Traditional Entrepreneur Networks and Regional Resilience

by

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ABSTRACT

The jobless recovery of the Great Recession has led policymakers and citizens alike to ask what can be done to better protect regions from the cascading effects of an economic downturn. Economic growth strategies that aim to redevelop a waterfront for tourism or attract high growth companies to the area, for example, have left regions vulnerable by consolidating resources in just a few industry sectors or parts of town. A promising answer that coincided with growing interest in regional innovation policy has been to promote entrepreneurship for bottom-up, individual-led regional development. However, these policies have also failed to maximize the potential for bottom-up development by focusing on high skill entrepreneurs and high tech industry sectors, such as green energy and nanotechnology.

This dissertation uses the extended case method to determine whether industry cluster theory can be usefully extended from networks of high skill innovators to entrepreneurs in traditional trades. It uses U.S. Census data and in-person interviews in cluster and non-cluster neighborhoods in Dayton, Ohio to assess whether traditional entrepreneurs cluster and whether social networks explain high rates of neighborhood self-employment. Entrepreneur interviews are also conducted in Raleigh, North Carolina to explore regional resilience by comparing the behavior of traditional entrepreneurs in the ascendant tech-hub region of Raleigh and stagnant Rustbelt region of Dayton.

The quantitative analysis documents, for the first time, a minor degree of neighborhood-level entrepreneur clustering. In interviews, entrepreneurs offered clear examples of social networks that resemble those shown to make regional clusters successful, and they helped clarify that a slightly larger geography may reveal more

clustering. Comparing Raleigh and Dayton entrepreneurs, the study found few differences in their behavior to explain the regions' differing long-term economic trends. However, charitable profit-seeking and trial and error learning are consistent behaviors that may distinguish traditional, small scale entrepreneurs from larger export-oriented business owners and contribute to a region's ability to withstand recessions and other shocks. The research informs growing policy interest in bottom-up urban development by offering qualitative evidence for how local mechanics, seamstresses, lawn care businesses and many others can be regional assets. Future research should use larger entrepreneur samples to systematically test the relationship between entrepreneur resilience behaviors to regional economic outcomes.

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CHAPTER

1 - INTRODUCTION

Overview

Entrepreneurs and the spirit of entrepreneurialism represent an enduring American value. Over time, names like Ford and Rockefeller have been replaced by Dorsey and Zuckerberg, entrepreneurs of the digital age. Today's policy research on entrepreneurship is focused on highly skilled individuals in knowledge-intensive industries with the capacity to innovate and catalyze economic growth. Their innovation networks and industry clusters are a significant departure from firm-based analyses because they suggest that groups of entrepreneurs can be both competitive and collaborative. It is within spatially proximate clusters that we find the positive externalities associated with agglomeration economies and regional growth. The positive externalities of small co-located firms, whether due to entrepreneurial ideas, skills diffusion or shared resources, are thought to create an environment ripe for entrepreneurship and regional economic growth(Acs & Armington, 2006).

At the same time, innovation-related research—and commensurate public policy—have largely ignored a significant percentage of the self-employed population because higher education viewed as a proxy for innovation capacity (Rosenthal & Strange, 2004). Over half of the self-employed persons have high school and not college degrees, and thus would be missed in studies of entrepreneurship and innovation (see Table 1-1). Always alongside the start-ups, spinoffs, and eventual industry titans, have been the shop owners and mechanics, the pizzeria and the salon, the artist, the seamstress, and scores of other traditional entrepreneurs that comprise the 14 million Americans who

have chosen to work for themselves (Hipple, 2010). For generations, these entrepreneurs have contributed to a viable and vibrant economy by supplying a needed service to their local area, creating their own job, and even creating jobs for others. Yet little is known about how self-employed, high school-educated individuals in these traditional trades operate as a group and how they contribute to the so-called knowledge-based economy. Even within the broader urban affairs literature, the experience of entrepreneurs who do not possess college degrees has been confined to ethnic enclaves on the one hand and the chronically poor operating in the informal economy on the other (Wacquant, 2008).

Table 1-1. Self-Employment by Educational Attainment, 2010

Final educational attainment	**Worker type (in thousands)**			
	Self-employed		Not self-employed	
College graduate	5,522	38%	38,288	36%
High school graduate	7,755	54%	60,235	56%
Less than high school	1,196	8%	8,912	8%
Total	14,473	100%	107,435	100%

Source: Hipple, S. (2010). Bureau of Labor Statistics, Current Population Survey.

In addition to concerns about innovation, persistent unemployment and stalled growth since the mid- 2000s has simulated increasing academic interest in economic resilience—minimal disturbance or rapid recovery from downturns—over short term growth rates (e.g. Christopherson, Michie, & Tyler, 2010). Self-employment, no matter ones education or potential to catalyze large scale growth, is a promising strategy to promote resilience to recessions and industrial restructuring because it puts adaptive capacity in the hands of more workers. They operate small, sometimes home-based firms and are locally oriented; this makes them flexible and more easily aware of changes in

local conditions and needs. They also add necessary diversity to the types of businesses and human capital in an economic system. Recent data (Table 1-2) show that during the Great Recession, entrepreneurship grew the most among those with only a high school diploma (Fairlie, 2012). And although the (net) stock of entrepreneurs fell, unincorporated businesses, which are more likely to operate informally and without employees, have fared significantly better than incorporated ones in terms of remaining open (Shane, 2011). Traditional entrepreneurs then, may help regions recover from economic shocks or even insulate them from experiencing precipitous decline over the long run.

Table 1-2. Rate of New Business Startups by Educational Attainment, 2005-2011

	Entrepreneur Activity	
Year	High school graduate	College graduate
2005	0.29%	0.29%
2006	0.29%	0.30%
2007	0.30%	0.33%
2008	0.35%	0.31%
2009	0.38%	0.34%
2010	0.34%	0.33%
2011	0.33%	0.29%

Source: Fairlie, R. (2012). Kauffman Foundation Entrepreneur Activity.
Note: Entrepreneur activity is the percent of individuals (ages 25 to 64) who do not own a business in the first Current Population Survey month, that start a business in the following month with fifteen or more hours worked.

This dissertation begins to fill the gap in entrepreneurship research by offering new quantitative analysis of census data and qualitative data gathered directly from a sample of traditional entrepreneurs. Drawing on insights from innovation and cluster theory, I posit that urban neighborhoods are the traditional entrepreneur's analogy to high skill innovation networks. The research asks whether locally-owned firms in areas with a low

proportion of college graduates (i.e. working class neighborhoods) generate positive externalities akin to the agglomeration effects identified at the regional level. Considerable neighborhood research indicates that the economic outcomes of working class residents rise and fall together (e.g. Kefalas, 2003; Sampson, Raudenbush, & Earls, 1997), but scholars have not looked at entrepreneurs in this light. Moreover, innovation networks rarely include interaction between established and home-based businesses. The neighborhood entrepreneur framework is also used to explore the resilience capacity that traditional entrepreneurs bring to their neighborhoods and regions. In short, I use mixed methods to investigate the following research questions:

1. To what extent do traditional entrepreneurs cluster and what agglomeration (spillover) sources could explain clustering?
2. In what ways do traditional entrepreneurs contribute to neighborhood or regional resilience?

Importance of the Research to Public Policy

A better understanding of positive entrepreneur environments for those outside of high skill industries has immediate practical policy implications. With just a third of workers holding a college diploma (U.S. Census Bureau, 2009), job creation strategies in the current model are heavily reliant on a small sector of innovators. This has proven limited in its ability to reverse the larger course of the economy over the past five years, either through job or production growth. Unemployment remains at nearly eight percent and many have dropped out of the labor force, too discouraged to continue looking for a job or to create their own (Bureau of Labor Statistics, 2013). The ability to self-employ is a unique one. Identifying a need or market opportunity in one's community and

determining how to address it is a valuable type of human capital and an individual and community asset. Effective and innovative workforce and economic development policies are in high demand.

In a growing number of policy areas, analysts are evaluating when decentralizing decision-making authority from government bureaucrats and policymakers to citizens meets policy goals more effectively or less expensively. For example, alternative energy sources have led some regions to invest in centralized solar power plants, but a decentralized alternative is to subsidize solar energy shingles to embed energy usage and awareness within the household (Hirematha, Shikhab, & Ravindranathb, 2007). In transportation, subways and mass transit have long been the solution to congested highways, but San Francisco commuters saw a more flexible approach in white-collar "hitch-hiking" and the city eventually designated areas where drivers could safely and legally pick up passengers (Innes & Booher, 1999). These decentralized solutions are advocated by public administration scholars as "smarter" infrastructures for governing (Johnston & Hansen, 2011; Kanter & Litow, 2009).

Decentralizing the micro-foundations of job creation from established companies to individual entrepreneurs across all industries is a promising policy strategy for at least three reasons. First, entrepreneurs may be a particularly useful mechanism for successful regional adaptation to economic change because they have fewer barriers to identifying and acting on a course change. Second, neighborhoods are an established foundation on which to understand the collective capacity of a broader range of entrepreneurs and they allow immediate policy translation because local government redevelopment efforts are typically neighborhood-based. Third, using the conventions, theories and language of

regional economic development and innovation makes the value of the research more immediately understandable to the broader development community. As a result, it marries the interests of top-down economic development efforts and empowering bottom-up, community (neighborhood) development efforts and creates a unified goal.

The remainder of this dissertation proceeds as follows. In Chapter 2, I review several strands of literature to put the policy focus of this research in context, starting with the epistemic perspective and methodology that guide my investigation. Chapters 3 and 4 are the main data sections. They explain the theoretical framework I use for assessing entrepreneur clusters and regional resilience, respectively. Each data chapter presents the theory, empirical findings in previous research, data collection and analysis methods, and findings, in that order. Chapter 3 is further divided into the data collection and findings from a statistical analysis of the American Community Survey (part 1) and the data collection and findings interviews with entrepreneurs (part 2), so it is the longest chapter. It is also longer because some of the data and analysis processes are introduced in Chapter 3 and simply referred to in Chapter 4. Similarly, major definitions and concepts (e.g. traditional entrepreneur) are introduced in full in Chapter 2, but referred to throughout the dissertation. To limit repetition, I only briefly summarize the process or concept in subsequent chapters, but I make note of what chapter includes the fuller description and Appendix 1 of the dissertation lists four of the most common concepts. The final chapter, Chapter 5, draws conclusions from the findings and focuses on the implications and future research that should evolve from this dissertation.

This dissertation informs public policy that fosters success among this core group of workers. Over the next several chapters, I bring together new analysis and primary

data collection to increase the breadth and depth of information on traditional entrepreneurs. The analysis is supported by prior theorizing and empirical work. It builds on what is known about these workers and the phenomena of industry clusters by extending current economic development theory. The next chapter offers the reader background on entrepreneurship research and economic development. The purpose is to provide a big picture view of this interdisciplinary field to better understand the contribution my research makes to policy and theory.

CHAPTER

2 – BACKGROUND

This dissertation ties together three areas of regional development research: entrepreneurship, clusters, and resilience. Scholars have begun to link entrepreneurship to clusters, and they have explored the relationship between entrepreneurship and regional resilience. But no work has combined the three, and I believe it offers a distinct advantage in leveraging the entrepreneur spirit from across the skills spectrum. In this chapter I explain the extended case approach, my methodology for extending and combining current theories. I outline the major lines of inquiry in the two cross-over literatures to place my research in the larger context of local and regional economic development research. I also introduce the consequent definitions used throughout this dissertation, such as entrepreneur and innovation. A review of the theoretical underpinnings and empirical evidence more specifically related to clusters and resilience is in Chapters 3 and 4, respectively. One of my motivations in this research is to further opportunities for bottom-up economic development. Therefore I conclude this chapter with reflections on how my research contributes to that endeavor.

Methodology and Methods

Although the methods—the techniques of data collection—will be familiar to most (e.g. interviews), my overall methodology departs from the typical deductive and positivist inquiry found in policy-related research. Therefore it is important to discuss the methodology at the beginning of the dissertation. The deductive approach reflects the scientific method, which starts with an established theory, derives hypotheses and gathers data to test that theory. It has been critiqued in the policy sciences for not only failing to

develop a useable body of predictive generalizations, but failing to supply effective solutions to our most pressing policy problems (Fischer, 1998). There are now several post-positivist guides to theory development and data analysis, including the extended case approach (Burawoy, 1998, 2009), the embedded case study (Scholz & Tietji, 2002), grounded theory (Charmaz, 2003), and theory-driven participant observation (Lichterman, 2002). To the ends of policy development, the four approaches are equally nascent and promising. Because of its direct applicability, this dissertation uses the extended case approach, developed by Michael Burawoy.

The extended case approach builds on established theory in four sequential ways: to guide intervention into the participant's experience, to understand a social process at work, to identify the social forces driving that process, and ultimately to reconstruct the theory. As Burawoy notes, reconstructing theory is not often realized in a single study. The extended case approach offers a distinctly different goal than strictly positivist social science research. The goal of a well-formulated extended case theory is to create "reconstructions that leave core postulates intact, that do as well as the preexisting theory upon which they are built, and that absorb anomalies with parsimony, offering novel angles of vision" (1998, p.16). In this way, pre-existing theory is "extended" and possibly recombined with other theories in order to make it more empirically inclusive and therefore useful to the analyst.

The extended case approach does not reject positivist science. It offers the researcher an alternative relationship with subjects in what Burawoy calls, reflexive science. Whereas positivist science seeks to distance the analyst and the observed subject to increase objectivity and replicability, *reflexive* science seeks an analyst who will be

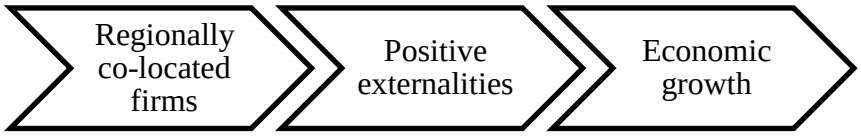
self-reflective and influenced by the participants' experience but always grounded by theory in his/her new inquiry. The analysis task is similar between the two sciences in that researchers must "reduce" to draw conclusions. Positivist science reduces by aggregating (hopefully) representative data into generalizable propositions from which to draw causal inferences. Reflexive science aggregates the situational knowledge collected from a small number of individuals to depict a social process. Therefore, it extracts the general from the unique, which allows the analyst to take into account more causal complexities, moving from the 'micro' to the 'macro' and "connect[ing] the present to the past in anticipation of the future" (Burawoy, 1998, p.5).

Burawoy describes positivist and reflexive science as Siamese twins, each born from a shortfall in the other. Positivist science fails to account for the macro context in which individuals are embedded by attempting to "hold constant" many aspects of the participant's environment. On the other hand, in reflexive science's aim to embrace context and dialogue with a participant, it cannot control for power dynamics that naturally exist between the analyst and participant and that influence the information offered. As a result, reflexive and positivist science are complementary in the extended case approach and the researcher should determine how best to balance their shortfalls.

In this dissertation, I use some positivist methods to complement an overarching reflexive inquiry. As I will describe, the two-part study uses increasingly reflexive science with each component. Figure 2-1 shows the basic components of agglomeration theory. The theory posits that some degree of co-location among firms of a particular type, usually thought to be regional connections among small and large firms in the same industry, results in positive externalities and cost reduction, that generate more regional

economic growth. In the first part of my analysis, I extend agglomeration theory to a new geography and population of "firms." I test the hypothesis that traditional entrepreneurs cluster at the neighborhood level. To do so, I use the conventional, quantitative tools of agglomeration research. Then I conduct semi-structured interviews with traditional entrepreneurs in cluster and non-cluster neighborhoods. I maintain the core postulate of positive externalities found in agglomeration theory and search for anomalies and ties between the theory and the extended setting.

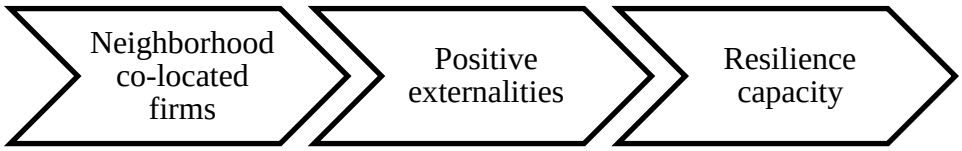
Figure 2-1. Simplified Cause and Effect Relationships in Agglomeration Theory



The second part of my analysis relies more heavily on reflexive science in that data are collected through interviews, but without the formal direction of a hypothesis. I investigate a novel angle in the extended agglomeration case by combining agglomeration theory with regional resilience theory. Regional resilience describes the capacity of a city or metropolitan area to respond to social, demographic and economic change (MacArthur Foundation, n.d.; Resilience Alliance, 2007). Regionally co-located firms are associated with growth, but some evidence (describe later in this chapter) suggests they have little to do with regional resilience. Neighborhood clusters of entrepreneurs may or may not relate to growth, but I investigate their impact on resilience. Specifically, I conduct semi-structured interviews with entrepreneurs in an

economically ascendant region and a stagnant region to develop future testable hypotheses about the contribution of traditional entrepreneurs to regional resilience.

Figure 2-2. Simplified Cause and Effect Relationships in Agglomeration Theory - Extended Case Approach



In sum, I use the extended case method to expand the theory of agglomeration and combine it with resiliency theory (see Figure 2-2). In the extended case method, the researcher analyzes data (usually qualitative) to discover ties, anomalies and crossovers between existing theories and a particular setting or situation. My main proposition and extension of agglomeration theory is to suggest that traditional entrepreneurs cluster at the neighborhood (not regional) level and that they contribute to regional resilience capacity (not growth). Formally, I propose that traditional entrepreneurship is a function of neighborhood conditions (social and economic) and regional resilience is a capacity fostered by the interdependence of neighborhood entrepreneur clusters.

Entrepreneurs and Clusters

There was little policy interest in entrepreneurship as an economic development strategy, relative to business recruitment, until the 1980s (Elisinger, 1995). Scholars speculate the lack of interest in policy and urban research is the result of an economic theory of the firm that failed to incorporate the entrepreneur (Glaeser, Rosenthal, & Strange, 2010; Malecki, 1993). They represent uncertainty of markets, markets in disequilibrium and are outside the realm of mathematically-focused economic study. The technology boom and greater appreciation for innovation has started to stimulate this

interest. Joseph Schumpeter is credited for linking entrepreneurs and economic development. He theorized that it is precisely the disequilibrium of "creative destruction" that propels development of an economy, through enabling conditions for new markets, new products, new processes and new forms of organization (Schumpeter, 1934). Rather than competition that drives growth through productivity-enhancing efficiency gains, innovation drives long-term development through recognizing potential value and commercializing it. An entrepreneur, by Schumpeter's definition, is one who recognizes and commercializes an innovation.

The varied meaning of entrepreneurship may be a second reason that research in economic development policy has lacked an entrepreneur component. Malecki (1993), among others, notes that innovation requires receptivity to change, which makes small firms generally an important mechanism for regional development. Small firms receive a relatively high degree of attention in policy. At the federal level, the Small Business Administration promotes research, policy and procedures that facilitate small firm growth and development. At the local level, policy efforts to minimize taxes and regulations are in large part a small business development strategy. One problem with viewing these efforts as entrepreneur policy is that the standard definition of a small firm is one with 500 or fewer employees. Glaeser, Rosenthal, & Strange (2010) outline five dimensions to entrepreneurship that are of interest to researchers: self-employment, small firms, firm ownership, new firm entry, and innovation. They argue that defining an entrepreneur as one with all five characteristics is too narrow. For example, a social entrepreneur may start a cooperative venture or nonprofit organization where ownership is ceded to a board (Amin, Cameron, & Hudson, 2003). The founders of Kiva—an online forum for micro-

lending around the world—are unlikely to be the firm owners, but they are certainly innovative and self-employed (http://www.kiva.org/about/history).

How entrepreneurship is measured usually relates to the research question. The most inclusive definition of the five is self-employment, because it captures all people who work for themselves, regardless of how profitable they are, whether they have employees and whether they are "innovative." Self-employment measures also allow for individual analysis of owner attributes, which is more difficult with firm level data because firms can have more than one owner. In economic and policy studies, the research question often has to do with the relationship between entrepreneurs and regional economic growth. Therefore researchers define entrepreneurs as small firms (Acs, Parsons, & Tracy, 2008; Glaeser, Rosenthal, et al., 2010), although when assessing educational attainment, self-employment is a common measure in economic studies (Doms, Lewis, & Robb, 2010; Glaeser, 2007a). In some of these studies, they distinguish innovative from imitative small firms using the industry. For example, Glaeser (2007) divides self-employment in manufacturing into high and low skill entrepreneurship. He divides information services similarly. Aside from the five dichotomous depictions, self-employment is also represented as a continuum because early in a venture, an entrepreneur could be employed full time and working for him or herself on the side. Again, the appropriate definition relates to the research question. For scholars looking to identify all entrepreneurial activity or the correlates of moving from nascent entrepreneurship (e.g. Davidsson & Wiklund, 2001), for example, a more fluid understanding of self-employment is necessary.

Industry and skill classifications of innovation are blurry. What constitutes an innovation is subject to a variety of categorizations. There are incremental and radical innovations, process and product innovations, the introduction of new knowledge or the recombination of existing knowledge, and so on (Rossi, 2002). Quite profitable innovations have come from small, specialized entrepreneurs in ostensibly low skill manufacturing work, such as footwear, metal goods, and textiles (Malecki, 1993). Much of the innovation literature, as with economic analysis in general, uses examples and data from the manufacturing sector, but the growing service sector has demanded attention from innovation scholars. In the service sector there is a greater focus on organizational and process innovations, relative to technology or mechanical advances that are predominant in manufacturing (Drejer, 2004). For example, the service sector has made advances in external *relationship innovation*, whereby a firm establishes a unique and productive relationship with partners, such as customers, suppliers or competitors (Djellal & Gallouj, 2001). Process and organizational innovations tend to be incremental rather than radical, which also explains why they have been overlooked in manufacturing studies. Lowe, Williams, Shaw, & Cudworth (2012) describe it as "splicing," where innovation is "the creation of new capabilities through recombination of elements of existing organizational processes enriched by best-practice capabilities drawn from the local market." A very profitable service innovation in the U.K. has been experience-themed hotels, such as the wine school offered at the HduV, which was imitated in a rural setting with the garden kitchen theme at The Pig (Lowe et al., 2012). The diffusion of Japanese forms of organization with large reliance on subcontractors is another highly sought after and valued organizational innovation (Drejer, 2004).

