the fundamental economic unit. Noting their time and place in the context of history, it can be understood why these men put such emphasis on nations. Today that fundamental economic unit has changed, becoming ever more mobile and thus, location-dependent. The new 'creative economy' erodes traditional people-anchoring institutions like the company-town and the idea/promise of a job-for-life. Joseph Schumpeter claims these, "great gales of 'creative destruction'," are unstoppable and that adaptation to a new theorem of 'people and industry based' economic geography is essential (Florida, 2008. pg. 63).

Transnational Corporations

Major shifts in economic geography are underway as the world embraces the Information Technology (IT) revolution. One interesting development in world economics is the ability and prevalence of transnational corporations to shift their production to overseas markets to take advantage of cheap labor and land. In doing so, US-based manufacturing and production struggle to remain competitive and often must relocate, perish, or adapt their business models. While (arguably) good for the foreign employees gaining these jobs, it has forced a 'race to the bottom' for a number of industries in first-world countries. The late technology guru, Steve Jobs, when asked by President Obama if, 'any of those Apple jobs were coming back to the U.S.,' frankly rebuffed the president saying, "Those jobs are never coming back." It's easy to understand why. Whether subscribing to one-line quips like 'Jobs Americans won't do', 'dumb jobs' or others: 'Made in the USA' is increasingly not an option for many companies.

This general trend in global economics and its impact at home does not spell doom for the U.S. economy, but it should signal a wake-up call that the future of domestic markets lies elsewhere. When forced to consider restructuring U.S. markets, prudent considerations of abundant, available resources and special advantages ought to factor heavily when formulating economic strategies. Again, when looking locally at those advantages, we can, in some places, identify the people themselves as the greatest asset in the community. So it is for Gainesville, Florida – a small city with big dreams of high-tech innovation. Research and development is the 'bread and butter' of this university, and the university is the heart and soul of the city. In these times of recession and economic uncertainty, it makes perfect sense that the University of

Florida would seek to maximize its opportunities while also looking to minimize its frivolous expenditures. And so, acting in a manner of self-preservation, harsh decisions have been made. They have come in the form of non-essential department cuts, higher tuition costs and the prioritization of proven capital generators. The STEM industries are the current 'fashion', as our world becomes increasingly reliant on countless technologies to prop up our over-consumptive economies. For now, we can expect a higher return on investments in innovative industries and subsequently, we expect communities with a comparative advantage to make those investments.

The importance of good planning and decision-making cannot be overstated. Planning for and building an innovation economy takes years. Building a fair amount of flexibility into the system while maintaining focus on the larger goals would be wise. It helps build an image or sense of place for the community while remaining agile to economic changes. Doing so will keep a positive and competent image of the city. Often, the reputation of a place is exaggerated, positively or negatively. Past events or misconceptions can greatly hinder an economy in the midst of transforming itself. Marketing is a powerful tool and cities wishing to brand themselves must take their image into account and help craft an accurate representation of their community.

Perception Is Reality

Perception is reality, at least in business. Developing a good reputation is often the only way a company can, at least initially, compete in the larger market. Gainesville can be seen as one such 'business', and to truly prosper, it must make efforts to change its image. And image is difficult to control. A person, a business, even a country can exhibit good taste and moral judgment for years, only to have their reputation sullied by one negative event or a series of questionable decisions. Further, such an entity might

not have transgressed in the first place but the perception of fault, weakness or ineptitude can create a lasting blemish.

For Gainesville, it will take years of consistent, good-natured relations with the business community to reverse the current perception of being a 'business-unfriendly' town. Physical indicators of growth and prosperity will also go a long way to ensuring the Gainesville community that change is on the way. It is not enough to talk a good game; Gainesville must prove its sincerity. By physically completing the Innovation Square, starting development of the Power District, improving the downtown core and its connection to the University of Florida, the innovation economy will demonstrate its worth. Luckily it appears that Gainesville has the requisite land, labor and capital to do so. However, another component, which is unknown, is the resolve of local leaders to implement this change and the whims of the economy at-large.