In summary, entrepreneurship has been defined by the action or the outcome of a self-employed person, and what constitutes an innovative outcome has differed based on skill level and sector in which the entrepreneur works. Beyond definitional differences, there are generally two approaches to studying the cause of innovation and entrepreneurship (Mytelka & Smith, 2003). The first is the input approach, where the level of entrepreneurship is determined by the attributes and financial resources of nascent entrepreneurs. When measured as small firms, the input approach would look to the firm's level of R&D spending. The second is the network approach, where entrepreneurship is determined through a social process. The debate between human capital and social capital is a particularly relevant culmination of the two approaches for this dissertation. Is education and experience more important to entrepreneurship, or are one's social networks a bigger factor in success? For both, the relationship to entrepreneurship is usually positive, but results have been inconsistent. Some of the latest evidence shows that their relative influence depends on the stage of entrepreneurship: identifying a commercial opportunity, starting a business, or running a financially successful business (Davidsson & Honig, 2003; Montgomery, Johnson, & Faisal, 2005). They found that human capital was important to identifying an opportunity, but social capital was more important for succeeding as a business.

Interest in entrepreneur social networks is substantial and has grown considerably since the link between innovation and entrepreneurship was solidified (Hoang & Antoncic, 2003). Social networks can even be sources of human capital development. Innovation researchers have come to distinguish Science, Technology and Innovation (STI) from the Doing, Using and Interacting (DUI) mode of innovation (Jensen, Johnson,

Lorenz, & Lundvall, 2007). The STI mode is based on the production and diffusion of technical knowledge within a social network, while the DUI mode is based on informal learning processes and learning-by-doing experience. Ruef (2010) focuses on entrepreneur groups and accounts for STI or DUI learning, though he does not use the terms. He looks at high-tech and traditional ventures and uses social network theory to show how both types of ventures evolve through a group formation process, thereby countering the image of the entrepreneur as a rugged and heroic individual. Ruef argues that entrepreneurship is a set of commercial linkages and social relationships, through which critical information flows about business opportunities, resource availability, and labor market conditions, among other pieces of information. This is not to argue that most ventures are joint partnerships, but that entrepreneurs are necessarily embedded in a network characterized by social conditions such as trust (Hoang & Antoncic, 2003). It is important to note that this perspective minimizes direct capital inputs mentioned earlier, such as a loan or training in how to write a business plan. Instead, networks illustrate the old adage: it is not about what you know, but who you know.

Regional economic development policy focuses on the group process perspective on entrepreneurship in at least two ways. The first is innovation networks. Information does not flow everywhere equally and is instead conditioned by regional difference in organizational norms and institutions (Malecki, 1993). The importance of open social networks to innovation has been shown in successful industrial (manufacturing) districts (Russo, 1985; Boschma & Ter Wal, 2007) and regional high-tech hubs (Powell, Koput, & Smith-Doerr, 1996; Saxenian, 1994). Second, agglomeration studies have a long history of quantifying how concentrations of firms increase output and further regional growth

(Marshall, 1920). Agglomeration theory will be explained in Chapter 3, but it has grown from a study of the positive externalities occurring among co-located firms to a study of the co-location benefits for entrepreneurs or small firms specifically. Quantitative studies of agglomeration also find evidence of information "spillovers" in highly entrepreneurial regions using proxy measures of innovation networks (Acs & Armington, 2006; Glaeser, Kerr, & Ponzetto, 2010). However, they are concerned with non-innovation related positive externalities that occur due to co-location.

Taken together, research on regional networks of innovation and agglomeration is what I call cluster theory. The term was made popular by Michael Porter in the late 1990s and has been criticized for its lack of precision, but I use it in an even more extended fashion to encompass somewhat different ideas about why entrepreneurs benefit as a group, and it is well known in the research and policy communities, both of which are the term's advantages (Martin & Sunley, 2003). Cluster strategies are a significant departure from the still popular business recruitment strategies that rely on importing development capacity from outside the city. Cluster strategies include activities such as university technology transfer programs, regional industry associations, and business incubators to foster entrepreneurship by increasing interaction and the flow of information between potential innovators. They are also a significant departure from neo-classical economic development strategies because they emphasize the importance of business collaboration as much as competition in growing a local economy.

Traditional Entrepreneurs Defined

As it stands, most workers in the U.S. do not have a college degree. Although college graduates are over-represented in the entrepreneur ranks, the sheer size of the

non-college graduate population means that the majority of entrepreneurs (54 percent) have a high school diploma, but no college degree (Hipple, 2010).[1] Educational attainment is associated with a number of other firm characteristics that, when taken together, create a portrait of the average non-college educated entrepreneur as somewhat distinct from the average college-educated entrepreneur. I define a traditional entrepreneur partly by their educational attainment, but also by their firm characteristics, industry and location.

Firm structure. Traditional entrepreneurs are small operations, very small. From the standpoint of firm-based economic analysis, many are on the tail end of the size distribution. A standard economic definition of small business is one with less than 500 employees, but almost two-thirds of business owners without a college degree have no employees at all (Survey of Business Owners, 2007).[2] These single-employer or non-employer firms, as they are called, are large in number but they comprise less than five percent of business receipts (Acs, Headd, & Agwara, 2009). Another way to look at the size of traditional entrepreneur ventures is shown in Table 2-1. Self-employment is divided into incorporated and unincorporated firms (typically sole proprietorships). A full 86 percent of unincorporated firms—those disproportionately held by non-college graduates—have no employees (Hipple, 2010). Salons, eateries and other traditional low-barrier firms that require physical, brick and mortar establishments may have up to 20 employees (Servon, Fairlie, Rastello, & Seely, 2010), although a physical location is no

[1] Although there are several data sources for self-employment figures, this distribution is fairly consistent. For example, Doms et al. (2010) found a nearly identical distribution when they used the 2000 Decennial Census and limited self-employment to those who worked at least 1500 hours in the year and have no wage income.

[2] Incidentally, the number is only slightly lower for those with a college degree. About 19 percent of single-employer firms are in the Professional, scientific and technical services industry group (Acs et al., 2009).

certainty to have employees. Many female traditional entrepreneurs operate home-based businesses, such as child care or book-keeping and several male dominated traditional entrepreneurship avenues are "on-call" services with no physical location, namely construction subcontractors. About half of all self-employed males and the majority of females are home-based (U.S. Census Bureau, 2011). The rate of home-based businesses by educational attainment is not available.

Table 2-1. Type of Self-Employment by Educational Attainment, 2010

Final educational attainment	Total self-employed (14 million)	Unincorporated (9 million)	Incorporated (5 million)
College graduate	38%	32%	49%
High school graduate	54%	57%	48%
Less than high school	9%	11%	4%
Total	100%	100%	100%

Source: Hipple, S. (2010). Bureau of Labor Statistics, Current Population Survey

Traditional entrepreneurs are also more likely than their high-skill counterparts to operate partially or fully 'off the books' (Williams & Nadin, 2010). These goods and services go uncounted in official statistics for different reasons, for example when an entrepreneur barters his services, deals only in cash, or does not report taxable income (Losby et al., 2002). Though the good or service is not illicit or illegal (as say, gambling or drug dealing), the same cannot be said for the accounting practices. Furthermore, these studies show that entrepreneurs often combine formal employment with other formal or informal self-employment activities, which is called blended work. Given these structural factors, this dissertation defines entrepreneurship as someone that is self-employed.

Local services. Innovation, if apparent among traditional entrepreneurs, will likely occur in the Doing, Using and Interacting mode and be apparent in incremental

process or organizational innovations, due to the concentration of traditional entrepreneurs in the service sector. Entrepreneurs without a college degree typically start businesses in industries with low barriers to entry. Bates, Lofstrom, & Servon (2011) define barriers by the necessary human capital and financial requirements for entry. They use the U.S. Census Characteristics of Business Owners to identify personal services, repair services, construction, transportation, and miscellaneous services as low-barrier, while high-barrier industries include manufacturing, wholesale, professional services, business services, finance, insurance, and real estate. Retail businesses lie at the cutoff between low and high capital and education requirements.

Table 2-2. Self-Employment Market by Educational Attainment

	Average annual firm formation per 100 establishments	
Area served	High school	College degree
Local businesses	12.22	8.60
Local consumers	8.42	9.08
Nonlocal markets	7.86	10.72

Source: Acs, Z. & Armington, K. (2006), Table 4.6, p. 164.

Using a similar categorization process for the service sector only, Acs & Armington (2006) find that those in low barrier industries (i.e. requiring just a high school degree) are more likely to start firms that serve local business needs such as office cleaning, truck rental and linen supply stores, while high barrier (college-educated) industries are likely to serve non-local markets (see Table 2-2). These groups are about equally likely to start businesses that serve local consumer markets. Although salons, child day care and sports club managers are typical low barrier industries serving local consumers that one might associate with traditional entrepreneurs, high barrier industries

serve local consumers through firms in the arts (dance, theater, etc) and special data services such as tax return preparation (Acs & Armington, 2006).

Motivations and outcomes. Those in low-barrier industries start businesses out of necessity and opportunity. One view is that these represent two categories of entrepreneurs: true entrepreneurs who fit characteristics of the entrepreneurial type and those for whom self-employment was their best option (Servon, 2006). A second view is that deciding to start a business involves the need for more income and the opportunity for a more meaningful work life. For example, interviews with entrepreneurs in four cities revealed that economic necessity was the primary reason for starting an informal business (The Aspen Institute, 2004; Williams & Nadin, 2010), but the same interview respondents report that they were also motivated by the desire for more flexibility and autonomy; more control in an economy of routine firings; and dissatisfaction with formal employment options. Similarly, Bates et al. (2011) found that unemployment was statistically (positively) related to the likelihood of entrepreneurship in low-barrier industries, but unemployment was just as likely to be a factor in the self-employment decision of those in high-barrier industries. Because the latter individuals should have more reserve funds, it suggests that unemployment can present an opportunity for entrepreneurship that would not have been pursued otherwise.

In addition to a potentially undesirable start, self-employment may not produce a livable income, it may be an inefficient use of the worker's time, or it may require a stressful and difficult lifestyle. About 15 to 30 percent (depending on the industry) of those who are self-employed are in the bottom quarter of the income distribution (Glaeser, 2007a). Given the typical industries populated by traditional entrepreneurs, it is

unsurprising that they are less financially successful and are more likely to leave self-employment than college-educated entrepreneurs (Doms et al., 2010). For example, Acs & Armington (2006) found that the rate of new firm formation is equally predicted by the proportion of college-educated residents in the region as the proportion of high school dropouts. In some cases then, wage work may be a better situation for the entrepreneur and it is important that public policy does not rely on entrepreneurship as a social safety net program (Jurik, 2005).

To help exclude instances in which entrepreneurship is primarily a necessity, I focus on people and places we may think of as working class rather than poor. Similar to my notion of a traditional entrepreneur, Lamont defines the working class as those with "stable employment and high-school diplomas, but no college degrees, which means they face severe barriers to jobs and other social benefits" (2000, p. 2). There is not a universal definition of the working class, but researchers acknowledge that blue-collar factory workers no longer capture the typical working class person (Kefalas, 2003; Lamont, 2000; Zweig, 2005). The low end white-collar jobs of today are more similar to blue-collar work than professional white-collar jobs in terms of pay and benefits (Kefalas, 2003). Zweig argues that the working class spans all industries and races, men and women, and is better defined by their lack of power and ownership in work and production. Although being one's own boss necessarily minimizes the issue of power and ownership, the breadth of Zweig's description is appropriate and it hints at the more anthropologically-based definitions that describe working class as a culture and identity, "grounded in everyday life, in human interactions, and in the relationship between work, place and community" (Russo & Linkon, 2005, p. 9).

For the purposes of my research, I define an entrepreneur as a self-employed person, and 'traditional' entrepreneurs by the level of education and poverty in their residential area, which is closely tied to income level and industry choice, but which constitutes its own class identity that significantly influences with whom you socialize (Hyra, 2006; Lamont, 1992; Vallejo, 2009). For this reason, my definition of a traditional entrepreneur has a significant geographic component that constitutes the entrepreneur group in my dissertation.

Role in economic development. Although traditional entrepreneurs are not studied for their impact on regional growth, a small literature on minority entrepreneurship views local business owners (non-chain stores) as an asset in community economic development. There are a number of reasons that local business owners foster neighborhood development. First, they are visible signs of neighborhood investment to outsiders, which promotes community identity and continued investment (Sutton, 2010). Community development theory focuses on the self-empowerment benefits of entrepreneurship, which may indirectly benefit the physical neighborhood when residents feel a sense of belonging and ownership (Ghorayshi, Graydon, & Kliewer, 2007). Second, local entrepreneurs can create jobs. The spatial mismatch hypothesis has long argued the problem of neighborhoods located far from employment opportunities (Holzer, 1996; Olof, Osth, & Zenou, 2010). Local owners may also sustain jobs if they internalize the costs to the community of relocating or reducing employment (Kolko & Neumark, 2010). Third, they increase the political capital of the area. Local business owners may engage in the political system to preserve the neighborhood business environment, such as through zoning laws (Sutton, 2010). Finally, businesses

generally reduce vacancy rates and crime and increase tax revenue, which along with the other benefits are all mutually reinforcing for neighborhood revitalization (Chapple & Jacobus, 2009).

This literature typically focuses on areas of concentrated poverty in need of redevelopment. Entrepreneurship has been studied as a place-based development strategy in the U.S. (Bates & Alicia, 2008; Sutton, 2010) and E.U. (Welter, Trettin, & Neumann, 2008). As such, it has been subject to the place-based versus people-based debate. Place-based strategies target investments to dilapidated areas to directly affect the economic conditions there, while people-based policies give individuals more choice in job-related decisions, including their mobility among places. People-based policies make it difficult to recoup city investments when residents move out of the neighborhood, which also makes them inefficient neighborhood redevelopment policies; place-based policies do better at redevelopment, but are critiqued for their gentrification impacts, labor migration inefficiencies, and inability to improve the economic outcomes of original residents (Elvery, 2009; Glaeser, 2007b; O'Sullivan, 2009).

There are also people-based programs aimed at traditional entrepreneurs, at least more so than are activities like technology transfer in the universities. They include state micro-finance programs, the self-employment training option in the Workforce Initiative Act's unemployment assistance centers, and free business mentoring programs sponsored by the Small Business Administration. These programs are far from directed economic development efforts. Financing that is based on the projected job creation potential of the new firm may be considered development-oriented, but more often the programs are viewed as workforce development or poverty alleviation strategies (Jurik, Cavender, &

Cowgill, 2006; Servon & Bates, 1998). Still, it is important to note that in the case of poverty-alleviation programs, there are some efforts to build social capital among participants, which mimics the design of regional cluster strategies (Jurik et al., 2006).

Regional Resilience and Entrepreneurs

For all the interest in clusters and entrepreneurship, traditional entrepreneurs are rarely studied as a networked group. Considering clusters are of value to policymakers for their economic growth effects, the likely reason is that traditional entrepreneurs are not typically exporting firms, nor do they have employees, so their impact on growth is assumed to be negligible. There is some evidence to call that assumption into question. For example, Acs & Armington (2006) found that job growth was more strongly associated with the proportion of high-school educated residents in a region than college-educated ones. They surmise that the overall education level of the population (i.e. high school grads versus dropouts), not high levels of education in a small segment, is what matters to growth.

In terms of economic development objectives and regional prosperity, economic resilience is just as important as growth. Regional resilience describes the capacity of a city or metropolitan area to respond to social, demographic and economic change (MacArthur Foundation, n.d.; Resilience Alliance, 2007). Such a policy goal may sound self-evident, but it is a dramatic shift from the dominant paradigm of economic growth. Cluster research is of interest in economic development because clusters relate to regional growth (Acs & Armington, 2006; Beaudry & Schiffauerova, 2009). A good development strategy (clusters included) is evident by its impact on the growth trajectory of jobs, income, tax revenue or some other economic measure (Blair & Carroll, 2009).

The narrow focus on growth started to expand in the mid-2000s. The most immediate cause of the shift was the global financial crisis and string of natural disasters that occurred during that time (Christopherson et al., 2010). Urban scholars sought ways to minimize the impact of these acute shocks. They adapted the resilience concept from environmental studies where it is used to describe the biological capacity to adapt to adverse conditions. The biological definition transfers well to mitigate shocks, but also to regional problems that build over time from slow, accumulating change, such as deindustrialization. By either definition of change, it turns out that high growth regions say little about their resilience capacity. For example, looking over twenty years and using two different measures of regional resilience, Chapple & Lester (2010) found that few Sunbelt cities (known for their high growth) made the list of resilient labor markets and some unexpected Rustbelt cities did. Regarding the recent downturn, Christopherson et al. (2010) note that some older industrial regions (Rustbelt cities) have fared the best because they did not experience the housing boom and had more diversified industrial base. Thus, the factors that contribute to economic growth may be different, or even work against regional resilience in the long run.

There are several streams of research under the broad goal of building regional resilience capacity. For example, The MacArthur Foundation's resilience project looks into infrastructure resilience to determine if our roads, bridges and buildings have the capacity to withstand significant population and environmental change (MacArthur Foundation, n.d.). The Foundation also researches what aspects of urban governance can positively influence an area's resiliency. Fiscal or budget resilience refers to financial planning that accounts for unexpected change (Hoene & Pagano, 2013). The Resilience

Alliance's (2007) framework emphasizes natural resource resilience, such as a city's ability to manage fuel, water, energy and other inflows with natural limits through times of stress or change.

Clearly all of these factors affect regional economic resilience, but they are distinct from the body of literature that examines the economy directly. Economic resilience, like economic growth, is concerned with indicators such as jobs, income and productivity. In Chapter 4, I discuss these different indicators at length and the specific arguments for why a healthy level of entrepreneurship could increase a region's ability to avoid, or recover more quickly, from regional economic challenges. It bears mentioning that resilience is also studied as an individual capacity (Luthans, Avolio, Avey, & Norman, 2007). Traditional entrepreneurs may be more resilient to their own economic hardships than other entrepreneurs or than wage workers, for example. In this study, resilience is taken to mean a firm level (which in this case is one person), community level or regional level capacity.

Traditional Entrepreneurs and Economic Development Policy

Exploring entrepreneurship as a group phenomenon and for its relationship to regional resilience offers the unique advantage of connecting economic interest in innovation to entrepreneurs from across the education spectrum. Traditional entrepreneurs, as I have described them, have been largely absent from economic and policy studies of regional development, especially the literature on industry clusters. This is problematic for an economic development strategy based on innovation. Drawing on Schumpeter's theory, Cooke, Uranga, & Etxebarria (1997) argue emphatically that innovation policy and research must move beyond the subset of companies that use

science and technology innovations to improve their products. The value of innovation, as it relates to regional prosperity including jobs, is also in its ability to open new markets and try new organizational arrangements. The change that is needed from organizations is not only technological, it is in their behavior and habits and the way they interact with other agents in the economic system. The key question of effective innovation policy, according to Cooke and company, is the extent to which the policy it is indeed systemic. If cluster strategies leave the majority of entrepreneurs unaffected or excluded, they cannot be systemic.

One of my goals in this research is to contribute to the movement for more bottom-up policy implementation strategies. This is a goal that innovation scholars would share because it allows for more ideas from more people, which is one way to gain more systemic change. Bottom-up strategies mean decentralizing authority over development decisions from the few elected officials, business elite and lobbying groups to the many people whose daily interactions and decisions determine a wide variety of development patterns (Innes & Booher, 1999). That does not necessarily mean abandoning land use laws and other centralized governing mechanisms. It could simply mean allowing more participation in the process in an ongoing way. For example, one question in cluster development is whether implicit incentives for firm self-organization (bottom-up) is more effective than explicit cluster policies implemented through regional authorities (top-down) (Fromhold-Eisebith & Eisebith, 2005).

The very promotion of entrepreneurship (provided it is an opportunity afforded to residents of all means) is one way to think of economic development being driven by a bottom-up strategy. Rather than providing incentives to corporations to generate regional

growth, policies should be focused on growing the capacity of local entrepreneurs. Another way to think of bottom-up development is to invest more power in the hands of neighborhoods. Neighborhood residents can more quickly identify opportunities for economic development that correspond to current conditions and capacity. This is especially true for the large number of neighborhoods that are not in extreme poverty, but are not upwardly mobile. These neighborhoods and residents can be overlooked in policy research because community and housing programs target high-poverty areas (Wacquant, 2008).

Despite the interdependencies of cities and their component neighborhoods (Hill, Wolman, & Ford, 1995; Phelps, 2004), neighborhood development and regional growth objectives are taken as separate tasks. Community (neighborhood) economic development by local governments and community development corporations is undertake with little interest in the regional context (Gottlieb, 1997). Conversely, city and state economic development leaders determine strategies for regional growth, but as indicated by post-recession policy efforts, their tools are often limited to financial incentives to attract business (Osgood, Opp, & Bernotsky, 2012). There are likely politically motivated reasons for the disconnect between regional growth strategies and neighborhood economic development (e.g. NIMBY, the city growth machine mentality), as well as empirical difficulty in measuring interdependent and recursive processes, such as the relationship between cities and their component neighborhoods.

Scholars have advocated the value of understanding (or even creating) a link between top-down and bottom-up economic development, but the task has been difficult. Woolcock (1998) argues that social capital should be leveraged for both. He identifies

two distinct but shared types of social capital across bottom up and top down development: embedded and autonomous social ties. Embeddedness from the bottom up perspective refers to intra-community ties, such as the social capital shared in ethnic enclaves. From a top down perspective, embeddedness refers to the internal relationships between city government officials responsible for economic or community development. Autonomy in the bottom up perspective refers to extra-community networks, the kind most likely used in innovation networks. Top down, autonomy refers to institutional capacity and credibility built through government relationships with industry (including nonprofits). The resulting two by two matrix represents four different types of social capital, the balance of which impacts transmission of economic prosperity between the national and local levels or in our case, between the city and neighborhoods. The appropriate balance is a function of the present development level of the city, but because the top-down and bottom-up social capital build on one another, there is no clear place to start, much less evaluate the effects of an intervention.

Woolcock's framework is useful for thinking more critically about the role of social capital and innovation networks, but it does not offer ways to build those cross-linking capital stocks. Gottlieb (1997) argues that urban development research has failed to link the two goals and needs to be more practitioner-oriented and normative to make headway in the policy world. He recommends two areas for action-oriented research. The first is a better understanding of the mismatch between communities in need of jobs and where those jobs are located in the city. The second is to determine how the theories and techniques of cluster development need to be customized to the neighborhood. If so, can inter-firm linkages and network economies be created among neighborhood businesses?

His main concern with the idea, which I believe to be a valid one, is that these businesses will not be able to generate job creation at the scale needed in the neighborhood.

This dissertation essentially takes up Gottlieb's call and determines, not only if neighborhood clusters of entrepreneurs can be identified, but just as importantly, if they could and should be created as a potential bottom-up innovation strategy. It tries to situate the neighborhood in its regional context by exploring ways that traditional entrepreneurs stabilize neighborhoods and possibly the region through external challenges. Rather than see neighborhood and economic development objectives as inevitable trade-offs, the work of traditional entrepreneurs may offer a synergy between the two in resilience. While this dissertation only takes initial steps in the direction of identifying synergies, creating development policies that capitalize on them would represent a truly systemic innovation policy, and one that ensured the spirit of entrepreneurialism remained an enduring American value.

CHAPTER

3 - NEIGHBORHOOD CLUSTERING AND TRADITIONAL ENTREPRENEURS

The Literature

Agglomeration economies are the growth enhancing effects of businesses locating near one another. Alfred Marshall (1920) theorized that firm cost reductions, realized through positive externalities are what explain the empirical observation that firms in specialized industries tend to co-locate. Developing and supporting so-called 'clusters' is of great interest to policymakers because clusters are thought to be associated with regional economic growth (Martin & Sunley, 2006; Porter, 1998). The source of positive externalities, the precise meaning of proximity, and how, together, they generate regional economic growth are major areas of theorizing in urban economics and economic geography. The growing interest in innovation over the past two decades has also led to a fruitful exploration of entrepreneurship and inventor social networks in clusters.

In this chapter, I draw on economic studies of growth and sociological studies of networks to document the importance of clusters to regional growth and to argue that traditional entrepreneurs and neighborhood-level clustering constitute a significant gap in empirical studies of clusters. In the first section, I review cluster theory, which includes a large (mostly economic) literature on agglomeration economies, recent developments on spinoff clustering, and how clusters relate to entrepreneurship. Next, I offer some empirical evidence derived from cluster studies and conclude that they have not looked for clustering effects among traditional entrepreneurs. In the final literature section, I draw on sociology and urban studies to derive two hypotheses to determine whether neighborhood social networks foster clustering among traditional entrepreneurs. The next

two sections contain the analysis broken into two parts. Part one is a quantitative study that describes my data sources, statistical techniques and results of the analysis. Part two is a qualitative study that describes my neighborhood site selection, interview protocol and results of the analysis. The last section is a brief summary and conclusion. This chapter uses concepts developed in Chapter 2, with a summary of definitions provided in Appendix 1.

An economic theory of clustering. Scholars have identified a number of potential reasons that clusters occur. None have strayed far from Marshall's original triad of labor pooling, shared inputs and information spillovers, but Duranton & Puga (2004) offer a potentially valuable theory-based classification. They group sources of agglomeration into sharing, matching and learning mechanisms, each of which has a distinct explanation for the positive externalities that characterize agglomeration economies (see Table 3-1). Until recently, sharing and matching have garnered the most attention. Sharing captures the ability of co-located firms to minimize costs by sharing indivisible goods like production facilities, to maximize benefits by a wider variety and more specialized suppliers (who exist due to their ability to access a larger final goods market), and to minimize the impact of risky undertakings. Matching mechanisms capture the greater access co-located firms have to a specialized labor market, which improves either their probability of finding a match or the expected quality of matches.

Table 3-1. Sources of Agglomeration Economies

Agglomeration source	Example of mechanism generating positive externality
Sharing	The ability of co-located firms to minimize costs by sharing indivisible goods like production facilities

Matching	The greater access that co-located firms have to a specialized labor market, improving their odds of finding a qualified worker
Learning:	
-Ideas	Generation of new ideas or knowledge through the interaction of co-located firms
-Skills	Transfer of skills between differently skilled workers in co-located firms
-Information	Diffusion of information among co-located firms

Interest in learning mechanisms, also called knowledge 'spillovers,' has increased with the economic transition away from manufacturing industries. Within learning mechanisms, Duranton & Puga (2004) distinguish three types of spillover: the generation of ideas (new knowledge), the transfer of skills, and the diffusion of information. Spillover means that a positive externality is produced for the cluster by the investment of one firm. The generation of ideas is one of the most philosophical areas of theorizing on spillovers, as it goes to the heart of creativity and out-of-the-box thinking. For example, the theory of generative relationships describes how the innovation process requires individuals to maintain ontological uncertainty and participate in constructing large-scale transformations of agent-artifact space (Lane & Maxfield, 2005). Duranton & Puga (2001) take a more classic agglomeration perspective on idea generation. They formalize a theoretical model showing that diverse city environments facilitate idea generation by allowing new firms to test product development in a variety of different production processes and therefore better identify commercial-ready ideas.

Diffusion of skills is the second and potentially more intuitive and verifiable interpretation of spillovers. Skill diffusion is the production benefit that occurs by

proximity between people or firms of different skills. Through co-location, they acquire incremental skills based on tacit knowledge that is ambiguous and so more easily developed through experience learning than through formal education (Acs & Armington, 2006). For instance, Russo's (2000) analysis of the ceramics industrial district in Italy demonstrated that proximity to many high skilled workers facilitated skill transmission to unskilled workers, raising group productivity, an idea also supported in aggregate analysis (Glaeser & Resseger, 2010).

Thirdly, information diffusion builds on models of social learning that capture word-of-mouth type information exchanges that facilitate norms (Sobel, 2000). Information diffusion may be behind the 'entrepreneurial culture' hypothesis for why rates of entrepreneurship vary by city (Audretsch & Feldman, 2004; Glaeser, 2007a).

Evolutionary economic geographers have focused on learning mechanisms to explain agglomeration, but they do not necessarily support that clusters occur through economically rational spillovers. These scholar attribute the co-location of firms to historically grown (path dependent), spatially concentrated types of knowledge embodied in firm routines (Boschma & Frenken, 2006). Firm 'routines' are created by the history and culture of a geographic area, which supports a particular way that firms are organized, the way they interact, and the way they interface with government institutions (Cooke et al., 1997). Silicon Valley and Route 128 in Boston demonstrate regional firm routines. Although both Silicon Valley and Route 128 had the requisite technical capacity for success, one theory is that the Valley pulled ahead in the global competition for high-tech industry in the 1980s because of its organizational routines of openly shared information versus the traditional hierarchical organization and relationships in Boston

(Saxenian, 1994). Firms will learn these routines from one another, which is necessary for success in that region. Another popular theory in evolutionary economic geography is that clusters occur through the high rate of new firms that 'spinoff' from a successful parent company (Buenstorf & Klepper, 2009). This spinoff phenomenon is an important and relatively new line of theorizing in cluster development that I will discuss further in the empirical review. It is distinct from agglomeration because a high rate of spinoffs can occur despite no positive externalities realized in the cluster.

The source of positive externalities in agglomeration is just one puzzle. There are also several debates about what exactly constitutes a cluster of firms. For example, one long-standing question in agglomeration research is about the industrial scope of a cluster. Thus far we have referred to clustering among firms in a specialized industry. Jane Jacobs' (1969) observations of New York neighborhoods are often used to support the notion that learning mechanisms operate on a much wider industrial scope. She argued that the interaction of different types of firms and people within diverse city environments generate economic growth through innovation, or as she said it, the invention of 'new work.' The industrial scope question has come to be called the Jacobs - M-A-R debate. M-A-R refers to three macro economists (Marshall, Arrow and Romer) who argued that related firms and the spillover of specialized knowledge is a more important source of agglomeration than the benefits of diverse knowledge found in large cities. The economic success of large cities was known to agglomeration theorists before innovation and knowledge spillovers were popular and the debate on the growth-enhancing advantages of each takes a number of names, as shown in Table 3-2.

Table 3-2. Equivalent terms for the Debate on the Industrial Scope of Agglomeration Economies

Positive externalities between firms in the same industry	Positive externalities between firms in the unrelated or related industries
Intra-industry linkages/spillover	Inter-industry linkages/spillover
M-A-R externalities	Jacobs externalities
Specialization	Diversification
Localization economies	Urbanization economies

The geographic scope of clusters is as puzzling as their industrial scope. To understand why geographic scope matters, we have to think about how spillovers occur in the real world. Marshall (1920) said it was simply more ideas 'in the air,' but researchers have since developed concrete possibilities. Inter-organizational collaborations, particularly with universities are probably the most well-studied explanation (Bruneel, D'Este, & Salter, 2010; Powell et al., 1996). Trade organizations or other professional networks for interacting is another candidate, and labor mobility across related firms is a third (Breschi & Lissoni, 2003). Another approach is to view the entrepreneur him/herself as the mechanism of a spillover (Audretsch & Feldman, 2004). This makes the individual the unit of analysis, which is not the standard in firm-based economic studies and creates a host of conceptual problems (or opportunities). For one, entrepreneurs do not exist exogenous to the cluster; their decision to appropriate their knowledge within an organizational structure or to set out on their own has to do with the cluster environment. I will return to this issue, but on the point of how information gets from one firm to another, agglomeration theory must also account for the extent to which the firms must be near one another. That is, the issue of proximity needs to be better specified.

Interestingly, it was the idea of learning mechanisms that first directed innovation research from the national to subnational level (Cooke et al., 1997). However, the actual

distance between economic agents over which spillovers could be expected to occur is not clear. This is a major criticism of the cluster concept: that clusters are said to operate anywhere from the district to the metropolitan to the state level with no theory to guide the geography assessed (Martin & Sunley, 2003). Agglomeration sources are typically studied at the metropolitan level (Rosenthal & Strange, 2004). Spillovers via labor mobility, trade organizations and inter-organizational collaborations could all occur fairly easily within a metropolitan area. Indeed, metro boundaries are drawn for their cohesive labor markets and other vital institutions for creativity are at the metropolitan scale (Scott, 2006). Most of these geography arguments are like the first: metropolitan areas are more important labor markets than national boundaries. But just how close must people be for spillovers to occur? Glaeser and company's well-referenced quote is useful here (Glaeser, Kallal, Scheinkman, & Shleifer, 1992). They remarked that intellectual breakthroughs *must* travel across hallways easier than across oceans. Consequently, other authors have suggested that a better theoretical framing of the issue is to say that agglomeration economies diminish with a firm's distance from a cluster (Rosenthal & Strange, 2003).

Geography is one variant of the proximity needed for learning mechanisms to operate. Cognitive, organizational, social, and institutional proximity may also effect spillovers and cluster development (Boschma, 2005). To reduce uncertainty, firms first look for knowledge processes similar to their own. Some basis for shared understanding makes useful knowledge easier to recognize, absorb and act on. This is called cognitive proximity. Organizational proximity refers to the degree and formality of connections within and between organizations. Close proximity could be demonstrated by the

hierarchical organization of a firm and contractual relationships with other firms, while distant proximity could be the on-the-spot interactions between organizations in the market. Close proximity is useful for reducing the transaction costs of sharing information, and according to Williamson (1975) is the very reason that certain economic functions are undertaken under hierarchical rather than market institutions.

Social proximity draws on Granovetter (1985) and refers to the embedded social relationships that increase trust in interpersonal interactions, while institutional proximity is a similar concept at the group level and refers to the shared cultures and values that work to increase trust. Unlike geographic proximity, the other forms have limits, past which they constrain cluster development. For example, too much cognitive proximity reduces the benefits of spillover because the information is too similar to generate new knowledge. Thus the advantage of learning in an intra-industry setting is that knowledge is more easily absorbed, while between industries information is more likely to clash and be a source of radical innovation (Lowe et al., 2012). Additionally, the other forms of proximity are unique to learning mechanisms. Geographic proximity is a necessary and sufficient condition for sharing and matching mechanisms to operate, but it may be neither necessary nor sufficient for learning mechanisms (though it likely facilitates learning) (Boschma, 2005).

Introducing the entrepreneur. The last puzzle in agglomeration theory is how clusters generate regional economic growth. The most direct effect of agglomeration is increased productivity at the firm level, but because these data are hard to come by, agglomeration is often measured indirectly according to employment growth (Beaudry & Schiffauerova, 2009; Rosenthal & Strange, 2004). This artifact is not without its

problems because increasing returns mean that the overall economic effect of agglomeration is more than the sum of increases in individual firm productivity so it is difficult to empirically connect the two. Nonetheless, employment growth is measurable and of practical concern. An alternative to general employment growth, and the most direct way that clusters have been related to entrepreneurship, is to measure growth in the birth of new firms (Rosenthal & Strange, 2004). Sorenson states the theoretical claim here quite well. He argues that "production centers provide individuals with more opportunities to acquire knowledge of the business, form critical networks, and build confidence in their ability to open a new venture" (2000, p. 442). Thus clusters do not persist because their established firms are more productive or less likely to fail; competition for scarce resources among similar, co-located firms makes this unlikely (Sorenson, 2000). It is that new business ventures are more likely to start in established agglomerations.

Alternatively, and of greater interest in this dissertation, is that entrepreneurs are a *key* input to agglomeration economies. Large firm agglomeration is a collection of firms with a common focus that realize gains through collective action (Audretsch & Feldman, 2004). But entrepreneurs actively organize resources and institutions to support their work and the work of emerging entrepreneurs (Feldman, Francis, & Bercovitz, 2005). Further, an environment of many small scale suppliers (versus vertically integrated firms) is more hospitable to starting a new venture because the entrepreneur has easier access to resources he needs (Chinitz, 1961). In a slightly different view, economic churning in the form of high rates of small business entry and exit is the creative destruction process at work (Acs & Armington, 2006). It is this activity that results in faster regional

development, but also growth, a main reason being that small firms add more employment than large firms (Acs et al., 2008). These three ideas on entrepreneurs could be tied together through a multi-stage cluster development theory where initial entrepreneurs organize latent resources and ultimately allow an environment of churning (Feldman et al., 2005). In any of these explanations, the reasoning quickly turns to a literature on the cause of entrepreneur clusters (or variation in region entrepreneurship rates). Of course the relationship between entrepreneurship and cluster growth is most likely endogenous and so the circular causation argument is hard to escape: certain regional factors make entrepreneurship more likely and many of those factors relate to the current supply of entrepreneurs.

One implication of focusing on entrepreneurs is that the growth question becomes: do clusters of entrepreneurs contribute to regional growth more than non-clustered entrepreneurial activity (Rocha, 2004)? There is also greater attention to structural and network issues related to firm size rather than to industry scope. For example, one hypothesis is that an abundance of small firms lowers the cost of entry into self-employment for the next entrepreneur because suppliers and competitors are more equivalently resourced compared to new firms (Rocha, 2004). Another is that higher human capital stocks in any industry contribute to entrepreneur clusters (Glaeser, Kerr, et al., 2010). A third is that stable relationships in clusters, better information about opportunities, and lessened social stigma for failure reduces uncertainty in starting a business and increases its likelihood (Romero-Martínez & Montoro-Sánchez, 2008).

We are in the early stages of theorizing about the scope of agglomeration (geographic, industrial, etc.) and its source (sharing, matching, learning mechanisms)

when considering the entrepreneur, or even a startup firm, as the key input. In the U.S., the entrepreneur's unique position in the local economy has been somewhat neglected. In their review of two major urban economics journals, Glaeser and company found fewer than 70 mentions (much less full articles) of entrepreneurs since the 1970s (Glaeser, Rosenthal, et al., 2010). There are a variety of potential ways to link agglomeration economies and entrepreneurs, but little theorizing exists on why proximity among traditional entrepreneurs could benefit regions. That is why this dissertation, though exploratory, is a bold and necessary step in cluster research. Even aspects of cluster theory that could easily be applied to a wider array of entrepreneurs are not applied in empirical work. And this leaves significant space for adapting and extending the theory.

Empirical evidence of clustering. Empirical studies of agglomeration theory must document three things, but they are almost never undertaken within the same study. First, they must document clustering among some economic units, such as small firms or related industries. This is often done with a measure of spatial concentration, with the appropriate geography and industries accounted for. Second, agglomeration studies must relate firm clustering to firm productivity or regional economic growth. Third, they must identify the cause of the cluster as a source of agglomeration and not some natural locational advantage for the industry, such as solar energy production occurring in the southwest or export industries clustering near a port.

The largest body of empirical work documents the first two of these tasks: the scope of agglomeration across industries, locations and time, and their relationship to economic growth (Rosenthal & Strange, 2004). Economists are much less likely to take on the third, an investigation or comparison of sources of agglomeration economies (this

is more common in economic geography and sociology). However, economists are certainly apt to rule out other likely suspects, including differences in the natural advantage of geographic areas and in the supply of entrepreneurs (e.g. entrepreneur clusters in the state of Florida because self-employment becomes more likely with age). In this section, I draw on different synthesis articles to discuss the state of knowledge on the scope and effect of clustering and to demonstrate the overwhelming focus on high skill workers in high tech and other exporting industries. This leads me to conclude that there is a gap in our knowledge of the clustering behavior of traditional entrepreneurs who often work in local services and have no employees.

In a comprehensive review of 67 agglomeration studies from around the world, Beaudry & Schiffauerova (2009) weigh in on the localization-urbanization debate. Which is more conducive to growth? The evidence is about equal for both and, as the authors conclude of economic findings in general, 'it depends!' They make a number of useful observations from the data about what industrial and geographic facts matter. First, service and high tech manufacturing clusters are more likely to grow through urbanization economies while localization economies are more strongly associated with lower tech manufacturing growth. Second, clustering at small levels of geography (zip code level and highly populated spots in metropolitan areas being the smallest variety studied) reveals a larger influence on growth than clustering at the county, metropolitan area or state level. At smaller geographies, both localization and urbanization economies are more likely to be related to growth, which makes the localization-urbanization (i.e. Jacobs-MAR) debate less important in sub-regional analyses. Third, both types of

clusters are significantly related to new firm births, but small firms benefit much more from localization economies than large firms, whether new or not.

There are many fewer economic studies that answer the specific question of whether entrepreneurs (or at least small firms) cluster to a degree that generates regional growth, partly due to the problem of isolating the direction of causality in situations of cumulative causation such as agglomeration. But for the few that have tackled the question, the evidence is positive. Acs & Armington (2006) document the relationship of entrepreneur clusters to employment growth extensively. Glaeser, Kerr, et al., (2010) use the Herfindahl-Hirschman Index at the metro area-industry level to measure entrepreneur concentration. They find that clusters of small (employer) firms lead to more (employer) startups, in all sectors but especially in manufacturing. Although they call the causal relationship inconclusive and they do not directly compare the different agglomeration mechanisms, the authors hold the most hope for the relationship being caused by lower costs for entrepreneurship in clusters (rather than greater returns). To my knowledge, there are no quantitative studies that operationalize clusters as self-employed people and also include firms with no employees or entrepreneurs working from home. In a related empirical inquiry, Glaeser (2007) shows that higher rates of self-employment in metropolitan areas correlate with growth. He finds little support for the idea that those high rates (usually caused by high rates in one or more specific industries) correspond to more entrepreneurship in other industries, as a learning mechanism might suggest.

Why co-located firms see cost-reductions or exhibit positive externalities (i.e. the source of agglomeration) is not well known. Equally unknown is why entrepreneur clusters see cost-reductions. In an unusual study that compares (proxies) for different

agglomeration sources in manufacturing clusters, Rosenthal & Strange (2001) show that labor market pooling has the most robust effect on new firm entry, positively influencing clustering at the zip code, county and state level. Audretsch & Feldman (1996) use the locational Gini coefficient to measure geographic concentration in a number of industries and find that innovation activity is highly clustered. By ruling out the explanation that this is due to clustered manufacturing firms (producers), they demonstrate the existence of knowledge spillovers. A third study more directly compares services and manufacturing clusters and upon finding stronger growth effects in service firms, shows that it is most likely due to knowledge spillovers (Bosma, Stam, & Schutjens, 2009). Compared to manufacturing, service activities can be produced in small quantities and still be efficient, so new, often small entrants contribute more easily to productivity improvements. These studies suggest that if agglomeration economies exist in services, they are of the learning mechanism variety rather than labor pooling or cost sharing.