The vision and the determination of plans set in motion – whether for cluster development growth or greater interaction between the university and government – needs to remain consistent. Gainesville cannot afford the petty squabbles over political power with so many eyes fixed on the region. One mistake or series of miscalculations could make that difference. As much as Gainesville needs to work on its image abroad, a great benefit to the emergence of the innovation economy would be to promote these events locally. Many students and local residents are simply unaware of the larger efforts to expand the economy. Spreading the word locally might encourage students to pursue their own innovative ideas in a familiar environment.

The Role of Government and the University

Perhaps the message broadcasted about the evolution of the local economy flies over the heads of students or simply bounces off them. The experience of this

researcher in Gainesville should have clued him into some of these larger events. As a planning student and almost decade-long resident sure, I have witnessed change in the community, but nothing that would make me believe that Gainesville was on the verge of a renaissance. Yet, that is what many of those interviewed appear to claim. The common consensus was that here and right now – these are the most exciting times in Gainesville anyone can remember (other than the post WWII development boom).

If only more of the enthusiasm and energy from our community leaders could be transplanted into the university. The student body should hear this news and be inspired to pursue their creative interests which might also help Gainesville blossom. Numerous theories enter my mind when I consider why the student body is lackluster, disengaged or worst – ignorant – of the larger changes on the horizon. Perhaps they just don't know, or maybe they don't care because they're only here four years? Maybe it's because the students are engaged in their own lives or otherwise disenfranchised from participation in the community? It could be that rising tuition, shrinking aid packages, and dismal job prospects leave them dejected. Whatever the cause, the resulting effect only slows the establishment of the innovation economy, allows for unrealized profits by the university, and heightens the opportunity cost for students and citizens missing out on the benefits.

The University of Florida has noticed this potential for directed studies into innovation. The university sponsors the Innovation Academy, a subset of the University of Florida's curriculum that specifically targets creative class academics. This four year program models itself on the educational and 'real-world' experiences needed for advanced innovative thought processes. Students will attend classes in the spring and

summer and then pursue internships or research in the fall semester. Enrolling about 500 students per semester, the Innovation Academy will reach an average of 2,000 students – a number that the current university infrastructure can easily accommodate. The Innovation Academy is set to relocate inside of Innovation Square, minimizing the physical distance between ideas and industry. This entrepreneurial-based, academic community will also have a residence hall (Inspiration Hall) inside of innovation square. This is the first development of its kind inside the US and the estimated completion date is Fall, 2014. Other advances by the university include the creation of an entrepreneurship minor and the refocusing on computer and information sciences (Kushner, 2012).

The Innovation Academy is a start and there needs to be more direct applications of government like it in the innovation economy. Generalities like, 'government needs to work closely with business' or euphemisms such as, 'current relations are better than ever', are not applicable to the rigors of scientific testing. If we are ever to prove when, to what extent, or by what means the role of government plays in the innovation economy, we need measurable data. Dr. Denslow, UF's resident expert on macroeconomics, was the chief critic of the innovation economy model/definition but he also provided several insights as to how this criticism might be answered. Denslow speculated that network effects could be studied to determine the significance of relationships. These might be used to determine relationships between the government and the university.

Denslow also briefly touched on a few theories regarding the importance and measurability of 'industry co-location' and 'interdepartmental research papers and