Agglomeration theory is not the only reason for clustering. An alternative theory explains clustering as the evolutionary process of spinoffs—where an employee of a successful company leaves to start his or her own business—and there is a surprisingly large amount of empirical work on this issue. Important for this dissertation, there seem to be fewer differences between service and manufacturing industries according to the spinoff theory of clusters (Boschma & Frenken, 2011). Klepper (2010) uses historical data on the birth of new firms to show that spinoffs are a likely cause of clustering in Silicon Valley's semiconductor industry and Detroit's automobile industry, two of the largest clusters in American history. Though his study does not test the alternative hypothesis that agglomeration caused the cluster, he remarks that the superior performers

were not firms attracted from other areas and their success appears to be based on firm capacities present at the time of entry rather than a benefit of co-location. These reasons argue against agglomeration. Sorenson (2000) finds a similar spinoff phenomenon in the clustering of shoe manufacturers in different U.S. regions. She attributes the high rate of spinoffs to the fact that entrepreneurs who previously worked in that industry know the players and local conventions for establishing trust. A rather large number of industry studies in Europe, including cars, fashion design, tires, semiconductors, banking and publishing, also support the spinoff theory of clustering (as cited by Boschma & Frenken, 2011). Like Klepper's, these studies do not identify what it is that spinoffs inherit. Some likely candidates are knowledge, organizational capabilities, network relationships, or even reputation (Boschma & Frenken, 2011; Dahl & Sorenson, 2012). In any case, to explain regional growth, the spinoff theory would need to identify what the spinoff is doing differently than the parent firm because otherwise it is merely changing the organizational form in which some production is happening (Klepper, 2010).

Neighborhood clustering. Traditional entrepreneurs have received almost no attention under cluster theory. We know little about how these very small-scale service providers operate as a group, despite the preceding literature review that suggests groups of entrepreneurs can be an important unit by which to measure economic success. One reason is that cluster studies in the U.S. have interpreted the learning mechanism as scientific knowledge transferred in ideas and skills (refer to Table 3-1). As Audretsch & Feldman (2004) point out, in the North American context, learning capacity has been operationalized as the proportion of workers with advanced degrees, while in the European context learning has been studied in specialized small firms in traditional

industries such as apparel and metalworking. U.S. studies have found that clustering happens in knowledge-based industries and among high skill workers and entrepreneurs. One study that makes a direct comparison of skill level is Gabe & Abel (2010) who find that employees in low skill industries are not as likely as those in high skill and creative industries to cluster in metropolitan areas. Specifically, they use a locational Gini coefficient to show that workers in the social sciences, engineering, physical sciences and arts are the most geographically concentrated groups, while those in personal services and sales, clerical positions, mechanical occupations, and low-skilled labor are more spread out across metropolitan areas.

There are a number of explanations for why regional clustering and positive externalities would *not* be apparent in traditional entrepreneurship. The first is that human and financial capital are only weakly associated with new business formation in low barrier industries (Bates et al., 2011). In contrast, the availability of financial and human capital inputs are some of the most important determinants of entrepreneur clusters in mainstream economic models. Second, traditional entrepreneurs are likely to have few or no employees. That means the role of labor pooling and matching incentives to cluster are weaker than in studies of entrepreneurship in general. Third, traditional entrepreneurs are less likely to fit the portrait of a profit-maximizing firm seeking the best location (e.g. land prices, crime rates) upon generating a novel business idea, and more likely to locate close to home due to family and friend networks that support their business (Dahl & Sorenson, 2009). Finally, traditional entrepreneurs are unlikely to produce export goods or services. Clusters at the city level are conventionally taken to indicate a primarily

exporting group of firms (Kolko & Neumark, 2010). Low barrier industries, such as personal services and home remodeling serve more localized markets.

While it is reasonable to think traditional entrepreneurs would not cluster in particular regions, research from sociology and urban studies indicate they maintain local social networks that directly and indirectly effect entrepreneur success. Ruef (2010) studied traditional and high-tech entrepreneurs to show that in both cases, entering and maintaining an entrepreneur venture largely depends on one's social ties. He argued that entrepreneurship is necessarily a group process, where nascent groups are formed, evolve, adapt over time, and may or may not result in a new venture, but act collectively when they do. These networks though, tend to be smaller and less diverse for entrepreneurs with less education (Schutjens & Völker, 2010). Studies of minority (Valdez, 2011) and women (Loscocco, Monnat, Moore, & Lauber, 2009) entrepreneurs indicate family members are one of the most important sources of support, for example by providing unpaid labor. Strong social networks may explain why some studies have found formal education is important for starting, but not succeeding (profiting) at a new venture (Davidsson & Wiklund, 2001; Montgomery et al., 2005).

I argue that social networks that influence business in traditional trades may be more accurately captured at the neighborhood level. A large literature on 'neighborhood effects' finds that regardless of individual characteristics, such as education, the fates of low income residents (e.g. the ability to find a job) tend to rise or fall together (Clampet-Lundquist & Massey, 2008; Forrest & Kearns, 2001; Guest & Wierzbicki, 1999; Sampson, Morenoff, & Gannon-Rowley, 2002; Woolcock, 1998). Whether intentional or not, neighborhood social capital influences economic success. This thinking has been

applied to entrepreneurship in the Survey of the Social Networks of Entrepreneurs in the Netherlands, which surveyed 385 entrepreneurs in any industry that are home-based or work within their neighborhood (i.e. a ten minute walk or less). They find that the more highly educated entrepreneurs have more network ties, but the medium educated ones have more neighborhood ties (Schutjens & Völker, 2010). Moreover, in statistical tests of the survey, neighborhood ties were found significantly (positively) associated with job satisfaction and employment growth (though not profits).

Few agglomeration studies are conducted at a geography smaller than the city. Rosenthal & Strange (2003) produced the seminal study in this regard. They found that new businesses are most likely to cluster within a mile of the zip code of other firms in their industry and the effects drop off sharply by five miles distance. That is, new firms born in 1997 were most likely to spring up in close proximity to similar firms clustered in 1996, for the six industries they studied (e.g. software, manufacturing). Their study excluded low-barrier industries because one criterion of selection was that the industry must have a national or international sales scope and their data did not allow them to capture entrepreneurs without employees or a physical location. Nevertheless, they provide some of the only evidence that firms cluster at the neighborhood level. There is also evidence of neighborhood entrepreneur clustering among specific groups, such as artists (Stern & Seifert, 2010) and immigrants (Fong & Shen, 2010). Given the importance of social networks to traditional entrepreneurs and the types of networks maintained, the first hypothesis relates to the geography of traditional entrepreneur clusters.

Hypothesis 1: Traditional entrepreneurs cluster at the neighborhood level.

Applying cluster theory to neighborhoods suggests some interesting mechanisms by which groups of traditional entrepreneurs would either be more productive themselves or generate growth through an environment hospitable to new firm entry and spinoffs. Learning-based agglomeration, specifically the generation of ideas and the diffusion of information are good places to start. Entrepreneurial succession is a well-documented contributor to the propensity for entrepreneurship, especially among middle-class families (Valdez, 2011). As Valdez says, those with a family history of business ownership "reveal a confidence in pursuing entrepreneurship as an alternative to wage work that is unique when compared to their peers without such experience" (p. 51). In one study, having family and neighbors who are entrepreneurs fully doubled the odds of going into self-employment (Davidsson & Honig, 2003). If traditional entrepreneurs tend to stay in the neighborhood they grew up in, learning through succession could create an entrepreneur cluster over time.

Information diffusion and idea generation among co-located entrepreneurs may also foster cluster growth. Glaeser (2007) argues that erstwhile customers may 'learn' from a local entrepreneur and become one him/herself. Though he does not find support at the regional level, the type of services supplied by traditional entrepreneurs are highly localized, so customers are more likely to come from the immediate area and may therefore demonstrate clustering. Along these lines, Sassen (2001) finds that entrepreneurs in the informal economy serve local demand for services that are not offered by the mainstream economy, such as home-based child care and gypsy cabs which sprung up in New York's low income neighborhoods that formal companies refused to serve. An entrepreneur's customers are important networks for idea generation

and information (Boschma & Ter Wal, 2007; Glaeser, 2007a; Porter, 1998; Rosenthal & Strange, 2004). Monitoring consumer demand and how it might be supplied with available resources is specific information that may only be accessed by living within the community and moving in the same social circles. These agglomeration arguments parallel those made about local information within an established firm generating spinoff entrepreneurs (Audretsch & Feldman, 2004).

Sharing mechanisms also constitute some possibilities for clustering in traditional entrepreneurship. Bartering and trading services is a common occurrence among entrepreneurs in the informal economy (Losby et al., 2002; Williams & Nadin, 2010). These activities help entrepreneurs start their business and operate on thin margins during tough times. Being part of a group could make the difference for business survival. Another potential sharing mechanism among traditional entrepreneurs with physical establishments is to share the cost of political action. Whereas mobile entrepreneurs can select their location from across the metropolitan area, low-barrier services are more closely tied to their neighborhood customer base. At the same time, to stay viable, working class neighborhoods must organize against the economic development interests of the city, which include siting new infrastructure and market-based redevelopment that lures outside investors into a decaying community using land use and tax incentives (Logan & Molotch, 1987; Turner, 1999). Individual entrepreneurs in a neighborhood will have little political power, but Sutton's (2010) case study of a New York neighborhood showed that acting collectively, neighborhood small businesses have been able to access resources to prevent land use decisions that would be detrimental to their businesses.

These potential mechanisms for agglomeration among traditional entrepreneurs suggest several insights. First, inter-industry linkages are likely a stronger source of agglomeration at the neighborhood level. This is consistent with the empirical findings on services, although those studies often refer to publishing or design rather than low barrier services (Boschma & Frenken, 2011). On the other hand, the empirical meta-analysis also suggested that small firms are decidedly more influenced by intra-industry relationships. But many traditional entrepreneurs are not only small, they have no employees or physical establishment, thus inter-industry linkages should be more common. Second, the lack of employees means that matching mechanisms are less likely than other agglomeration sources such as sharing and various types of learning. Therefore the second hypothesis is as follows:

Hypothesis 2: Traditional entrepreneurs cluster due to inter-industry learning and sharing.

Neighborhood social networks, whether intentionally fostered for business success or not, could result in clusters of traditional entrepreneurs in some neighborhoods and not in others. I explore these hypotheses quantitatively and qualitatively in the next sections.

Quantitative Methods and Analytic Tactics

Data sources. To determine the extent of neighborhood clustering, I use publicly available self-employment data from the American Community Survey (ACS), previously the Decennial Census long form. Like the Current Population Survey (CPS) used in several studies of entrepreneurship, the annual ACS asks a nationwide sample of workers 16 and older whether they are employed by the government, a for-profit company, nonprofit company or are self-employed. Specifically, they are asked at which

job they spent the most hours last week, which means self-employed persons may also have a part time wage job. Unlike the CPS, the ACS is available at the Census Tract level, the boundary commonly used for neighborhood research in public policy (e.g. Galster, Quercia, Cortes, & Malega, 2003); and unlike establishment level data commonly used in agglomeration studies, ACS captures home-based entrepreneurs and informal entrepreneurship. Schneider (2002) estimated that the informal economy in the U.S. varies between seven and nine percent of Gross Domestic Product, depending on the year.

To ensure statistical reliability comparable to the decennial census, the ACS makes Census Tract level data available as 5-year composites of their annual survey estimates. This study uses the first 5-year file, the 2005-2009 ACS (hereafter 2007*). Although more recent surveys are available, the 2007* file uses 2000 tract boundaries, which can be linked to the 1990 and 2000 decennial censuses using commercial data files produced by Geolytics. I accessed these data through public libraries and used them to create a three-year, neighborhood level panel dataset to measure change in neighborhoods over time. According to the ACS, the major variables in my analysis are measured identically in the three periods, except where I note in the findings section.

I report neighborhood self-employment information for 12 regions that are representative of the U.S. census divisions and vary on important economic development measures, including population size, population growth rate, and self-employment rate (see Table 3-3). I have grouped them by population growth to facilitate interpretation of the results. Stagnant regions declined in population in the 1990s or 2000s, while ascendant regions grew over 20 percent in one or both periods.

Table 3-3. Regional Statistics

Metropolitan statistical area	Population 2009	Growth rate 1990 – 1999	Growth rate 2000 – 2009	Self employ-ment rate 2009
Ascending				
Raleigh-Cary, NC	1,125,827	28.8	41.2	8.6
Phoenix-Mesa-Scottsdale, AZ	4,364,094	34.6	34.2	9.7
Denver-Aurora-Broomfield, CO	2,552,195	22.1	17.1	10.8
Maintaining				
Bradenton-Sarasota-Venice, FL	688,126	12.4	16.6	14.8
Spokane, WA	468,684	13.4	12.1	11.1
Cincinnati-Middletown, OH-KY-IN	2,171,896	7.9	8.1	7.5
Los Angeles-Long Beach-Santa Ana, CA	12,874,797	10.4	4.1	12.8
New York-Long Island, NY-NJ-PA	19,069,796	3.2	4.1	9.9
Stagnant or declining				
Abilene, TX	160,070	2.4	(0.1)	9.7
Flint, MI	424,043	1.6	(2.8)	9.8
Dayton, OH	835,063	0.8	(1.5)	7.3
Scranton, PA	549,454	(4.2)	(2.0)	7.2
Average of all 366 MSAs	703,156	10.0	10.0	10.0

Source: U.S. Census Bureau, Population Division, Historical Estimates Data; U.S. Census Bureau, 2005-2009 American Community Survey

Working class neighborhoods. I use neighborhood data for the 12 counties in which these cities are located (i.e. the county seat). This ensures that I capture neighborhoods with residents of modest means, which are commonly formed between the central cities and suburban periphery. Using the county seat also helps exclude agricultural-based areas, which have similar education levels to my neighborhoods of interest and high rates of self-employment, but have a distinct class culture from that of traditional entrepreneurs.

Because the ACS is a neighborhood-level database, I cannot identify traditional entrepreneurs directly. Instead, I focus on neighborhoods in which traditional

entrepreneurs are likely to live and/or work. For ease of communication, I call these working class neighborhoods. Working class neighborhoods are those with a below average rate of college attainment but average poverty level (see more on the definition in Chapter 2). The downside of this approach is that it restricts what can be said about 'traditional entrepreneurs' to a potentially non-representative sample of traditional entrepreneurs who live in neighborhoods of a particular character. There is also no way to verify the extent of sample selection bias and whether it could be improved upon by better operationalizing a 'typical' working class neighborhood. I take steps to make this process as data-driven as possible, as I explain shortly, but it is a limitation of using the ACS. Another limitation is that the ACS is a household level survey so the location of self-employed respondents reflects their residence, not business (if they work outside of their home). The upside of starting with neighborhood characteristics is that many local and federal community economic development programs also target neighborhoods of a certain demographic. Therefore, the findings can more accurately be applied to place-based development strategies.

Working class neighborhoods are primarily operationalized as those where the proportion of college graduates in the neighborhood falls between 10 and 30 percent. The national college graduation rate is 33 percent (by age 25), so the upper bound for a working class neighborhood was set at slightly less than the national average. For many of the counties, the 30 to 35 percent interval was also the point at which the neighborhood poverty rate dropped more dramatically than in any other five percentage point interval. A lower bound was set because below a 10 percent college attainment rate corresponded to high poverty rates on average. For many of the counties, a population of

10-15 percent college graduates was the first five point interval at which the median neighborhood was no longer in concentrated poverty. For public policy purposes, concentrated poverty is defined as an area with a greater than 20 percent poverty rate (Kingsley & Pettit, 2003). Counties that do not fall as neatly into the upper and lower education cutoffs are likely to capture more poverty neighborhoods than less.[3] To better target traditional entrepreneurs in desirable self-employment situations and neighborhoods, I also exclude very poor neighborhoods, despite their education levels. This also helps exclude gentrifying neighborhoods and potential artist clusters. Extreme poverty is defined as an area with a greater than 40 percent poverty rate (Kingsley & Pettit, 2003). However, the economic downturn has meant more neighborhoods fit the definition of concentrated poverty (Kneebone, Nadeau, & Berube, 2011). Therefore (somewhat arbitrarily) I exclude neighborhoods with poverty rates greater than 30 percent.

From this population of neighborhoods, I exclude ethnic enclaves because immigrant clusters are known for their entrepreneurialism (Fairchild, 2010). There is no accepted statistical definition of an ethnic enclave. In fact, every study I reviewed used a relative measure. I have defined ethnic enclaves as neighborhoods with more than 20 percent of the population foreign born, which is much higher than the national average of 13 percent foreign born and is used to define other types of residential 'concentration,' as discussed above. Immigration rates vary substantially by county and so this process had little effect in some of the regions and major effects in others, eliminating many neighborhoods in New York and Los Angeles Identifying working class neighborhoods

[3] I do not use high school education rates to define working class because I found that most of the variance in the 12 counties is explained by the negative correlation between high school graduate rate and rate of foreign-born.

at the outset is important to help exclude college educated entrepreneurs. Further, non-working class neighborhoods may inflate cluster estimates because college educated workers are more likely to be entrepreneurs, and neighborhoods are stratified by socio-economic factors so a high rate of entrepreneurship in a neighborhood could simply represent a large number of college educated residents living there (Kneebone et al., 2011).

Table 3-4. Sample Demographics

	Average			Working class neighborhoods	
County seat	B.A./ graduate degree rate	Poverty rate	Foreign born rate	Number	Percent
Scranton, Pennsylvania	22	15	4	38	66
Flint, Michigan	17	20	2	71	55
Abilene, Texas	20	19	4	18	51
Sarasota, Florida	29	10	11	42	51
Dayton, Ohio	22	18	3	70	48
Spokane, Washington	26	15	5	46	43
Cincinnati, Ohio	30	18	4	79	35
Phoenix, Arizona	27	15	17	178	27
Raleigh, North Carolina	46	12	12	14	13
Denver, Colorado	40	18	15	14	10
Los Angeles, California	27	16	35	120	6
Brooklyn, New York	28	20	36	27	4
County average	28	16	12	60	34

Source: U.S. Census Bureau, 2005-2009 American Community Survey

The results of identifying working class neighborhoods are shown in Table 3-4. In total, the dataset includes 4,491 census tracts with non-zero employment, 717 of which are working class according to my definition. Within the 717 tracts are 1.5 million employed workers. Consistent with my inclusion criteria, t-tests reveal that working class neighborhoods have lower average rates of college attainment (nine percentage points),

poverty (six percentage points) and foreign born status (22 percentage points). The differences were statistically significant at the .05 level. Additionally, labor market statistics such as labor force participation and unemployment are negligibly different (less than a percentage point or non-significant). Self-employment is three percentage points lower in working class neighborhoods on average and is statistically significant. This is not unexpected because although traditional entrepreneurs make up a large percentage of the self-employed population, those without a college degree have a lower rate of self-employment (not rate of entry) than those with a college degree. Still, an important caveat to the apparent difference in rates of self-employment in working and non-working class neighborhoods is that it is within the margin of error of the underlying survey data. Using calculations by the American Community Survey of the margin of error on reported self-employment (unincorporated only) at the neighborhood level, I found the neighborhood average is four percent in my sample counties, with a high of six percent in Brooklyn. As the number of neighborhoods included approaches the full county, those errors decrease to a one percentage point error or less, but for counties with few working class neighborhoods, the average neighborhood self-employment rate suffers from imprecision.

Measure of concentration. Clustering within working class neighborhoods is measured with the locational Gini coefficient, similar to that constructed by Gabe & Abel (2011) and others. A locational Gini coefficient measures the extent to which self-employed people are equally likely to live in any working class neighborhood (adjusted for the total number of employed people in that neighborhood) or whether they cluster in

certain neighborhoods. It is calculated for each county *k's* working class neighborhoods, as follows:

$$Gini_k = \frac{\Delta}{4u}$$

where,

$$\Delta = \left\{\frac{1}{[n(n-1)]}\right\} \sum_{j=1}^{n} \sum_{i=1}^{n} |x_i - x_j|$$

i,j = working class neighborhoods[4] ($i \neq j$)

u = mean of x_i

$x_{i(j)}$ = neighborhood *i*'s (*j*'s) share of self-employment / neighborhood *i*'s (*j*'s) share of total employment

n = number of working class neighborhoods

The calculation results in values between 0 and .5 depending on whether the county's aggregate entrepreneur rate is evenly represented in each neighborhood (0) or perfectly concentrated in one neighborhood (.5). The Gini coefficient is most common statistic to measure employment concentration (rather than industry/firm concentration) (Beaudry & Schiffauerova, 2009). The two major criticisms of the Gini are that it does not account for random variation in spatial patterns and it is sensitive to the number of (in my study) self-employed workers (Kim, Barkley, & Henry, 2000). The former is less of a concern in my application because it refers to the fact that certain industries are likely to operate in large scale, so some degree of employment concentration is related to differences in average plant size rather than agglomeration forces. The latter issue is a potential limitation in my study. Kim and co-authors identify a threshold at which the

[4] The notation for a neighborhood is both i and j because it must represent the average absolute deviation about a fixed X_i for all other X's, noted by X_j.

Gini coefficient will be biased (upwards). Bias occurs when (in my study) the number of self-employed people is smaller than the number of neighborhoods. This is never the case, as the number of self-employed is always in the thousands. However, sensitivity to sample size may be an issue when the number of self-employed people and neighborhoods are small. Bertinelli & Decrop (2005) showed that when comparing Gini coefficients over two time periods, regions that started with few plants showed large changes in their coefficients due to the entry or exit of just one plant. The problem of small sample bias also holds true for other popular measures of concentration, such as the Herfindahl-Hirschman Index and Ellison and Glaeser's 1997 index.

The next section presents the findings of the statistical analysis. I find that the level of clustering is very similar among the 12 sample counties. While the concentration of self-employed workers in neighborhoods is not high, traditional entrepreneurs are not equally spread across working class neighborhood, and this finding implies some degree of clustering. A multilevel model of the association between regions, neighborhood socioeconomic characteristics and neighborhood self-employment reveals little about why rates of entrepreneurship vary by neighborhood. Site visits and interviews with entrepreneurs will be used to investigate whether neighborhood social networks and potential agglomeration mechanisms explain the differences.