patents'. The criticism of the innovation economy and creative class and the general ignorance of variables in governance are all topics for further study. Then again, maybe we're asking the wrong questions. Maybe something as ephemeral as the 'innovation economy' cannot be measured and quantified with scientific instruments and tests because it is more of an idea than a tangible being. When considering the applicability of standard research protocols on what can best be described as a concept – the best response, that I can gather, comes in the form of a riddle. The riddle, or rather the quote that comes to mind is from a personal hero of mine, Neil DeGrasse Tyson. When asked by Steven Colbert to explain in ten words or less, "Why [in the universe] is there something instead of nothing", Tyson replied, in an older form of haiku (5/7) no less, that, "Words that make questions – may not be questions at all." The lesson or at least the 'discussion' I pose follows the spirit of Colbert's question and Tyson's response. Obsessing over the need to quantify the variables of an idea, to me, is like trying to describe the pigment of a newly discovered color: a pigment that resembles no other, or any combination of colors, to a person who has not seen it. The scientific method champions the need to prove a concept by replicating its variables, quantities, and precise arrangements. This is possible and certainly important in the physical sciences but that often does not translate into other 'realms' of study. Further, as scientists of one form or another, should we presume that the *need* to do so is equally important, much less viable in this dimension? In our urban experience, with so many interlinked variables and other intangibles, it may be irrelevant or impossible. But I digress. The important lesson taken away when undergoing this research, especially into the various

roles of community 'actors', is the maintenance of an open mind and the willingness to let connections form themselves.

It appears that business and government have reached an agreement and are working together. Now there is only one piece of the tetrarchy missing. Encouraging the business community, elected officials and other vested interests to make a serious and combined effort to energize and incorporate those very people needed to run this new economy: the students and faculty. If a united front of business, government and residents can coalesce, it will propel this community's dreams and ambitions exponentially. There is no stronger force than the collective will of a community. The people must know how they can benefit from the innovation economy – whether directly by jobs or indirectly by local modern marvels. Instilling pride and a zeal for a 'higher purpose' could ignite the renaissance of Gainesville, Florida. Just because the will is strong does not mean will alone can move mountains. A professor I admire, Andres Blanco, once said that we must look at the 'economics behind the story' to understand how world events are shaped.

Economic Feasibility

The economics behind the innovation economy and its compatibility to Gainesville, Florida, seem plausible to this researcher. The University of Florida is large, diverse, and academically competitive, especially in a few of the STEM industries, namely medicine and engineering. The community is diverse, intelligent and progressive; all traits that researchers point to as being important to creating innovative products. The 'accidents of history' allow diverse groups of creative people, meeting in 'third places' to dream and then create the world's greatest ideas. Taking this into account, albeit to a lesser extent, does Gainesville not resemble such a place? I am

lead to believe that it does. But, if the criticism of the innovation economy prevails or other world events make it obsolete, I would not worry. I take comfort in knowing the processes that enabled Gainesville to implement the innovation economy – adaptation and creativity – are the same processes that would see Gainesville transition to whatever came next. Before closing, consideration should be given to the limitations of this research and further research that could confirm or refute the findings.

Restrictions and Limitations of the Research

As stated before, the restrictions of this research and the credibility of its arguments are based entirely on 1) a comparative analysis between Gainesville, Florida and the concepts found in the literature review regarding the innovation economy and 2) the testimony of several major actors in the local community. This research is mostly qualitative in nature, and this is a major limitation. Also, many, if not all, of the respondents may be affected by a bias of opinion. Many of those interviewed have a vested interest in the success of the community, and so the impartiality of respondents may be skewed in favor of the innovation economy. Lastly, the potential bias, experience and time constraints of the researcher must be addressed. I have called Gainesville home for nearly ten years and may be not be impartial to its development. I also have no formal education as an economist, rather as a student of design and planning. These and other limitations, which might have eluded me, comprise the restrictions and limitations of this thesis.