Findings from Statistical Analysis

First, I present the locational Gini coefficients for the major employment groups, regardless of region (see Table 3-5). As expected, wage and salary workers in for-profit firms are almost (.037) uniformly divided across neighborhoods. Entrepreneurs who have formally incorporated their business (suggesting they have paid employees) are the most

highly clustered worker type, with a coefficient of .245. This means their spatial distribution is at the halfway mark between being equally spread across all neighborhoods and concentrated entirely in one neighborhood. Minor clustering also occurs among the unincorporated self-employed, at a level similar to government and nonprofit workers and the unemployed. Comparing Gini coefficients to one another as I have done, has become the conventional method for interpreting when clustering above zero is particularly noteworthy (Bertinelli & Decrop, 2005; Ellison & Glaeser, 1997). Another useful comparison is between worker types and occupations. For example, the coefficient of for-profit worker clustering is similar to Gabe & Abel's (2011) lowest coefficient in regional occupation clustering, which is secretaries (.037 compared to .052)[5]; self-employment clustering (.162) is comparable to engineer (.189) and scientist (.154) clustering; and the most concentrated occupation was shoe machine operators at .490, nearly twice the most concentrated worker type at the neighborhood level.

Table 3-5. Neighborhood Clustering by Type of Worker in All Study Counties

Type of worker	Workers (in 000s)	Percent of total workforce	Locational Gini coefficient
For-profit	1,086	65.0	0.037
Government	225	13.5	0.126
Nonprofit	106	6.4	0.144
Self-employed	88	5.3	0.162
Self-employed (inc.)	42	2.5	0.245
Unemployed	122	7.3	0.141
Total	1,670	100.0	NA

Source: Author's calculations; U.S. Census Bureau, 2005-2009 American Community Survey
Note: 717 neighborhoods in 12 counties

[5] Research using a different index of concentration found that the average level of concentration at the district level compared to the township level was .04 and .02, respectively, and concluded that smaller geographies are likely to reveal more spatial concentration, all else equal (Bertinelli & Decrop, 2005).

An improvement on the descriptive statistics I report is to use significance tests of the locational Gini coefficient to determine how slight changes in the underlying data effect it or whether differences in the coefficients (such as between self-employment and nonprofits) are statistically significant. Currently, there is no one test for any of the spatial concentration indices, and the variance calculation needed to test the hypotheses that the coefficients are statistically different is fairly complicated according to statisticians and economists working on the problem, and not yet a standard practice in concentration analyses (Bertinelli & Decrop, 2005; Davidson, 2009; Ellison & Glaeser, 1997; Giles, 2004). Faster computational methods based on Ordinary Least Squares exist, but their accuracy and robustness have been called into question in many papers (see Davidson, 2009 for review) and they have not yet been applied to the *locational* Gini. Future research on neighborhood self-employment should monitor the progress on statistical analyses of concentration measures. As for the current project, I follow the precedence set by (Gabe & Abel, 2010, 2011) who draw conclusions from metropolitan level Gini coefficients despite no significance tests and small variation among their coefficients (a standard deviation of .1 around a mean Gini coefficient of .2 in the industries they study). In addition, after reporting the findings, I conduct other comparison tests to determine the reliable of the coefficients.

Note that the aggregate self-employment Gini coefficients could be heavily weighted by counties with many census tracts and workers. To look more closely at neighborhood self-employment clustering, I turn to the regional analysis of Gini scores. In these tables, I combine incorporated and unincorporated self-employment except where noted. Table 3-6 shows that all but one coefficient falls between .11 and .16, which

demonstrates a very minor degree of clustering. Brooklyn is an outlier with a coefficient of .24, but it is also the region with the fewest self-employed persons so the score may be rather unstable. Although the primary purpose of this research is to investigate the scope of potential agglomeration economies, according to the theory these figures would be more meaningful if they demonstrated a relationship to economic growth on some level. I use the word relationship purposely because the self-reinforcing cycle of agglomeration-related growth makes it nearly impossible to identify causality. Therefore, at this stage I merely seek to demonstrate relationships or patterns. In the remainder of this analysis, I investigate such patterns. I also take an initial look at other potential explanations for clustering that could rule out agglomeration theory.

Table 3-6. Neighborhood Clustering and Regional Population Growth

County seat	Working class neighborhoods	Self-employed workers	Locational Gini coefficient
Ascending			
Raleigh, North Carolina	14	3,650	0.13
Phoenix, Arizona	178	46,756	0.12
Denver, Colorado	14	1,911	0.13
Maintaining			
Sarasota, Florida	42	12,297	0.11
Spokane, Washington	46	8,031	0.14
Cincinnati, Ohio	79	10,375	0.15
Los Angeles, California	120	22,104	0.15
Brooklyn, New York	27	1,583	0.24
Stagnant or declining			
Abilene, Texas	18	2,373	0.15
Flint, Michigan	71	8,646	0.12
Dayton, Ohio	70	7,776	0.16
Scranton, Pennsylvania	38	5,176	0.13
Total	717	130,678	NA

Source: Author's calculations; U.S. Census Bureau, 2005-2009 American Community Survey

In Table 3-6, I sort the coefficients (at the two digit level to facilitate pattern recognition) by the rate of population growth in the regions. While population is a gross measure of economic growth, it has been unambiguously related to the rate of new firm formation (Acs & Armington, 2006; Reynolds, Storey, & Westhead, 1994). I find no evident pattern of entrepreneur clustering in working class neighborhoods and the region's overall growth. Indeed, given these data, it is easier to claim that high growth conditions reduce clustering, rather than clusters facilitating growth! For instance, we might hypothesize that the similarly low coefficients among the ascending areas are the result of neighborhoods that have too much churning for neighborhood networks to develop (although the correspondence between clustering and the remaining region types calls this hypothesis into question).

A more direct relationship may be found between the degree of clustering and the regional self-employment rate. Agglomeration theory predicts that more clustered regions offer a better atmosphere to spawn entrepreneurs (and conversely, more entrepreneurs increase the benefits of clustering). Thus higher neighborhood cluster scores should correspond to higher self-employment rates. An even more direct connection would be higher entrepreneurship rates within working class neighborhoods. After all, working class neighborhoods are just a portion of all neighborhoods. Table 3-7 ranks the regions by their locational Gini coefficient. Consequently, the self-employment rates should generally fall in descending order. Neither the region nor neighborhood self-employment rate shows a clear relationship to the cluster score. In fact the least clustered region, Sarasota, has the highest rate of entrepreneurship in working class neighborhoods and neighborhoods overall.

Table 3-7. Neighborhood Clustering and Self-employment Rates at the Regional and Neighborhood Level

		Self-employment rate	
County seat	Locational Gini coefficient	All neighborhoods	Working Class neighborhoods
Brooklyn, New York	0.242	8.7	5.2
Dayton, Ohio	0.156	6.9	6.0
Los Angeles, California	0.154	12.9	9.2
Abilene, Texas	0.148	9.5	8.7
Cincinnati, Ohio	0.146	8.0	6.5
Spokane, Washington	0.138	10.2	9.1
Raleigh, North Carolina	0.133	9.2	8.0
Scranton, Pennsylvania	0.129	8.3	7.8
Denver, Colorado	0.125	10.8	8.1
Flint, Michigan	0.124	8.4	8.2
Phoenix, Arizona	0.123	9.9	8.5
Sarasota, Florida	0.111	17.6	14.9
Average	0.144	10.0	8.4

Source: Author's calculations; U.S. Census Bureau, 2005-2009 American Community Survey
Note: Includes 717 neighborhoods and 131,000 workers

The preceding analysis reveals no evidence of neighborhood agglomeration in a cross-sectional snapshot. The most precise test of the theory may be to reveal a relationship between neighborhood cluster *growth* and cluster score. If clustering is caused by agglomeration, regions with higher Gini scores should be associated with greater increases in neighborhood entrepreneurship. These data cannot capture the dynamic measure of firm births used in many studies, but linking 2007* working class neighborhoods to 2000 and 1990 data allows a basic measure of self-employment change.[6] In this analysis, self-employment statistics are limited to unincorporated firms due to constraints in the 1990 Census. Table 3-8 shows the results. The second and third

[6] The * symbol is used to indicate that the 2007 data file includes data from 2005-2009. See the methods section for more explanation.

columns show changes in the self-employment rate over the preceding period (2000). Self-employment was about equally likely to grow as to decline in each region. That is, about 50 percent of neighborhoods in each region saw their entrepreneurship grow. More to the point, the variation that does exist does not correspond to the Gini score. This conclusion also holds when change is measured by degree: clustered regions do not see larger increases (and smaller decreases) in their neighborhood entrepreneurship rate on average. The far right columns, show the same analysis, but this time I draw on an earlier reference period to simulate a lag between entrepreneurship growth in the 2000s and the cluster score determined in 2007*.

Table 3-8. Neighborhood Clustering and Self-employment Growth in Working Class Neighborhoods

		Change in self-employment rate (unincorp.)			
	2007*	2007* - 2000		2000 – 1990	
County seat	Locational Gini coefficient	Percent of neighbor-hoods that grew	Percentage point (avg.) growth/ decline	Percent of neighbor-hoods that grew	Percentage point (avg.) growth/ decline
Brooklyn, NY	0.242	25.9	-0.59	55.6	0.73
Dayton, OH	0.156	50.0	0.02	40.0	-0.40
Los Angeles, CA	0.154	51.7	0.56	50.8	0.01
Abilene, TX	0.148	50.0	0.34	27.8	-2.01
Cincinnati, OH	0.146	48.1	-0.32	53.2	0.20
Spokane, WA	0.138	50.0	-0.05	26.1	-1.26
Raleigh, NC	0.133	57.1	0.88	35.7	-1.05
Scranton, PA	0.129	47.4	-0.20	44.7	-0.27
Denver, CO	0.125	64.3	1.08	50.0	-3.40
Flint, MI	0.124	47.9	0.18	42.3	-0.11
Phoenix, AZ	0.123	44.9	-0.15	37.6	-1.02
Sarasota, FL	0.111	35.7	-1.00	52.4	-0.03
Average	0.144	47.8	0.06	43.0	-0.72

Source: Author's calculations; U.S. Census Bureau, 2005-2009 American Community Survey; 2000 Decennial Census and 1990 Decennial Census

Note: All calculations are based on the 717 neighborhoods identified as working class in 2007*

It is important to remember that these data are far from definitive on the relationship between neighborhood clustering and neighborhood change. Several factors that are unrelated to cluster growth effect change in neighborhood self-employment. For example, an increase in unemployment among former wage workers, all else equal, would artificially increase the self-employment rate because the total neighborhood population employed (the denominator) would decrease. Residential mobility is another factor that could effect self-employment rates and erroneously suggest cluster growth. Change analysis also introduces problems with small sample sizes. Regions with few working class neighborhoods (Brooklyn, Raleigh, Abilene and Denver all have fewer than 30) are more effected by change in just one or two neighborhoods. For instance, if just two neighborhoods in Denver had shrunk rather than grown their entrepreneurship rate since 2000, it would not be the outlier (64.3 percent positive growth) in the lineup that it is. In fact, for the columns showing change since 2000, the values become more sequential when the four small regions are removed. I investigate this issue of size and stability towards the end of the quantitative analysis.

Other explanations of clustering. No pattern of neighborhood clustering is evident at the neighborhood or regional level according to these economic indicators. The results suggest two potential conclusions about agglomeration theory. Either extending the theory to the neighborhood level does not have the predicted effect of better growth outcomes, or the variation in Gini coefficients is not caused by agglomeration sources. I investigate the former in Chapter 4 where I posit a relationship between entrepreneurs and local area resilience rather than growth. As for the latter, several conventional

explanations for entrepreneurship variation could be at work. Perhaps the coefficients are somewhat an artifact of how neighborhoods operate in these regions more generally. For example, Fairchild (2008) found that neighborhood segregation stifles entrepreneurship among African Americans. There is no broad measure of neighborhood sorting, but the dissimilarity index is one indicator of neighborhood culture in regions. Frey (2012) reports the dissimilarity index for the largest 100 metropolitan areas. The index scores the regions by their level of black-white neighborhood integration. These scores are available for eight of my 12 regions, and they do indicate a relationship to the locational Gini coefficients. Brooklyn has the highest dissimilarity score and highest Gini of the eight. Cincinnati, Dayton and Los Angeles have the next highest scores and though their Gini coefficients do not follow that order, the three have some of the largest coefficients.

A more natural degree of sorting that occurs in cities could also explain the level of clustering seen. Glaeser, Kerr, & Ponzetto (2010) call this a difference in the 'supply' of entrepreneurs because certain demographics are associated with a higher likelihood of self-employment. For example, as Glaeser and co-authors note, entrepreneurship is more prevalent among older people. Thus retirement type communities in regions like Florida with a higher average age could account for more clustering. To determine whether there is a correlation between clusters and demographic characteristics, I run a simple ordinary least squares model. The model (see Table 3-9) determines the impact of neighborhood poverty, college education, immigrants and race (white residents) on the rate of self-employment. It also controls for the percentage of residents 16 years or older who are not in the labor market, which includes stay-at-home parents and the unemployed who are no longer looking for work, but helps account for retirement communities and the effect of

age on self-employment. All five of these factors are known to be positively associated with self-employment, as discussed in the literature review. Lastly, I control for the percent unemployed and include region as a fixed effect to account for repeated measures on neighborhoods. Note that this model does not predict the locational Gini coefficient nor does it identify a neighborhood cluster versus non-cluster. Rather, it is a first step in ruling out demographic factors that could explain why neighborhood self-employment varies.

Table 3-9. OLS Model Predicting Neighborhood Self-employment Rate

Independent variables	Coefficient	Standard error	P-value
Percent in poverty	-0.005	0.030	0.863
Percent with college degree	0.059	0.033	0.069
Percent foreign born	-0.021	0.049	0.665
Percent non-Hispanic white	0.049	0.009	<.0001
Controls			
Percent unemployed	0.010	0.049	0.836
Percent not in the labor market	0.031	0.015	0.047
Fixed effects			
Region (12)			

Source: Author's calculations
Note: 717 neighborhoods

The results of the model indicate that demographic characteristics do little to explain variation in neighborhood self-employment. At the .05 level, the percentage of residents in poverty, college-educated, and foreign born are all statistically insignificant. The percentage of white (non-Hispanic) residents is statistically significant, but no predictor variable affects the self-employment rate by even a tenth of a percent. The employment control variables and region variables show a statistically significant relationship to self-employment accordingly. Taken together, the model explains a mere quarter of the variation in self-employment rates, with an adjusted R-squared of .26. This

basic model shows that neighborhood self-employment rates are not simply a byproduct of demographic composition, which suggests that agglomeration theory is still a candidate to explain the minor differences in level of entrepreneur clustering. However, it also suggests that neighborhood clustering does not have the predicted effect of better economic outcomes.

Robustness tests. To make inferences between neighborhood clustering and regional conditions, one would hope that the order of Gini scores in the regions (if not the actual score) is robust to data specifications. In the last part of this analysis, I conduct two tests to better understand the reliability of the locational Gini coefficient. The first test is to compare clustering in working class neighborhoods to clustering across all neighborhoods. We would expect the locational Gini coefficients to increase, but the ordering of regional scores to remain similar. They should increase because they now potentially include ethnic enclaves and better-educated neighborhoods where entrepreneurs may naturally cluster due to higher rates of self-employment among this group. In calculating the locational Gini for all neighborhoods (not shown), I found that the study regions show more clustering than working class neighborhoods alone, with the exception of Brooklyn. Brooklyn, an outlier to begin with, is less concentrated (.18) and comparable to the other regions. For the most part, the regions saw their coefficients increase by about .02. However, the ordering of regions changes significantly, indicating uncertainty in the underlying phenomenon that the Gini measures in this circumstance.

Comparing clustering among different types of neighborhoods is an imperfect way to test the reliability of the Gini scores because changes in the rank order could reveal something distinct about certain regions' neighborhood compositions and

traditional entrepreneurship. For example, Dayton might offer a great neighborhood environment for traditional entrepreneurs but not high skill entrepreneurs, while Phoenix neighborhoods are positive environments for high skill entrepreneurs but not traditional ones. It is interesting to note that changes in the order occur mostly due to scores in fast growing Sunbelt regions. Raleigh shows almost no change in its clustering score, indicating no difference in entrepreneur clustering in working and non-working class neighborhoods. Phoenix, on the other hand, shows the largest change in clustering, rising from .12 in the initial analysis to .17 across all neighborhoods. This suggests that the variation in region's working class and non-working class clustering is systematic, but a product of neighborhood compositional changes and not evidence of something inherent about neighborhood 'cultures' in regions.

A second test helps address the problem of churning regions more directly. This is by comparing the Gini coefficients for working class neighborhoods to their 2000 benchmark. Determining 2000 Gini coefficients has the potential to reduce measurement error in two ways. Every ten years the census tract boundaries are redrawn (if necessary) to better reflect 'neighborhoods' in terms of population size. Therefore the 2000 figures may be more precise than 2007* for fast changing regions. Furthermore, the 2007* figures represent data collected between 2005 and 2009, years with very different economic conditions. This is likely to disproportionately effect fast growing regions because their housing markets were more volatile. If fast growing regions create unique problems for the reliability of Gini coefficients due to rapid changes in who lives in which neighborhoods, it would be indicated by stable Gini coefficients in maintaining and stagnant regions and unstable ones in ascent regions.

Table 3-10. Neighborhood Clustering Over Time

	Locational Gini Coefficient		
County seat	2000	2007*	Difference
Ascending			
Raleigh, North Carolina	0.082	0.133	-0.05
Phoenix, Arizona	0.129	0.123	0.01
Denver, Colorado	0.151	0.125	0.03
Maintaining			
Sarasota, Florida	0.121	0.111	0.01
Spokane, Washington	0.120	0.138	-0.02
Cincinnati, Ohio	0.121	0.146	-0.03
Los Angeles, California	0.141	0.154	-0.01
Brooklyn, New York	0.136	0.242	-0.11
Stagnant or declining			
Abilene, Texas	0.130	0.148	-0.02
Flint, Michigan	0.117	0.124	-0.01
Dayton, Ohio	0.137	0.156	-0.02
Scranton, Pennsylvania	0.122	0.129	-0.01

Sources: Author's calculations; U.S. Census Bureau, 2005-2009 American Community Survey; 2000 Decennial Census
Note: Includes 717 neighborhoods identified as working class in 2007*. The total self-employed workers increased from 109,000 in 2000 to 131,000 in 2007*.

Matching the 2007* working class neighborhood IDs to 2000 data, I report the results in Table 3-10. They reveal less clustering (slightly lower coefficients) in 2000, almost across the board. Ascendant Phoenix and Denver do buck this trend and show slightly more clustering in 2000, as does another somewhat fast growing region, Sarasota. Moreover, the fast growing Raleigh region shows one of the largest differences between 2007* and 2000, but it is in the opposite direction than expected. Thus, Table 3-10 generally supports the notion that the 2007* Gini coefficients are less reliable in fast growing regions.[7] The 2010 Decennial Census will provide an excellent opportunity to

[7] The biggest difference between 2000 and 2007* scores are in Raleigh and Brooklyn. Although previous research could suggest that this is due to their relatively small number of neighborhoods (Bertinelli &

rule out measurement error as a source of change and determine theoretically-driven explanations of regional variation in clustering and cluster change over time. The present robustness analysis indicates that county level Gini coefficients are too unstable to draw valid conclusions about their relationship to regional outcomes.

In summary, the quantitative analysis lends little support to the first hypothesis that neighborhood clustering occurs among traditional entrepreneurs. At the same time, quantitative information does not allow us to consider factors like the entrepreneur's industry or whether it is a home-based operation. Perhaps one-man home improvement workers are highly networked with other tradesman for project-based work, but the salon owner has no routine collaborators for learning or sharing. The quantitative analysis also required a rough approximation of a neighborhood. Business-related social networks may be more neighborhood-based in smaller census tracts. Conversely, social networks may be less neighborhood-based in regions that are heavily car dependent. In the next section, I revisit the hypothesis that traditional entrepreneurs cluster in neighborhoods with qualitative evidence. I also investigate the second hypothesis about potential sources of agglomeration and clustering.

Qualitative Methods and Analytic Tactics

Recall from Chapter 2 that this research uses the extended case method (Burawoy, 2009). The overall approach and purpose in the present chapter is to take insights from cluster theory and extend them to traditional entrepreneurship at the neighborhood level. In part one, I used quantitative methods to demonstrate a very minor degree of neighborhood level clustering, though regional variation lends little support to the fact

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Decrop, 2005), other places with comparably few neighborhoods (i.e. Abilene and Denver) do not exhibit wild swings in their Gini score.

that clustering is due to agglomeration. Part two of the analysis uses interviews with traditional entrepreneurs to determine whether and how agglomeration and spinoff theories might produce neighborhood clustering. Specifically, I collect information about the social networks of traditional entrepreneurs in cluster and non-cluster neighborhoods. The cluster neighborhoods are from two regions, Dayton, Ohio and Raleigh, North Carolina. Two regions, an ascendant and stagnant one, were necessary for the second research question on resilience and the relevant data are used in this analysis. However, the non-cluster neighborhoods are from Dayton only to allow some neighborhood comparisons without confounding them with regional differences (see Table 3-11).

Neighborhood selection. From the analysis in part one, I used the U.S. Census Bureau data to identify working class neighborhoods, meaning that they had a below average rate of college graduates for the country, but also fell above the 'high poverty' thresholds used to target federal funding to depressed areas (see part one for exact definition of sample neighborhoods). From the 70 working class neighborhoods in Dayton and the 14 in Raleigh, I selected two cluster neighborhoods in each region. A cluster neighborhood was one with an above average self-employment or self-employment growth rate between 1990 and 2007*. Averages were calculated by region. Two non-cluster neighborhoods were also selected to offer a point of comparison and aid in drawing causal inferences about the relationship between social networks and self-employment rates. A non-cluster neighborhood was one with a below average self-employment or self-employment growth rate between 1990 and 2007*. The non-cluster comparisons are limited to Dayton to simplify confounding regional influences and reduce data collection time. In selecting the six neighborhoods, I avoided neighborhoods

on the extreme ends of the poverty and education distribution, though Table 3-11 shows that the non-cluster neighborhoods have fewer people in poverty on average. Given differences in local tax and incentive structures, another criterion was to select a neighborhood in the city limits and one in the inner-ring suburbs for each of the three site types shown in the table.

A small handful of neighborhoods fit the above requirements. When I arrived in the regions, it became clear that the administrative boundaries of a Census Tract were often not distinct enough to reasonably believe that residents would perceive any difference. Therefore a final criterion of selection was that the clusters and non-clusters had a more visible boundary like a major thoroughfare, and/or were neighbored by tracts with dissimilar self-employment rates. These steps helped to ensure that the biggest demographic difference between the neighborhoods is the self-employment rate.

Table 3-11. 2007* Average Site Characteristics

		Region	
Number of sites		Dayton	Raleigh
Neighborhood type	Cluster	2	2
	Non-cluster	2	

		Region	
Self-employment rate		Dayton	Raleigh
Neighborhood type	Cluster	9.1	10.1
	Non-cluster	2.3	

College education rate		Region: Dayton	Region: Raleigh
Neighborhood type	Cluster	14.5	16.0
	Non-cluster	18.5	

Poverty rate		Region: Dayton	Region: Raleigh
Neighborhood type	Cluster	19.5	16.5
	Non-cluster	9.0	

Source: U.S. Census Bureau, 2005-2009 American Community Survey

Interviewee selection. I conducted over a dozen site visits to the neighborhoods between March and August of 2012. I walked into establishments of low-barrier industries to meet the founder/owner and solicit an interview. Accessing traditional entrepreneurs with no physical establishment was naturally much more difficult. I called the numbers on business cards left in the area for subcontractors and other services and I called the phone numbers on work trucks parked in the driveways of the neighborhood after business hours. I investigated between 22 and 46 businesses in each of the six neighborhoods. Some were determined to be non-local. Others did not return my call or email. Very few potential candidates refused to participate once I introduced the study, with the most common reason being that they were too busy.

In the end, I conducted 27 interviews that averaged an hour in length (see Appendix 2 for list of interviewees). There is no way to determine the extent to which the sample represents the self-employed population in these neighborhoods because demographics of entrepreneurs are not available at the neighborhood level. I sought

representation from many demographic sectors, such as race, gender, immigrant status and age, and from a variety of industries (see Table 3-12 for sample characteristics), and the results are reasonable. For example, the neighborhoods are likely about 50 percent female, but females are significantly under-represented in the entrepreneur population so it is not unreasonable that about 20 percent of my sample is female. Though I only encountered a few business owners with a college degree who lived or worked in the neighborhood, as expected given the neighborhood selection criteria, I did not exclude them because I was interested in their relationship to a predominately non-college educated area. Despite my efforts, it was difficult to access home-based traditional entrepreneurs and they are likely under-represented in all three site types of my sample. Home-based businesses are thought to be about half of all male entrepreneurship, while about one-third of my sample in each neighborhood type is home-based.

Table 3-12. Demographic and Firm Characteristics

Entrepreneur	
Age (average)	47
Female	19%
Foreign-born	15%
Non-white	37%
College degree	19%
Firm	
Business start (average)	1996
Has full-time employee(s)	30%
Home-based business	33%
Industry	
Lawn/cleaning service (commercial and residential)	15%
Salon/Barber	15%
Auto service	11%
Food or alcohol sales	11%
Martial arts	7%
Remodeling	7%
Other	33%

Interview length (average)	61 min

The study design of the full dissertation means that two-thirds of the sample is from the Dayton area and one-third is from Raleigh. Firm characteristics are relatively similar between the neighborhoods. For example, the average start year of firms in the Dayton cluster was 1994 and 1995 in the Raleigh clusters, but it was 1998 in the Dayton non-cluster. There is some demographic variation between the three site types in the study (i.e. Dayton cluster, Dayton non-cluster and Raleigh cluster), most notably with a high proportion of African-Americans in Raleigh. Where a finding on behavior differences may be an artifact of the sample demographic characteristics, it is noted in the finding.

In the report, pseudonyms are used to protect the confidentiality of the entrepreneur. The interviews were semi-structured and revolved around two themes: what people and organizations have been important to your entrepreneurship and how has your entrepreneurship changed over the years (see Appendix 4 for interview protocol). Most interviews were conducted in-person, but a few were over the phone after I had met the entrepreneur. I recorded the interviews using an iPhone and transcribed them in full. Analysis was completed with the online, mixed methods software package, Dedoose.com. I coded the interviews for specific information, such as the source of important social networks, which I could then cross-referenced with the entrepreneur's location to determine if there were marked differences between the neighborhoods and regions.

Findings from the Interviews

1. **Inter-industry learning and sharing are the most common potential sources of clustering among traditional entrepreneurs.**

About two-thirds of the Dayton and Raleigh interviewees offered one or more examples of social networks that demonstrate a potential source of agglomeration (see Table 3-13). Important business networks were more often in related industries than within the same industry. This is consistent with findings from regional analyses of the service sector. Earlier agglomeration studies also suggest that at smaller geographies, both urbanization and localization economies (inter and intra-industry relationships, respectively) are evident. And in these data too we find several (nine) instances of intra-industry networks, in addition to the 13 examples of inter-industry networks. Learning mechanisms were the most common source of clustering mentioned. Recall that learning mechanisms take three interpretations: idea generation, skills transfer and a more social, information diffusion process (see Table 3-1. Sources of Agglomeration Economies). Interviewees discussed all three. A classic example of inter-industry learning is the local lawn equipment store owner who invested in a uniquely knowledgeable management staff, a characteristic that has allowed them to compete with Home Depot and Lowes. This investment has been passed on to the benefit of hundreds of local lawn care entrepreneurs who are now paired with the most reliable, cost-effective equipment, according to George and Kenneth, the owner and a lawn service customer, respectively.

Table 3-13. Number of Dayton and Raleigh Interviewees that Discussed a Type of Clustering (N=27)

Cluster type	Result
Agglomeration	18 of 27 interviewees (67%) offered at least one example of being part of a learning or sharing spillover

Inter-industry	13 of 18 interviewees offered at least one example where the spillover was between related or unrelated industries
Intra-industry	9 of 18 interviewees offered at least one example where the spillover was within the same industry
Spinoff	11 of 27 interviewees (41%) offered at least one example of generating or being the product of another venture

The more counter-intuitive learning examples involve intra-industry relationships because they require collaboration with competitors. For instance, Ed and Vincent have relationships with other local mechanics and pass their knowledge on to help these competitors solve their car troubles. Sam had a local pastor ask for his advice on starting a convenience store and not only did Sam offer advice, he worked with his suppliers to make sure the pastor got the same deals he negotiated for his own store. When I asked why these entrepreneurs were willing to help competitors, they often simply cited confidence in their own abilities or the right to an open playing field in the free market.

Twenty-two percent of interviewees also discussed a strong customer loyalty in traditional trades and services, which may explain why networking with competitors was not as much of a threat as economic theory would predict. Kenneth describes both sentiments in the lawn care industry:

Jen: Do you have any problem giving [others in your industry] advice?

Kenneth: No I don't. Because I want to see them do as good, as well, as I have done. And in that way, you're doing something for yourself. And you'll have your own.

On working with competitors:

Kenneth: …That means that if I've called one of the guys in and said look, this is something that, both of us might be interested in working together on this project. And I

go over and introduce them to the, you know, customer or future customer. Then I may get a call and they say, well such and such came back over asking me about the job, that he can do it for this amount or that amount. Kind of like undercutting basically. But they didn't get far. Because once you've built up a relationship with a customer, or say by your character or appearance, nine times out of ten it doesn't work when they try to do that. Phil's customer loyalty pushed him into hiring mechanics so he could be the face of the business.

Jen: How do you think you became so popular?

Phil: I got word of mouth and advertising. But my thing is, if somebody calls and I don't answer the phone, they'll call back. They won't talk to anybody else. So it got to the point that I couldn't work on cars and try to talk on the phone so that's when I gave up working on cars.

Loyalty and reputation demonstrate another potential agglomeration source: sharing. Reputation has been studied as a learning spillover between current and future transactions with a customer (Mayer, 2006) and as a resource passed down from a parent company (Dahl & Sorenson, 2012). But viewing reputation as a sharing mechanism makes it a candidate for clustering. Sharing reduces costs because one investment is spread over more entrepreneurs, rather than learning from one another where some individually-acquired knowledge/skills spill over in a positive externality to others. The typical examples in regional analyses are firms sharing (or supporting) the cost of intermediate suppliers such as accountants and even janitorial services by locating in a city center.

The present analyses revealed two unusual and important avenues for these cost reductions in traditional entrepreneurship. They are sharing a positive reputation and sharing work under one physical or contractual structure. Often these occur together. Entrepreneurs were emphatic that their success was dependent on their reputation passed on through word of mouth advertising about their quality and honesty. According to interviewees, a good reputation is built over time and once acquired, the entrepreneur is very protective of it and acts as a gatekeeper for customers. As a result, the referral of another successful and well-respected entrepreneur can be invaluable, particularly when starting out, but also in growing a reputation collectively.

The importance of sharing reputation was indicated time and again in interviews. Kenneth works with others in lawn service and also in related trades like stump removal; Derrick and Simon work with other construction workers in home remodeling and also electricians and bricklayers; Ellie linked up with another residential cleaner as she got too old to complete the largest houses herself; William's photography business refers a handful of wedding DJs and they refer his photography services. In each case, the entrepreneurs either cross promoted the service of trusted individuals or pulled together a project-based team of skilled and honest workers. The entrepreneur guaranteeing a service then, assumes a large share of the reputation risk, even if one team member fails to come through.

It was somewhat surprising to hear given their status as low barrier industries, but finding skilled and quality workers is a problem in traditional trades (discussed by nine interviewees), as it is in high skilled work. Derrick and Simon, for example, worry about the number of subcontractors on the market who make significant structural mistakes,

while Greg avoids hiring people who worked for a corporate employer in his industry because their standards for quality cleaning are far below Greg's own standards. Reputation is a critical resource for entrepreneurs, both in identifying collaborators and in gaining or maintaining customers.

Traditional entrepreneurs share more than their reputation with other entrepreneurs. Gwen shares her venue for those on consignment with her military paraphernalia store. Two or three interviewees brought up the economic benefits of these consignment arrangements and they reveal an interesting collaboration between home-based producers and traditional entrepreneurs with an establishment. Sharing a formal contract is another more tangible type of sharing. A successful entrepreneur can end up with more work than he/she can complete, and the customer or contract must be passed to a trusted colleague. For instance, Simon has been able to maintain a high volume of home remodeling by sharing his reputation, but he also sees more direct economic benefits to sharing, as he explains:

Simon: Like I said I'm working 16-18 hours. Now I'm down to like 10-12 hour days. So it doesn't leave a lot of time for paper work.

Jen: Is it less now because you have a year under your belt?

Simon: Yeah. Plus like I said, I've found some other contractors that I can use. That's really helped out with my work load. I don't have to do two houses a month. Now I got someone else who does a house and I make a little bit of money off his jobs.

Jen: Because you're the one getting the business?

Simon: Right.

Eli's customer at the barber shop passed him a contract for transportation services. Eli plans to buy a van and start the work part-time. More often, Eli's shop and reputation serve the broader entrepreneur community, reducing the hiring risk and associated costs by connecting quality entrepreneurs and workers.

Jen: Well what about, do [your friends in business for themselves]say stuff, specific [stuff], like any business advice?

Eli: I guess, the biggest headache, like I say, is good help. Most of the time if you get good help, your business will flourish. If you can't get good help, you have to deal with it as it comes. So I guess the main thing is good help.

Jen: So do you guys end up referring people you know to each other?

Eli: Oh I definitely do. Actually we all do. I send my buddies a lot of business through the barbershop. And they do the same for me. Because I know five of everybody that does everything. Seriously. I'm like a network man…I'll put it like this, due to the economy there's been a lot of people in and out of jobs. And I've got a couple people jobs just from people I know. You know what I'm saying? A couple people that didn't have jobs and I say, call so and so and so and so. And they call them and possibly, most of the time, well half the time they might get a job through someone I knew. So that kind of thing comes back to me.

Jen: Oh wow. And do they just come in the next time like, 'thank you so much'?

Eli: Oh, 'Thank you so much!' I have guys that call me and just be like, I do appreciate you. I've had that happen a couple of different times.

Jen: That's kind of cool. Do you have any criteria for who you're going to help?

Eli: Yeah because if I see you're not one that, I guess your morals aren't all there, I kind of shy away from it. But if you're a people person. Good people. Most of the people I've been cutting for years so I know who to lead in the right direction, who I can just be like, deal with a little differently.

The collaborative relationships described here have helped entrepreneurs alter their services when times got tough (usually through learning) and kept them afloat when their own advertising efforts were not producing (usually through reputation sharing). They do not necessarily explain cluster or firm growth, but they point to why some areas see fewer firm exits and therefore have more entrepreneurs than other areas. Then again, we must bear in mind the information source. It could be that networks are important for starting a new business, but because most of the interviewees were established businesses, they might not readily recall the people and information that helped them get started. There are also supportive environmental factors in a cluster, of which individuals would be unaware. For example, fewer large firms and more individual service providers could make for easier entry into the market. But no one entrepreneur would likely identify this as a beneficial local condition. Sam hinted at this fact when he discussed getting out of the convenience store business when Wal-Mart's 'neighborhood' stores come to his area.

2. **Clusters grow through spinoffs rather than positive externalities described by agglomeration.**

New firm spinoffs are the most consistent phenomenon to explain cluster *growth* among traditional entrepreneurs. Just over 40 percent of interviewees in Dayton and Raleigh (11 of 27) were either themselves a spinoff venture or they have passed along

vital information or resources so an employee could start a company. High tech parent firms, such as found in Silicon Valley, and low tech ones such as the Netherland's footwear industry, have passed on knowledge and reputation benefits that made their spinoffs more successful than start-ups with no prior affiliation (Dahl & Sorenson, 2012; Klepper, 2010). So too, traditional entrepreneurs pass on knowledge, reputation, supplier strategies and more that have contributed to success in traditional fields like convenience stores, martial arts Dojos and optical shops.

Following Boschma & Frenken (2011) point that spinoff theory does not explain what parent firms pass along (e.g. knowledge, network relationships, reputation), the 11 interviewees described different types of 'inheritances.' Jim fits most squarely in traditional views of spinoffs. He accessed vital knowledge from chemical engineers as an employee at Monsanto, which gave him the in-depth understanding of break fluids and their downsides to start his car repair shop with an edge on the local competition. Inheriting industry knowledge was also evident in less conventional ways. Fred passed his optical shop's supplier strategy to an apprentice who recently started his own eye glass shop about 30 miles away. As Fred says it, the critical reason he is able to procure eye glass frames so inexpensively is that he buys in massive quantities (e.g. 60,000 frames if he can get the right price), always pays in cash and always pays early. Given the ease of entry into the industry, his reliability as a buyer has allowed him unique access to a discounted supply. He started his apprentice off on the right foot by selling the former employee his first batch of frames under the same rules.

In addition to industry-related knowledge, parent firms passed business norms, industry relationships and their reputation (e.g. convincing their supplier to sell to a new

entrepreneur) to employees to aid in their startup success. Business norms are perhaps the most interesting, though they are the least common. Unlike knowledge that relates directly to sales, norms can be thought of as values that indirectly affect business success. Nick, for example, credits much of his success to the stellar staff at his craft beer store and sandwich shop, an asset he has maintain due to a norm instilled by his former boss over 30 years ago:

Nick: But Mr. [boss name omitted], he would walk around and he knew everybody's name. And I thought that was really neat. Danny was the janitor and he was a mentally disadvantaged person. Mr. [omitted] was standing there in a nice suit and Danny came by and took the broom right across his shoes. And the foreman started chewing Danny out. And Mr. [omitted] says, don't do that. He was just doing his job. I was in his way.

Jen: Do you have any other examples of someone who owned their own business who was kind of influential like that?

Nick: Yeah. As a matter of fact, here was another. We went to lunch, went up to a local bar, it was Monday night football…Mr. [omitted] and a bunch of engineers came in with a buyer…They sat down with us. And this guy, the salesman, told the waitress to get everybody a beer except for me…And she dropped off their drinks and Mr. [omitted] was sitting across from me. And I'm just a peon making three something an hour. And Mr. [omitted] looked at me and said, did you want a drink? And I said, uh, I wasn't offered one. He turned red in the face and looked at that sales man and said you either buy one for everyone or you don't buy for anyone…I was a peon, but Mr. [omitted] would not allow it. Those kinds of things really soak into my head. Everybody's a part of it.

Similarly, Sam says he owes the success of his convenience stores to his work ethic, a business norm passed to him by a former employer. Fifteen years later, he still remembers seeing the millionaire owner at his first convenience store job personally clean a bathroom that had been abused by a customer. He asked him why he didn't just call someone to take care of it and the owner said it would take too long: "*He says listen, the day you think you're too good for work, you're history. Doesn't matter what you own, doesn't matter how much money you have. Any day comes and you think you're too good to work, you're history*."

With regard to cluster theory, spinoff firms appear to be the most likely contributor to cluster growth. Agglomeration through learning and sharing mechanisms are also evident, as discussed next, but they more often demonstrate why a cluster does not decline through firm exit (an issue explored further in Chapter 4), rather than how it might facilitate growth through production or employment. Taken together, the first two findings offer some support for hypothesis Two, that inter-industry sharing and learning are potential agglomeration sources among traditional entrepreneurs. And the findings add that learning and sharing with former employees better explains growth because the traditional entrepreneurs did not often attempt to grow the size of their own firm in a sustained way. Identifying potential sources of agglomeration, however, is only half the equation. Hypothesis One stated that the neighborhood was the key geography to facilitate learning and sharing among these entrepreneurs. I next show that this hypothesis should be rejected based on the qualitative evidence, as well as the quantitative from part one of this chapter.

3. **There are few systematic differences between traditional entrepreneurs in cluster and non-cluster neighborhoods.**

Collaboration with other local business owners seems to be an important factor in the success of traditional entrepreneurs, but the relationships discussed in the previous findings were not predominately within the neighborhood. Eli's barber shop is one of very few clear examples where customers (and the owner) came from the same local neighborhood and the learning and sharing that occurs between traditional entrepreneurs frequenting the shop has a highly local component. From a qualitative standpoint, it was apparent that the spinoff companies discussed did not share the same residential or business neighborhood as their parent, nor were the industry collaborations very often with neighbors. For example, Ellie's cleaning assistant, Ed and Vincent's work with other mechanics and William's referrals from and to other entrepreneurs in the wedding industry are not relationships that were fostered by living or working near one another in the same neighborhood. It is also apparent that for the intra-industry collaborations, a larger geography helps explain why they persist despite competitive pressures.

After asking entrepreneurs about people or organizations that were important to their business in a very open-ended way, I specifically asked whether they interacted with the local businesses in their neighborhood, or other home-based entrepreneurs or even potential employees from their neighborhood. The neighborhoods I visited are very unlike the walking-friendly neighborhoods of New York City studied by Jane Jacobs and other scholars of innovation, and much more similar to the vast majority of mid-sized, car-dependent cities. My interview sites are primarily low-density residential, with one main thoroughfare of local and corporate businesses. Entrepreneurs had varying levels of

responses to using ‘local’ resources. Simon’s home-based remodeling business has the potential to serve the local area and to meet other potential handymen to network with or learn from. Greg’s home-based kitchen equipment business has a smaller potential for neighborhood networks. Though neither entrepreneur expressed much connection to the neighborhood, it seems that some industries are more conducive to neighborhood-based relationships beneficial to the business.

For entrepreneurs with a physical location, it is approximately equal effort for neighborhood residents to travel to their ‘local’ business as it is to travel to one in the next neighborhood over because both would most likely be done via car. Two neighborhoods had small business districts and these entrepreneurs had a greater potential to develop positive externalities among the group due to their co-location. Hanna was glad that her sewing and alternations business is located in their small business district (approximately two blocks) because she easily accessed supplies and personal items. She also held FedEx packages for a neighboring barber shop, which allowed that entrepreneur to hold limited hours that corresponded with the volume of business he maintained. Nick is also located in a business district and leads the district business association. His investment in video surveillance likely benefits the whole block and therefore represents a positive externality closer to the spirit of cluster theory. Locating in a business district was beneficial for these and other reasons, but a qualitative assessment of the interviews did not reveal clear neighborhood-based connections, and both Hanna and Nick were located in areas with low levels of self-employment.

The research design allows for a more quantitative look at the question of whether there are systematic differences that could explain neighborhood entrepreneur clustering.

Perhaps the examples offered did not demonstrate a neighborhood network, but the more networked or collaborative interviewees are also more likely to live in a neighborhood cluster. The following results draw on the Dayton sample only to compare entrepreneur behavior between the cluster and non-cluster neighborhoods I visited. Limiting the analysis to Dayton helps interpret any neighborhood differences because it 'controls for' regional influences that might be apparent between Dayton and Raleigh. Table 3-14 is similar to Table 3-13, but uses the Dayton subsample to show that interviewees who collaborate with or 'spinoff' other traditional entrepreneurs are not more likely to come from a cluster neighborhood. The counts indicate some neighborhood differences in the number of inter-industry networks and spinoffs in the expected direction. Cluster neighborhoods have a higher number of the group dynamics theorized to facilitate entrepreneurship. Results from the Raleigh cluster support the relationship as well (not shown). Still, the qualitative evidence that described relationships as non-neighborhood based and the small sample size suggest cautious optimism regarding this result.