Topics for Further Research

Some topics for further research were mentioned early but are presented now for review. The topic of ‘network connections’ between government and business or interdepartmentally on a university campus needs further study. Next, the role of

government in applying or sustaining the innovation economy model could be useful. Also, it would be wise to consider and compare different structures of the innovation economy as China and other Asiatic countries are likely to have a somewhat different model. Finally, a general critique of the innovation economy and the creative class would be of great benefit to this and future research

Discussion Conclusion

No doubt, the discussion portion of this thesis was a departure both in style and substance from the previous writings. Issues remain unresolved and many more are difficult even to conceptualize. Global trends are changing marketplace dynamics all over the world but of particular interest and relevance to me was the impact on first-world countries. Many jobs, some that in the past were staples of the American economy are gone and ‘those jobs are never coming back’. We must be forward-thinking when planning our economies and that entails using available, abundant resources in new, creative ways. The perception of a place, especially to outsiders, can entrench an image that is neither accurate nor deserved. Dislodging misinformed opinions takes time, energy, and a consistent image or representation. Who knew Gainesville, Florida had such good job potential? Certainly not the majority of students or at least not from what I have experienced. By getting the message out that Gainesville is a desirable place to live, work and play, greater benefits can be enjoyed by all its residents. While there is debate over economic models and the role of government, it appears communities must find that balance for themselves. Part of the danger yet also part of the adventure of the innovation economy is growing and adapting without the safety net of academic certainty. The innovation economy is a gamble but one that appears to favor the conditions and attitudes of Gainesville. I am

not a betting-man, but from what I can tell, this community is ready, willing, and able to adopt the innovation economy model.

CHAPTER 6 CONCLUSION

Conclusion

Throughout the world, certain areas have been chosen by man for development. These settlements and later cities formed because of natural, comparative advantages over other regions. Land that accommodated the collection, connection and dissemination of people, goods and services flourished while other areas did not. Some of these cities still exist today, while others, having lost their comparative advantage, are lost to time. So it is today that some places experience growth and prosperity while others stagnate and slip into irrelevancy. Traditional economic development in the world favors the abundance of land, labor and capital but as the world economy globalizes, ever more emphasis is placed on dense, connected, and heterogeneous physical environments and the skills of the labor force. The world has become 'spiky' with never-before seen numbers of people congregating in cities. Often those cities have unique properties that enable them to expand their comparative advantage into one specialty or another. The physical development of such places demonstrates that by clustering related groups of people and industries together, greater efficiencies and positive economic externalities are generated. Such places are likely filled with a wide variety of people and ideas. By encouraging their interaction in dynamic, exciting environments, it allows for the amalgamation of small ideas and insights into incredibly powerful technologies and revolutionary ideas. Throughout the course of history, it is in these places and with these people that world-changing ideas are born.

The combination of intelligent, open-minded people in rich, exciting environments is even more important today. Competition has intensified between cities over these

people and the most sought after are the scientists, technologists, engineers and mathematicians. These people allow us to dream about the home of tomorrow, the cities of tomorrow, the transportation of tomorrow (Tyson, 2011). The benefits of STEM industry are a: “force of nature like none other. . . If you advance frontiers, heroes are made. There’s a force operator on the educational pipeline that will stimulate the formation of scientists, engineers, mathematicians and technologists. . . and you reap the benefits of economic growth because you have people wanting to become the scientists and engineers who enable tomorrow to exist today. And that, in the 21st century, are the foundations of tomorrows economies” (Tyson, 2011). We cannot allow ourselves to stop dreaming, to stop inventing or innovating the world around us. How much would you pay, how much would you risk, to launch our economy?¹⁰

It seems that in Gainesville, Florida, that point is well taken. After speaking with community leaders of this Gainesville, both public and private, their goals and vision all appear unified. Evidence of that vision is apparent today in the form of Innovation Square, GTEC, and Progress Park. On the horizon, the developments made by Plum Creek and others will announce even more opportunity. Whether or not Gainesville can, or even wants, to become the ‘next Austin’ remains to be seen. However, what can be seen today is a small city with means, drive and opportunity to grow and prosper as it transitions to the innovation economy.