Table 3-14. Percentage of Dayton Interviewees that Discussed a Cluster Type, by Neighborhood Type

Cluster type	Cluster (n=9)	Non-cluster (n=9)
Inter-industry linkage	5	3
Intra-industry linkage	2	3
Spinoff	4	2

Another way to examine the question of neighborhood differences is to determine where important social networks come from if it is not neighborhoods. Systematic differences in networks between the two neighborhood types would support the notion that entrepreneur relationships effect entrepreneurship rates. Table 3-15 shows the most

common types of networks discussed by interviewees. On the whole, I find no consistent difference in the networks of entrepreneurs in cluster and non-cluster neighborhoods. The counts include instances of agglomeration already discussed, as well as other network relationships that entrepreneurs said had been helpful to them, such as learning something useful from a corporate competitor. The largest difference is in those reporting a family member who was an entrepreneur; however, we would expect the opposite relationship. Family entrepreneur norms are expected to foster clusters and instead interviewees in non-cluster neighborhoods were more likely to report a family entrepreneur (five compared to two in the cluster neighborhoods).

It is interesting that entrepreneurs living in a cluster were twice as likely as non-cluster entrepreneurs to network with industry competitors, while non-cluster entrepreneurs were three times as likely to network in service organizations. Statistics in the Raleigh cluster also support that high self-employment is related to a relatively high rate of competitor networking and relatively low rate of networking in service organizations (not shown). These relationships are especially interesting because those in cluster neighborhoods are not more highly networked than non-cluster entrepreneurs overall.

Table 3-15. Percentage of Dayton Interviewees that Discussed the Network, by Neighborhood

Network type	Cluster (n=9)	Non-cluster (n=9)	Example
Business organization	4	3	Got a new business idea from another member- Chamber of Commerce, Transmission Association
Customer or supplier	3	4	Learned of a new, top-selling product for the local market from a customer
	3	3	Met a business partner in trade school

Former colleague			
Industry competitor	4	2	Got new customer through a competitor referral
Succession	2	5	Had a parent/close relative entrepreneur
Service organization	1	3	Accessed new markets through the group- Knights of Columbus, Veterans Club, church
Other networks	5	7	Acquired money from friend/family; learned of available real estate from Licensing Board rep

If industry relationships do not explain why some neighborhoods have consistently high (or low) self employment rates, there may be factors related to the natural advantage of the area or economic factors such as high crime and low rent. Having spent several months in the neighborhoods, there is no obvious evidence that these other explanations are at work. There is one potential reason for consistently low self employment areas: government workers. Until recently, city employees in Dayton were required to live within the city limits. One non-cluster neighborhood I chose happened to be the most desirable and furthest from the city core. According to long time residents, the neighborhood had a disproportionate number of police, fire-fighters and EMTs. The second non-cluster neighborhood visited in Dayton is near the Wright Patterson military base so it may also be explained by an unusually high number of government workers.

4. Sub-regional geographies offer unique insights to traditional entrepreneurs' success

In this last section, I revisit the earlier findings to discuss what these interviews *did* reveal about the relationship between traditional entrepreneurs and their geographic location. Pulling together several smaller pieces from the above analysis hints at an

important role for sub-regional geographies in understanding traditional entrepreneurs. These findings are suggestive, and though less conclusive than earlier discussions, they have the benefit of offering next steps in how to facilitate entrepreneur and place-based economic development.

One potential sharing mechanism at work in a Dayton cluster is bartering. Adam started an electronic component and computer repair business near his home at the height of the recession, after his former employer went out of business and he was unable to find another job that paid enough to support his family. Other interviewees from this cluster did not engage in bartering so it seemed unlikely that sharing was a major factor in the high rate of self-employment in this area. Nonetheless, Adam's comments suggest it was more than physical proximity that helped him benefit from his location in a cluster.

Adam: So it's a lot of bartering too to get me to where I've been because I haven't had the money in my pocket to really spend out for anything.

Jen: And people seem pretty receptive to that around here?

Adam: Yeah. I think that's a bonus of being in a lower income neighborhood probably. Because I come from West Carrolton, Miamisburg area and it's a lot different here. But I've always been kind of a barterer, I haven't had a problem talking with people. I kind of fit in here with the way I look. I used to be a tattoo artist when I was really young so that's why I got all the tattoos. Mainly on the left hand side of my body, that's the stuff I did, just playing around and learning. For the area, it doesn't hurt me in this area. But whenever I go to nicer areas and stuff, I put on, you can't see anything whenever I go in. And I cut my hair usually. But it's been. You can't do enough to get people to like you I should say. You do whatever it takes and hopefully the other people are receptive to you.

I've never had anybody get upset for saying, hey you want me to help you out? What do you have laying around your house that's electronic? Because sometimes people do that and we can fix what they brought into us because they think it's junk. And we're honest with um. Hey, if it's been sitting around your house, it's been sitting there for a year, we can put it to good use. I've gotten tools that way too. Things that I need for tools for fixing the computers…. Yeah, this type of area will bend over backwards for you more. They're a little more understanding too. The people with the money say, well I can buy whatever I wanna buy, they don't want to wait 2-3 days. They expect it to be number one right on top. So here people are a little bit more understanding. So it's probably a benefit for me to be here first and eventually step out toward a little bit nicer areas to see how it works.

For the variety of reasons Adam discusses here, working class neighborhoods may offer a unique environment for burgeoning entrepreneurs. The analysis of entrepreneur networks also recommends looking at specific neighborhoods (rather than the region as a whole) to identify social resources for traditional entrepreneurs. Table 3-15 listed different types of networks entrepreneurs identified as important to their business and Table 4-4 shows the percentages for the full sample of Dayton and Raleigh interviewees. What is notable is the frequency with which informal networks such as customers and competitors are important sources of information or resources. Research on high skill regional clusters emphasizes the trade organizations and formal networks to facilitate cluster growth. Indeed, many regions have started cluster membership associations, and the Small Business Administration's cluster initiative is focused on improving these formalized organizations (Demiralp, Turner, & Monnard, 2012).

Although 44 percent of the Dayton and Raleigh entrepreneurs (12 of 27) noted that they benefited from a formal organization operating at the city, regional or national level, higher proportions in both places noted that they preferred to avoid these types of organizations, particularly those at the city and regional level. Some interviewees distrusted the formal organizations and others simply felt their goals were not well aligned. The entrepreneurs' reliance on members of service organizations in which they took part, though not nearly as frequent, is especially relevant in this light. The service organizations discussed by interviewees were all city-level chapters of national organizations or church affiliations.

The existence of these less business-oriented service networks may contribute to successful entrepreneur clusters. And their location and geographic representativeness in terms of membership would help identify relevant sub-regional geographies to study traditional entrepreneurs. This is further supported by the importance of other informal networks. Customers and suppliers are the most consistent and unquestionable source of vital information, mentioned by 56 percent of the full entrepreneur sample (89 percent in Raleigh). Although their customers are not all (or even majority) from the local neighborhood, they are far from randomly located throughout the metropolitan area. This appears to be less a product of travel distance than of network-based advertising. Almost 70 percent of interviewees (18 of 27) discussed the importance of word of mouth advertising over public advertising, which means that initial business leads have resulted in specific types of neighborhoods and customers. The home-based entrepreneurs I spoke with were willing to travel where ever the client happened to be. But Simon, for example, gets much of his remodeling business through a real estate company buying abandoned

and foreclosed properties. Similarly, Hugh has a lawn care service niche in a housing development near the military base due to neighbor referrals. It started by giving a good price and quick service to a friend from a military-related service organization called the American Legion.

It is reasonable to see how referrals for home-based workers could lead to a client network with some geographic constraints, as when your neighbor's remodeled porch causes you to ask who did the work. Entrepreneurs with physical establishments showed some of the same geographic bias. They talked about their customers coming from "all over." Yet they often listed other working class parts of town. Moreover, the entrepreneurs that (re)opened in a second location—including Rebecca, Harris, Phil and Jim—all located in another working class area, according to my study definition of these areas. Their reasons included not wanting to drive far between locations, not wanting to move too far from clientele and of course reasonable rents.

Regional cluster studies have identified customers as a source of innovation (Boschma & Ter Wal, 2007; Porter, 1998; Saxenian, 1994) and firms even seek out ways to leverage technology to use customers in co-production for innovation (Auh, Bell, McLeod, & Shih, 2007). Conversely, traditional entrepreneurs in this study have built strong social ties with customers organically through word of mouth advertising and ongoing face-to-face interaction. What these informal networks suggest is that cognitive, social or institutional forms of proximity seem to be more important than geographic proximity for explaining important business connections among traditional entrepreneurs. However, given neighborhood sorting by socioeconomic classes, these other forms of proximity have spatial implications that should not be ignored.

Conclusion

This analysis has relied on mixed research methods to characterize and to a lesser extent quantify the degree of traditional entrepreneur clustering. In this case, the multiple forms of evidence did not point uniformly in one direction. This means we should be extra cautious with the small sample size used to draw inferences about clusters. There are several aspects of a firm and owner known to effect business outcomes and behavior, and though I meant to draw commonalities from the inclusion of many types, I also lost the ability to account for intervening factors, such as industry and gender of the entrepreneur, because there were too few cases in each subcategory. Furthermore, as with studies of agglomeration in general, any quantitative evidence of clustering associated with social networks does not answer whether the presence of entrepreneurs allowed positive networks to develop or networks created an environment for more entrepreneurs. That said, some tentative conclusions can be made from the analysis.

The purpose of the chapter was to determine how and the extent to which agglomeration theory is appropriately extended to the neighborhood level for traditional entrepreneurs. By talking to traditional entrepreneurs, I found some support for hypothesis Two, that positive externalities exist among them in the form of sharing and learning mechanisms. As expected, sharing and learning occurred more between entrepreneurs in different industries (inter-industry linkages), but there was an interesting degree of collaboration among direct competitors, intra-industry linkages. These relationships seemed most beneficial for navigating tough times and maintaining a positive reputation and new referrals. Indeed, simply staying in business could be a more important indicator of success in these highly competitive local services with low barriers

to entry, than growing one's business. This conclusion means that the Schumpeter theory of innovation and economic development is less applicable to traditional entrepreneurs and their trades because he theorizes significant business entry and exit (i.e. creative destruction) is what fosters the development of an economy. Instead, neighborhood clusters may grow through spinoffs, regardless of positive externalities. Passing a useful resource to an employee who started his or her own business was quite common among entrepreneurs in this study.

On the other hand, I found little support for hypothesis One, that these spinoff firms or the firm linkages are neighborhood-based. With the quantitative analysis, I found that traditional entrepreneurs cluster more than other worker types, such as government workers. But the regional variation in clustering does not have the expected relationship to economic outcomes suggested in agglomeration theory, and there is some evidence that variation in self-employment rates is partly explained by neighborhood characteristics. Interestingly, regional growth demonstrates a slight, but consistent non-linear relationship to clustering (in 2007* and 2000) and to regional self-employment rates; stagnant regions show the least self-employment and clustering activity, the values increase in maintaining regions, and they fall slightly in ascendant regions. This suggests that positive self-employment outcomes occur during eras of regional economic stability, though the direction of causality is unknown.

The qualitative analysis supports the quantitative, that traditional entrepreneurs are not primarily clustered in neighborhoods. According to the entrepreneurs' descriptions of who and what is beneficial to their business, and an analysis of systematic differences in the responses of entrepreneurs in cluster and non-cluster neighborhoods,

there is little evidence to show that neighborhood networks or environments explain variation in traditional entrepreneurship. For example, employees did not necessarily come from the local neighborhood, project/home-based workers did not necessarily team with neighborhoods in related trades, and those in physical establishments did not often network with the business owner down the street, unless they were in a small business district.

The interviews revealed that unique networks develop in working class neighborhoods, even if they are not confined within one neighborhood, and these relationships are useful extensions of cluster theory to traditional entrepreneurs. Sharing one's reputation with other entrepreneurs has not been identified as a source of positive externalities in the high skill arena, but among entrepreneurs in traditional trades reputation is a vital resource and referrals can be a source of cost saving. Learning was also a source of positive spillovers and thus is usefully extended to traditional entrepreneurs. As mentioned, these networks did not appear to relate to cluster or regional growth. However, the extension of cluster theory to regional resilience outcomes is promising.

Learning networks offered some entrepreneurs ideas to diversify their business during tough economic times, which suggests their importance for resilience. These networks are likely to come from informal sources, such as customers, rather than trade and industry organizations. In addition, more flexible methods of exchange (e.g. bartering) or service options (e.g. paying in weekly installments) provided on an as-needed basis were discussed by interviewees as benefits to themselves and/or the area in which they are located. These sub-regional relationships could support entry and survival

of traditional entrepreneurs over corporate competitors in working class neighborhoods. They could help these areas maintain a positive quality of life through economic challenges in the region, even if they do not ultimately transform them into high growth components of the region. This idea is explored in the next chapter on traditional entrepreneurs and regional resilience.

CHAPTER

4 - TRADITIONAL ENTREPRENEURS AND REGIONAL RESILIENCE

The Literature

How regions develop and change are some of the most difficult questions to answer in the social sciences because they are shaped by a nearly infinite number of forces (Storper, 2010). Yet these are precisely the questions most important for public policies which seek to preserve certain economic outcomes and transform others. Urban economics primarily explains local economic development by the location decisions of firms and workers (Storper, 2010). The field has been less interested in endogenous change caused by entrepreneurship, partially due to the conventional modeling methods of the field and partly due to the failure to account for the entrepreneur in the modern theory of the firm (Glaeser, 2007a; Malecki, 1993). In Chapter 3, I described a growing interest in how regional entrepreneur clusters increase economic growth due to the positive externalities they generate by, for example, learning from one another. I argued that traditional entrepreneurs have been overlooked in these studies and I found that they do indeed demonstrate some of the same learning behavior described in high skill entrepreneurship.

In the present chapter, I look more closely at whether and how traditional entrepreneurs, as a group, help a region maintain its resilience to internal and external challenges. It is closely related to Chapter 3 because the ability to bounce back from challenges could be an alternative positive outcome of entrepreneur clusters (an alternative to regional growth). Many of the concepts used here (e.g. traditional entrepreneur) were developed in earlier chapters, thus a brief summary of definitions is

provided in Appendix 1. It departs from Chapter 3 in that it is more exploratory. It seeks a deeper understanding of processes so that, eventually, we may link clusters of traditional entrepreneurs to regional resilience. As such, the section on theory describes two systems perspectives that are the framework used to illuminate the role of traditional entrepreneurs in regional resilience in this research. The next literature section describes some empirical work on regional economic resilience, including comparisons of entrepreneur behavior in different regional contexts. I then describe the two regions under study in this dissertation and the research methods. The findings section offers the qualitative results of interviews with entrepreneurs in the two regions. I conclude with a brief summary of the chapter.

A framework to study regional resilience. I draw on two systems perspectives to illuminate the role of entrepreneurs in regional resilience. The first is evolutionary economic geography (EEG), which is primarily a European-based research effort, especially popular in the Netherlands, the U.K. and Germany. It has sought to understand economic development processes over time and space and to integrate findings from micro, meso and macro level research on regional economic change (Boschma & Frenken, 2006). I also draw on complex adaptive systems (CAS), which is an attempt across several disciplines to create a universal framework for understanding macro level outcomes from their source in micro level interactions (Lansing, 2003) and has recently been applied to regional economic change (Martin & Sunley, 2007; Pendall, Foster, & Cowell, 2010).

Before describing system properties that are theorized to produce resilience, we must grapple with the fundamental question of what phenomenon resilience is describing.

Regions develop and change, but when is change (or lack thereof) an indicator of resilience capacity? One of the most straightforward approaches to recognizing resilience is found in Pendall et al. (2010). They create a simple 2x3 matrix to show how evidence of resilient regions differs depending on the nature of the challenge faced and assumptions about the underlying urban dynamics—the resilience lens (see Table 4-1). First, they make a useful distinction between a region's resilience to acute shocks, such as a plant closure or natural disaster and to chronic slow-burns, which are best represented by the long term effects of deindustrialization. Acute shocks are exogenous to the system whereas slow-burn challenges as endogenous, an important observation I will return to. These help sort out one of two important questions, resilience 'to what'?

Table 4-1. Evidence of Resilience under Different Resilience Frameworks and Types of Challenges

	Resilience lens		
Type of regional challenge	Single equilibrium	Multi-equilibria	Complex adaptive systems
Acute shock	Return to normal	Establishment of new normal	Continual adaptation
Chronic slow-burn	Maintenance of 'natural' norms	Performance improvement	Continual adaptation

Source: Pendall, Foster, & Cowell (2010), Figure 4, p. 77

In general, we might say a region is resilient if its response to either type of challenge results in maintaining or even increasing 'good outcomes.' However, both what constitutes an outcome and what is good is not given by the theory *a priori*. As Pendall and company note, determining that a city has 'recovered' or an economic system is 'stable' presumes that the analyst pays attention to some outcomes but not others. A second question that must be answered is, resilience 'of what'? Resilience of income or

in the growth of average incomes in an outcome that urban scholars would likely agree is necessary to claim regional resilience. Some have even used persistent income inequality growth as a non-resilient outcome (Chapple & Lester, 2010), though it could easily be assessed as a potential contributor to diminished resilience along another measure, such as the inability to maintain stable employment levels.

In addition to ambiguity over outcome indicators, there is no theoretical ground to describe what is good: good compared to what? Many would agree that returning to the standard five percent unemployment rate would be a good outcome, but would a resilient region have even fallen far from the good outcome in the first place? Pittsburgh is a classic Rustbelt region because the large number of companies in the steel industry left high unemployment in Pittsburgh when the economy shifted toward the service sector (Treado & Giarratani, 2008). Pittsburgh has not exactly 'bounced back' to its population and economic growth highs of the post-war period, but by the 2000s it had transformed its quality of life by lowering pollution and crime levels and even increasing per capita income (Pendall et al., 2010). Pittsburgh must be resilient in some sense of the word.

Some of this ambiguity is resolved by conceptualizing regional resilience as a process rather than a 'normal' outcome to be achieved. Much like people do not achieve 'health' but rather maintain a healthy or unhealthy lifestyle, regions may evolve through processes that can only be compared to a recent previous state. Said another way, if we view the local economy as having a single, stable equilibrium, we look for regional resilience in quick returns to pre-shock income growth rates, for example; or for slow-burn challenges, we assume some natural state and watch that it is maintained, such as 'full employment' (Pendall et al., 2010). Alternatively, urban systems have been

conceptualized as having multiple equilibria with varying degrees of stability. A region may achieve a steady state of development for a time, but a strong enough external shock can move it to a new equilibria. These are known as basins of attraction because the ebb and flow of resources within some range make it harder than normal to disrupt and destabilize the system, but once disrupted change is quick and dramatic. Multiple equilibria is a view consistent with phenomena such as neighborhood racial tipping points or policy concerns over avoiding thresholds. A region that settles into a higher income growth trajectory given post-shock conditions and the story of Pittsburgh are two examples of regional resilience under the multiple equilibria resilience lens. Detroit is an example of movement to a suboptimal equlibrium. In this view, Detroit has lacked regional resilience capacity because decline of the auto industry (a chronic slow burn challenge) initiated movement of the average income to a flatter growth trajectory.

Resilience theorizing in economic development is relatively new. Christopherson, Michie, & Tyler (2010) have remarked that it is primarily a U.S. effort to create urban policies that mitigate the effects of recessions and disasters. But theorizing the problem of rigid regions, stuck in a suboptimal equilibrium, is not new. Regional path dependence and lock-in are used to describe a period in the evolution of a region in which it is no longer producing economic benefits, but the institutional structure of the area (meaning the formal and informal rules that govern economic actors) has grown so interdependent and complex that the pattern of regional decline is unusually difficult to reverse (Martin & Sunley, 2006).

The idea of regional lock-in was taken from the market context where it described how certain technologies, despite their known inefficiencies, came to dominate due to

network effects (Arthur, 1989; David, 1985). So its applicability to regions is not always comfortable. For example, it may make more sense to talk of negative lock-in of an industry, such as the auto industry in Detroit, than to use it to describe an entire region (Hassink, 2005; Martin & Sunley, 2006). Yet the regional metaphor has clear intuitive appeal as suggested by the wide-spread use of the term Rustbelt. In Germany's 'Rustbelt,' Grabher (1993) identified three forms of regional-level lock-in based on the many supplier relationships and complementary industries and activities associated with the Ruhr area's steel and iron industry. Functional lock-in describes hierarchical firm relationships, while cognitive lock-in has to do with knowledge and world-views. Political lock-in described the state-sponsored institutional environment, such as regulations and political relationships. These types of political, economic and social rigidities have long been used to describe the rise and fall of whole nations (Olson, 1984). It bears mention that cluster theory suggests that some degree of interdependence is what allows for regional growth in the first place. Positive externalities caused by co-located firms sharing resources and knowledge describe a period of lock-in with positive growth outcomes.

Thresholds for path dependence with positive versus negative outcomes are of consequence for policy. Its application in technology markets suggests that only an exogenous shock can push a region traveling down a suboptimal path onto one with 'better outcomes' (Martin & Sunley, 2006). Alternatively, its application to clusters and regions suggests that endogenous reinvention, perhaps like Pittsburgh's, is also a means of attaining a new equilibrium. Indeed, Martin and Sunley argue that the seeds for a new round of agglomerative growth could be in the legacy institutions and capabilities of the

region rather than the result of historical ‘accidents’ as scholars who formalize path dependence theory are apt to claim (Storper, 2010; Arthur, 1989).