¹⁰ See: <http://www.youtube.com/watch?v=CbIZU8cQWXc>

Final Thoughts

At this time, Gainesville has made great strides in attracting creative class employers to the area. These businesses have located in or near the Innovation Square, GRU Power District and Downtown development clusters. The innovation economy appears to be well underway. This thesis seeks to address the adaptability of the innovation economy in Gainesville, Florida by analyzing the components of proximity, availability and time as key factors. As of now, proximal land with good connectivity exists. The availability of labor is in abundance while the element of capital is increasing. Finally, efforts to shorten the variable of time have commenced as the city seeks the adoption of a streamlined permitting process, one of which is 'Form Based Code'. As such, the conditions set forth by this thesis are either satisfied or at least moving in a positive direction. The vision of implementing the innovation economy is being realized.

APPENDIX A
BIOGRAPHY OF INTERVIEWEES

- BREDFELDT, ERIK** Erik A. Bredfeldt, Director of Planning and Development Services Department for the City of Gainesville, has a Bachelor of Arts in Economics (1988) from Muhlenberg College in Allentown, Pennsylvania as well as a Master of Arts in Urban and Regional Planning with an economic development specialization from the University of Florida (1993). In addition to experience in economic development and redevelopment activities, Erik has extensive experience in urban planning. He is a member of the American Institute of Certified Planners and in 2001 received National Development Council certification as an Economic Development Finance Professional. Erik joined the City of Gainesville, FL staff in 2003 as Economic Development Director and in 2007, was appointed the Planning and Development Services Director providing continued leadership and management expertise to a professional staff of 40 and budget of approximately \$4.0 million. Erik received his PhD in Urban and Regional Planning from the University of Florida in 2009 and teaches occasionally as Adjunct Faculty in the University's College of Design, Construction and Planning.
- DAY, DAVID** David joined the Office of Technology Licensing at the University of Florida as Director on April 2, 2001, where he oversees the commercialization efforts for UF through licensing, incubation and related activities. Mr. Day serves on the following Board of Directors & Executive Committees: BioFlorida, the Florida Research Consortium and Southeastern Bio Investors Forum. Mr. Day also serves as Vice-Chair of the Board of Directors and Principal Investigator for the Florida Institute for the Commercialization of Public Research. He is Co-Chair of Innovation Gainesville, UF Center for Pharmacometrics and Systems Pharmacology Strategic Advisory Group Member, and an Enterprise Florida Innovations & Entrepreneurship Task Force Member.
- DELANEY, BRUCE** Bruce has held the position of Assistant Vice President-Real Estate at the University of Florida Foundation, Inc. for the last 28 years. In that position he seeks, receives, manages and markets all gifts of real estate to the University of Florida Foundation. In addition, he actively works on town/gown campus "edge" issues, attempting to ensure that the neighborhoods around campus stay healthy, safe and economically viable. He is an active proponent for the redevelopment of commercial and rental neighborhoods near campus into more vibrant urban, creative class communities and believes such redevelopment is critical to the University achieving

“Top 10” status nationwide. Mr. DeLaney actively promoted the creation of the College Park/University Heights Redevelopment District in 1995. He then served as the first Chair of the Redevelopment District Advisory Board and has hosted every Advisory Board meeting since inception at the University of Florida Foundation. In addition, Mr. DeLaney has served as Chair of the Alachua County Economic Development Advisory Committee and on the Chamber of Commerce Board of Directors.

- DENSLOW, DAVID Dr. David Denslow Jr., Research Economist for the Bureau of Economic and Business Research and Distinguished Service Professor in the Department of Economics, is best known at the University of Florida as the effective and popular professor of the televised course Basic Macroeconomics. A measure of the respect held for Dr. Denslow was his selection as the University Alumni Professor for 1989-1991. Given by the National Alumni Association in cooperation with the Office of the Vice President for Academic Affairs, the award recognized his influence on students and alumni as a classroom teacher and the national credit he has brought to the University through research and service.
- NIELSEN, WARREN Former Gainesville Commissioner
- OLDENBURG, RAY Dr. Oldenburg is urban sociologist who is known for writing about the importance of informal gathering places for functioning civil societies. He coined the term ‘Third Place’ and is the author of several books on the subject. He held positions at Stout in Menomonie WI, U of Nevada at Reno, and U of West Florida until retirement in 2001. He, left as Emeritus. He taught a term at the University of Klagenfurt (Austria), lectured in Vancouver, Oslo, Osaka, and Pepperdine U most recently. He is Consultant to developers, YMCAs, churches, libraries and regional planning offices.
- POLLITT, BRADLEY Since joining Shands HealthCare at the University of Florida in 1989 Mr. Pollitt has served as Hospital Architect, Director of Major Construction Projects, Director of Facilities Planning, and Director of Facilities Development. In 2000 he was named Vice President of Facilities, a position he currently holds, with responsibilities for core services including strategic facility planning, construction, facilities operations, environment of care, safety, security and transportation serving the Shands HealthCare three-hospital network. During his tenure Shands has seen the development of over \$750 million of construction, renovation and capital improvement to enhance the operations and quality of Shands HealthCare facilities.

POPPELL, ED

Ed has been in Higher Education Administration for over 40 years. He attended Florida State University where he obtained a B.S. degree in Business, and then a Graduate degree from the University of Florida, where he likes to say “he got an education.” Ed serves as Vice President Emeritus and former Vice President for Business Affairs & Economic Development. The University of Florida is an enterprise of over \$4.5 billion with 22 million sq. ft. of facilities. He is a former Board member for the University of Florida Foundation, Shands Teaching Hospital, the University of Florida Research Foundation, and former Treasurer of the University Athletic Association. He serves as a member of the Proton Therapy Institute Board and various community boards, including member of the Board of Directors and Past President of Oak Hammock Continuous Care Retirement Community at the University of Florida. Ed is now guiding the development of Innovation Square, a 40-acre live/work/play urban community adjacent to UF that will encompass 5.5 million sq. ft. of office/lab/retail and commercial space. In addition, Ed is responsible for the 45 historic properties managed by UF in the City of St. Augustine.

RAMSEY, DAVID

Mr. Ramsey joined the Council for Economic Outreach (CEO) in August 2004 after interning for the organization while studying at the University of Florida. Since then, he has been promoted to Vice President of Economic Development. Founded in 1991, CEO is the economic development arm of the Gainesville Area Chamber of Commerce. CEO works with major local stakeholders (business community, government, workforce and educational institutions) to grow, expand and recruit new business and industry to Gainesville and Alachua County. CEO is funded by private stakeholders; the organization recently raised more than \$3.4 million to fund its economic development efforts through 2015. In 2012 alone, CEO announced more than 600 new jobs in the IT, manufacturing and aviation sectors.

SMITH, JOELLE

Joelle has been working in the Information Technology & Product Engineering Industry for the better part of 15 years with a heavy concentration in Banking, Financial Services, Insurance, High-Tech and Information Services. She started her career with Wharton Econometrics and then moved to Thomson Reuters where she began her sales career selling equity and fixed income software to Wall Street firms on both the buy and sell sides. She then decided to take a chance on a very small technology services start up called AppLabs. As employee number 6 she directly contributed to groundbreaking triple digit year over year growth taking the BSFI division from 0 to 600 people in a little over 3 years. During this time she built a team of sales, marketing, solution engineering and

account management professionals to spearhead their fastest growing division. In 2008 Joelle was recruited to Mindtree for her first of two joyous adventures. Joelle has managed national sales organizations at several small and mid-sized technology enabling companies for the last 10 years where the deals range from anywhere between \$2 - 30 Million; regularly interacting with C-level executives at Fortune 1000 companies across the US, Europe and Asia. In June 2012 Joelle was again recruited to Mindtree to create 400 new jobs in the Gainesville area over the next 5 years. Since arriving in Gainesville she has been a mentor for the eWITS (Empowering Women in Technology Start-ups) program and was selected to be a board member for the Gainesville Chamber of Commerce for 2013.

APPENDIX B INTERVIEWS

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- Pollitt, B. (2012, August 27). Interview by D McDuffie [Audio Tape Recording]. Innovation economy interview., Gainesville, FL.
- Poppell, E. (2012, August 23). Interview by D McDuffie [Audio Tape Recording]. Innovation economy interview., Gainesville, FL.
- Ramsey, D. (2012, August 12). Interview by D McDuffie [Audio Tape Recording]. Innovation economy interview., Gainesville, FL.
- Smith, J. (2012, August 22). Interview by D McDuffie [Audio Tape Recording]. Innovation economy interview., Gainesville, FL.

APPENDIX C INTERVIEW QUESTIONS TEMPLATE

Interview Question Template

The purpose of my master's thesis is to explain the relationship between proximity, availability and time as the key components to the economic success of innovation economies/ knowledge center communities

Opener Questions

- Why is the 'innovation economy' important for the present and future of Gainesville?
- How can we determine what an innovative company is? Are there certain aspects of a company that you look for?
- Where do you see the greatest opportunities for development? Which areas are more difficult or would be prudent to bypass? What areas/connections are looking promising and which appear to be declining

City perspectives on growing the innovation economy

- What are the greatest resources of this city and region and how do they help attract business?
- What industries is the city targeting and how does one make those decisions?
- What are the primary means by which the city currently seeks, attracts and promotes STEM industries?

Roles and Relationships of Various Actors

- What role does the University and Shands play in the business attraction process and what actions might further the interests of all the interested parties?
- What is the interaction with the neighboring cities and how might relations be improved to foster business relationships?
- What factors do you consider to be the most important in business attraction with specific regard to the innovation economy?
- How does the city-wide and/regional transportation network factor in to the development of the innovation economy?
- Do you find it easy, much less necessary, to interact with other businesses or the University? Are there any (generally) special benefits you have encountered in these relationships?

Land Use Issues

- Do we have enough land and/or the right kind of land use designation for Gainesville's future development goals?
- What are the land use needs of innovation economies when it comes to long-range and short-term plans? What does Gainesville need to be successful and when?
- *Is has been said that the time it takes to navigate land use, citing, zoning entitlements and approval could take a year to 'get on the ground' or longer if alternations need to be made.* How do you think this factors in to a business's decision to locate here?

- Where do you see important production and distribution centers emerging?
- What industries need these resources and which ones really need the proximal advantages of the Gainesville core? Is there a way to market or more efficiently plan for these industries?

Policy Issues

- If Gainesville is unwilling or unable to be as fast as other cities (competing for the same business) in the short run, how else might we be competitive?
- What would you think of a policy that appropriated land use and zoning designations given certain criteria – say for example – regular intervals or when a 'tripping point' is reached? What kinds of tripping points might you envision?
- How long is Innovation Hub going to last? (10-15 years?) What comes after that – where do you envision the next area of economic growth to be? (The Power district, around GRU and Depot storm water park?)
- What lessons can be drawn, in the way of comparative analysis, of similar innovation cites and economies?
- What about how those places structure(d) their comprehensive planning and regulatory zoning initiatives? Can you cite examples that have either fostered or inhibited the development of innovative enterprises?

For Economic Development and Business Professionals

- What is your view on the role of incentives in persuading business to locate in Gainesville?
- What is the role of Government in supporting business formation?
- What incentives here in Gainesville do you believe persuade businesses to locate and expand or conversely, to move elsewhere?
- If Gainesville is going to 're-tool' and wants to take advantage of its strategic assets - what does it need to do to leverage them for developing an innovation economy?
- What can the city capitalize upon that is readily available, prevalent and a real catalyst for success?

Workforce Relations and Imperatives

- What do Gainesville employees value most about their work environment?
- How difficult is it to attract and retain employees? What are their priorities as workers and citizens?
- What assumptions might you have about their lifestyle that makes them comfortable or uncomfortable in Gainesville?
- What is the role of Government in supporting business formation?
- What do you consider to be the most important draw/advances Gainesville has in attracting business.

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BIOGRAPHICAL SKETCH

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