In theory, different avenues to lock-in could also be used to understand a region’s ability to respond to acute shocks, but most path dependence research is concerned with longer time horizons and an inability to respond to slow-burn challenges. Recall that Pendall et al. (2010) described slow-burn as an endogenous challenge. More specifically, they consider slow-burn both a challenge and an outcome. They offer some examples: one measure of resilience to the forces of deindustrialization may be the extent to which the region reindustrializes; or a current immigrant influx could indicate resilience to the previous period’s level of immigration. To account for these endogenous processes, Pendall and company offer a third view of urban dynamics in which no equilibrium state exists (see Table 4-1). Regions should be thought of as constantly evolving and this is the perspective taken in the analysis of the interview data I collect. In such a world, regional resilience would be indicated by a redistribution of resources that sustains ‘acceptable’ job levels after an acute shock, for example, and less volatility in unemployment say, through slow-burns. Martin and Sunley (2006) agree and argue that it is likely unproductive to distinguish endogenous and exogenous forces in both acute and chronic changes because the forces are so recursive, priority cannot be assigned to one source of cause over the other.

Assuming an urban system with no equilibrium shifts the theoretical lens from how an economy is resilient to simply how it adapts and transforms (Simmie & Martin, 2010). Change is not only the result of adaptation to external challenges, it is also self-generated adaptation, or as complex adaptive systems (CAS) says, it is self-organizing.

Self-organizing systems display stable patterns that are not centrally planned but instead emerge through the interaction of actors (or some other system subunit, like firms). Actors in self-organized systems search for new solutions and new ways of combining knowledge when they are dissatisfied with their current returns (Metcalfe, Foster, & Ramlogan, 2006). This act of searching, learning, and adapting propels growth and helps avoid lock-in past the point of good outcomes. At the same time, self-organizing systems adapt to external challenges with minimal disturbance to macro patterns. Self-organized systems are said to strike the balance between connectivity that fosters growth and autonomy that allows for responsiveness. They are 'stable' in that they do not collapse when confronted with external challenges and that they continually self-renew. Self-organized systems in nature can 'collapse,' such as a fishery whose stock is eradicated by polluted waters. Cities are more prone to enter a 'vicious cycle' of decline than to collapse. Thus, although CAS theory is based on descriptive evidence of various natural systems, in urban studies it has a normative character to maintain or improve upon 'good outcomes' (Christopherson et al., 2010; Lindsay, 2005).

How can we ensure our complex urban systems behave like CAS, able to avoid lock-in or respond positively to acute challenges? Looking across social and biological systems, Axelrod & Cohen (1999) have made headway on what makes CAS able to do both. Although different characteristics of complex systems have been proposed by various authors, I use Axelrod and Cohen's analysis because it is intended for systems whose actors can intentionally make changes (adapt) and it has a prescriptive component. First, they define variety as a key ingredient to CAS because it provides the raw material for adaptation. They refer to variety in agent types, some detectable feature shared by a

subset of agents in the system. The frequency of types in the system is altered through several mechanisms, such as births and deaths, imitating, imitating with error (i.e. mutation) or recombining. Consequently, the degree of interaction among diverse types is a second key ingredient to healthy adaptive systems. The degree of interaction could be measured by the number of different types of agents interacting or the depth of interaction, for example. According to Axelrod & Cohen, selection is a major force acting to alter the frequency of types, but selection can operate at multiple levels simultaneously. Market competition, for example, could select on firm types and firm strategies. The authors also pose a trade-off between searching for more variety upon which to adapt (exploration) or exploiting and furthering the successful type in its current form. To 'harness complexity', they recommend taking advantage of variety by balancing exploring and exploiting behavior and better understanding the basis for interaction among agent types to potentially affect it. Scott Page (2007) offers a nice analogy to the benefits of variety (diversity) when he says that agents sharing similar mental maps may work together to reach the peak of their proverbial mountain (exploiting), but it takes exploring the valley for diverse perspectives to eventually find the even higher peak on the next mountain.

Applied to regional economic development, Martin and Sunley (2007) conclude that complexity's required variety and interaction of types must refer to the rules and connections between new ideas. This is premised on the notion that regional economic evolution is driven by (spatially-confined) advances in knowledge. They describe the exploit-explore balance as inertia-innovation, where inertia describes the inevitable decay of current knowledge and innovation describes the product of a search for new

knowledge. To test this application of CAS theory to economic development, they suggest the following research question: Are the most successful economies those which show the highest rates of innovation, and highest rates of global and local search, or is it those which are able to apply new innovations within relatively stable (inert) knowledge structures?

Many other applications of CAS to economic development theory are possible. Important lines of inquiry in EEG are easily mapped to the CAS framework. For example, understanding the appropriate degree of interaction between types would benefit from Boschma's (2005) investigation of different ways in which agents are 'close' to one another (e.g. geographically, cognitively). Similarly, EEG considers firm routines to be the 'genetic material' that is passed and adapted through search and selection. Firm routines are the unique behaviors of the firm, the product of tacit knowledge transfer and learning-by-doing knowledge generation (Winter & Nelson 1982). Firm routines are a clear instance of agent type variety upon which selection acts to change the extent of variation in the system. These and other interpretations of a complex, adaptive economic system will be developed based on the interview data.

The major difference between the CAS and EEG adaptation frameworks, according to Martin and Sunley (2007) is the relative weight put on selection forces. CAS is much less interested than EEG in how market selection shapes the distribution of types in an economy and it is much more interested in how self-organization or search efforts initiate new spatial patterns of firms and industries. For example, system 'failure' could occur because agents adapt to local conditions, but ignore the broader competitive forces that will effect them. In this sense, the dissertation focus is closer to the EEG than CAS

framework. The idea that change is primarily motivated by self-organization is problematic for EEG scholars because it does not explain how external challenges impact firms and ultimately the variety available (Martin & Sunley, 2007).

Of course other research tracks in different academic disciplines could be described in terms of CAS components, such as sociology's interest in the need to balance bridging (exploring) and bonding (exploiting) social capital for economic benefit. The difference is that other research tracks are not typically interested in the macroeconomic (regional) effects of such interactions, although there are clear exceptions (e.g. Woolcock, 1998). Both CAS and EEG seek to account for the effects of individual and collective action on the regional economy, as well as constraints on that action posed by slow-burn challenges. O'Sullivan, Manson, Messina, & Crawford state it succinctly when they say that what is novel about a systems approach is its "sustained attempt to grapple with the 'bottom up' emergence of aggregate behaviour on the one hand, and the top down impact of emergent structures on the behaviour of constituent elements on the other" (2006, p. 614).

CAS and EEG are frameworks for theorizing about development and change, more than they directly suggest testable hypotheses (Simmie & Martin, 2010; Boschma & Frenken, 2006). As described early, the tenants of a resilient system, such as agent connectedness, needs to be operationalized in a real system before hypotheses about resilience outcomes can be tested. In general, adaptation models suggest that path dependent decline in Rustbelt regions and growth in other regions are not deterministic conditions. "[P]ath dependence is a probabilistic and contingent process: at each moment in historical time the suite of possible future evolutionary trajectories (paths) of a

technology, institution, firm or industry is conditioned by (contingent on) both the past and the current states of the system in question, and some of these possible paths are more likely or probable than others" (Martin & Sunley, 2006, p. 402). The analytic question is what is different about the adaptive capacity in regions currently on a growth versus decline trajectory. The value of exploratory work on system adaptation is to ultimately suggest new hypotheses about regional resilience for empirical testing (Swanstrom, 2008).

System approaches to urban development and regional resilience are not without their critics. CAS largely avoids early urban systems' critiques that the current structure of low-income workers and poor neighborhoods is functional for the larger development purpose of the city (Castells, 1979; Logan & Molotch, 1987). But CAS' basic assumption of autonomous, interacting agents does little to recognize the power inequalities that shape the selection of institutional and organizational landscapes (Martin & Sunley, 2007). Furthermore, centralized policy action is already part of the interdependent fabric in a complex system such as an economy. Some argue that the major instigator of the housing bust was in fact a repeal of a 'centrally coordinating' policy that limited interest rates on first-lien mortgages (Swanstrom, 2008). Similarly, Pearson and Sweetman (2011) submit that resilience policy discussions tend to romanticize the ability of women in poverty to remain resilient in the face of the recent global economic crisis. Extolling the resilience advantages of a 'self-organizing' system should not come at the expense of needed social supports for poor men and women. For the present analysis, systems frameworks have advantages over other policy-related approaches to urban development

because they allow for a clearer understanding of how policy interventions can affect change within a system of historical context and cumulative causation.

Empirical research on regional resilience. Several factors are under investigation for their contribution to resilience capacity. For example, Christopherson et al. (2010) list a strong regional system of innovation, strength in factors that create a learning region, modern productive infrastructure, skilled and entrepreneurial workforce, supportive financial system and diversified economic base, as some good starting places to assess reliance. Martin & Sunley (2006) also cite a diversified economic base, but from the standpoint of 'de-locking' a path their list is slightly different and includes diversified economic agents, social networks and technologies; indigenous creation of new firms and technologies; the transplantation of new organizational forms and technologies; and upgraded technologies in the older industrial base. The MacArthur Foundation-funded Building Resilient Region's research network developed an resilience capacity index to rank regions that includes some of the indicators already mentioned, as well as the extent of civic participation and income inequality (MacArthur Foundation, n.d.). With a wide range of research agendas, I will discuss a set of related resilience mechanisms with long histories in industrial and labor research, and a connection to entrepreneurship. Most of the cited studies have their roots in neoclassical or single-equilibrium studies of economic growth, but they nonetheless address the need for variety in adaptive systems.

One line of inquiry with a significant empirical history is the proposition that a diversified industrial base allows for quicker adaptation and greater resistance to regional economic challenges. As described in Chapter 3, this began as the Jacobs – M-A-R debate on economic growth, with the former indicating the growth benefits of industry

diversity and the latter the benefits of specialization (Boschma & Frenken, 2011; Glaeser et al., 1992). Recently, the benefits of industry diversification have been advocated as a portfolio strategy to protect regions from external shocks. This research has found that the presence of specialized or at least related industries in a region results in more growth, but the existence of unrelated industries reduces the risk of decline (via unemployment) after a recession (Frenken, Van Oort, & Verburg, 2007), a finding consistent with the need for variety in CAS. A second area of inquiry focuses on the role that intermediate suppliers play in resilience. Conventional wisdom in the U.S. and abroad suggests that intermediate suppliers closely linked (or even vertically integrated) with a major local producer make the region more vulnerable to lock-in and decline than a cadre of independent suppliers (Chinitz 1961; Sadler 2004). In CAS terms, suppliers and producers that are too connected reduce regional resilience to slow-burn challenges.

The third and perhaps most consistent area of study is the role of high skill workers in resilience. From a CAS perspective, one could view high skill workers as offering greater variety in knowledge due to niche specializations. Chapple & Lester (2010) found that high skill workers were related to a region's ability to reverse a below average or downward trend in earnings per worker over several decades. Similarly, Glaeser et al., (2011) found a close connection between college-educated workers and the ability of regions to grow despite many economic challenges over the long-run. St. Clair et al. (2011) looked at 1,500 regional employment shocks between 1978 and 2007 and found that a low proportion of college-educated workers increased the likelihood of suffering a downturn. Interestingly, they also found that a high proportion of high school educated workers increased the ability of a region to recover from an economic downturn

(as opposed to not suffering a post-shock downturn in the first place). Acs & Armington's (2006) work is also useful here. They found that the proportion of college educated workers significantly predicted new firms in the service industry in early and late 1990s, but a few years after the short 1991 recession, educational attainment was much less of a factor in new firm startups. The discrepancy suggests that high skill (or low skill) workers effect regions differently depending on the type of external challenge in question. From a CAS perspective, the skill variety needed for regional resilience could stem from a healthy mix of different skill types.

An undercurrent in many of the resilience mechanisms just described is the role of the entrepreneur. Small, entrepreneurial firms constitute the independent intermediate suppliers and make possible the wide diversity of industries in regions. They found the technology start-ups and other high skill worker ventures in places like Silicon Valley. At the individual firm level, entrepreneurs are thought to foster regional resilience through their deliberate deviation from established paths of commerce (Garud & Karnøe, 2001), ability to generate local knowledge and link it to local capacity (Malecki, 1993), quick response to changes in local conditions (Feldman et al., 2005) and reduced likelihood of shedding employees for short term gains (Kolko & Neumark, 2010). Most commonly, entrepreneurs are recognized for their role in Schumpeterian innovation, which is the antidote to already locked-in regions. Empirical research that specifically relates entrepreneurs to regional (slow-burn) resilience, however, is limited. And drawing conclusions from this literature suffers from the many definitions of an entrepreneur (e.g. new firm, small firm, someone who files a patent).

Glaeser & Kerr's (2009) statistical analysis of new employer firms found that the lack of entrepreneurship in Rustbelt regions partly explains their differing economic circumstances from Sunbelt regions. They find different entry rates have mostly to do with the current industry structure and educational attainment in the cities, which of course is a legacy of previous periods. Clark's et al. (2010) descriptive study of entrepreneurship and resilience separates innovation by large versus small (down to one-man) firms and offers a more nuanced picture of successful regions than the Rustbelt-Sunbelt dichotomy. They create a typology of innovation regions using the overall level of patenting and the proportion of small firm patenting in the 81 most innovative U.S. regions. Using descriptive statistics they find that average GDP per capita is highest for regions with a large proportion of entrepreneur patenting (e.g. Raleigh, San Diego, Boston). It is lowest among regions with little patenting by both large firms and entrepreneurs (e.g. Dayton, Jacksonville, San Antonio). These 'least innovative' regions tended to have more diversified industry strengths (i.e. low concentration of patent filing in any one technology class) and so despite low incomes, the authors conclude they may still represent resilient regions that are better able to mitigate external shocks than they are at combating slow-burn challenges.

Comparative studies offer some of the most consistent findings that entrepreneurs are vital to regional resilience. They also offer more in the way of what are the important types of variety and patterns of interaction in entrepreneurs that produce regional resilience capacity. Saxenian's (1994) comparison of organizational relationships in the faltering Boston and ascending Silicon Valley technology industries in the 1990s; and Chinitz's (1961) comparison of entrepreneur-corporation relationships in the growing

New York versus faltering Pittsburgh of the 1960s are great examples. Both studies found that the inability of faltering regions to adapt to technology changes (and demonstrate resilience) lay in small-scale and open (non-hierarchical) interaction patterns of entrepreneurial actors. Treado & Giarratani (2008) recently surveyed intermediate suppliers in Pittsburgh's steel industry and found that consultant, engineer, and machinist firms that had been closely linked to corporate producers in the region were eventually able to rebound as viable clusters by growing their national and global steel market or adapting their services for buyers outside the steel industry. Simmie & Martin (2010) compared the economic histories of two British cities, innovative Cambridge and faltering Swansea. They found that Cambridge's home-grown university-sponsored entrepreneurs built the region's resilience capacity (to recessions and ultimately slow-burn challenges) more than Swansea's short term success with attracting foreign-owned (mostly Asian) technology innovators. The reason, they argue, is that Cambridge entrepreneurs were continually able to branch out into new specialized industrial sectors given their solid foundation in advanced mathematics and computing.

Traditional entrepreneurs and resilience. The present analysis also compares a stagnant and ascendant region, but is a unique contribution to the resilience literature because it focuses on traditional entrepreneurs. The earlier findings on high and low skill workers hint at a potential role for traditional entrepreneurs in resilience, but none of the cited studies theorizes or tests such a relationship. At a basic level, traditional entrepreneurship puts adaptive capacity in the hands of more workers because there are many more 'low skill' service providers than high tech startup companies. Thus, more workers can respond directly to challenges. Similarly, a resilience framework suggests

that areas of little entrepreneur activity could have a larger than expected effect on the rest of the region's local business climate due to neighborhood interdependence (Hill et al., 1995). Entrepreneurship that is more evenly spread across different parts of town could prevent a drag on economic activity. Also from a resilience perspective, it is important that traditional entrepreneurs represent variety in the human capital available in a region. Jacks-of-all-trades with a balanced skill set are more likely to become entrepreneurs than specialists with expert competency in one area (Lazear, 2002). Rather than formal knowledge, traditional entrepreneurs bring labor attributes such as perseverance and a high tolerance for risk (Wadhwa, Aggarwal, Holly, & Salkever, 2009).

More specifically, they may introduce needed variety through their structure, organizational routines and functional relationships with other firms that would set them apart from high skill entrepreneurs and medium or large firms. As discussed in Chapter 2, major structural characteristics that distinguish traditional from other types of entrepreneurs are that they have low capital requirements and often blend work types so they are more practiced at coming in and out of self-employment. They have no employees and sometimes work out of a house or work truck, which are both unlikely in export-oriented businesses. These features increase firm flexibility and could contribute to more or faster adaptation to acute shocks and slow-burn challenges.

The involvement of traditional entrepreneurs in the informal economy may also provide needed flexibility. Observing the informal economy in New York and other global cities, Sassen (2001) notes four ways in which traditional entrepreneurs may contribute to regional resilience. The neighborhood subeconomy serves local demand for

services that are not offered by the mainstream economy, such as home-based child care and gypsy cabs which sprung up in New York's low income neighborhoods that formal companies refused to serve. The use of immigrant labor is a second informal economy that affords 'formal' companies flexibility in labor costs. These informal economies are often co-located and industry specific, such as New York's garment district. Gentrified neighborhoods develop a third type of informal economy, as they seek artifacts of middle class consumption from the nearby (formerly local) residents, such as high end wood work. Lastly, Sassen describes informal supply chains comprised of firms operating under the radar, often in violation of various city codes, but that allow small, formal businesses in manufacturing and services to compete with large ones. Some of these factors may be specific to global cities, but they offer a real world account of how traditional entrepreneur behavior may help combat slow-burn challenges.

As for acute shock resilience, much of the recent research has simply tried to determine if entrepreneurship grows or falls during these periods. Given the broader purpose of these studies, they speak to traditional entrepreneurship a bit more than the earlier studies of high skill entrepreneurs. A study of single-employer firms, very common in traditional entrepreneurship, found they are more likely to increase during periods of high unemployment, while employer startups are more likely to decrease (Acs et al., 2009). Shane (2011) points out that despite entries, exits meant that the net stock of entrepreneurs actually fell from 10.2 million people in November 2007 to 9.8 million people in June 2009. Traditional entrepreneurs may increase resilience capacity more than other entrepreneurs, but they do not seem to prevent a downturn. The closest to answering the question of entrepreneurs and acute shock resilience is a study of employer

firms. Kolko & Neumark (2010) find that the headquarters of locally owned chains (multi-establishments) are less likely to reduce employment than non-local, non-headquarter firms when the economy experiences a recession. And, local single establishment firms help stabilize employment during regional economic shocks, but they themselves are more likely go fully out of business (rather than lay-off employees) after a shock. Kolko & Neumark (2010) conclude that we cannot reject the theory that local firms weigh the costs of lay-offs to the community more than non-local firms, but given the mixed evidence, they argue there must be more to the story.

In sum, there are few studies that look directly at the role of traditional entrepreneurs in regional resilience. Traditional entrepreneurs appear vulnerable to acute shocks, but potentially less so than larger firms with employees and physical establishments to maintain, which can make them an asset in resilience capacity. Furthermore, they may play a role in resilience to slow-burn challenges through the informal economy, or again, by flexibility to changes in the business environment. But this has only been studied comparatively through the behavior of high skill entrepreneurs. Entrepreneurship is indeed lower in stagnant regions than ascendant ones, but endogeneity makes it very difficult to tease out when favorable regional conditions produce more entrepreneurs and when entrepreneurs produce the right conditions for regional adaptation. The various definitions of entrepreneurship and the limited literature argue for a more exploratory analysis than a hypothesis-based one. Unlike the comparative studies mentioned above, my purpose is not to determine if traditional entrepreneurs are the *cause* of the regions' divergent paths. It is to determine how the unique features of traditional entrepreneurship interact with the macro environment in

ways that could promote regional resilience. In the next section, I introduce my regions and research methods and then offer findings in the final section.

Research Methods and Analytic Tactics

The stagnant manufacturing titan and ascendant tech-hub. Dayton is a mid-sized region (800,000 inhabitants) located in southern Ohio, just north of Cincinnati. Since the late 1800s, it has been an important site for defense and aerospace. It is considered the birthplace of aviation, as it was home to the Wright Brothers who invented the first controlled airplane. At that time, the region was a hub of invention and patenting that spawned several manufacturing companies. The first cash register and resin coated flexible substrates for printing are two of the major industries born from Dayton inventions (City of Dayton, n.d.). Wright Patterson Air Force Base has long been a major regional asset. One of the largest and most diverse bases in the U.S., it employs nearly 30,000 military, civilian and contract workers. The region also houses two major universities, University of Dayton and Wright State University.

Nonetheless, Dayton has suffered significant economic hardship since its heyday in the last century. What was a manufacturing titan is now a stagnating Rustbelt region by most indicators. The city of Dayton and the metropolitan area have been on the decline. From 1980 to 2005, the region lost nearly a third of its manufacturing jobs and fell far below the U.S. average for job growth, 16 percent compared to 42 percent (Friedhoff, Wial, & Wolman, 2010). The trend has continued into the recent recession when Dayton saw the loss of General Motors which closed its plant in 2008 and the National Cash Register Company, which relocated its headquarters to Atlanta after 125 years in the area. It may be no surprise that the metropolitan population shrunk two percent between 1990

and 2010. Typically a negative indicator, the contraction in this case may have helped keep the unemployment rate at the national average of 11 percent in 2010, up from 6 percent in 2007 according to Bureau of Labor statistics. Before the financial downturn, Dayton ranked extremely low (238 out of 255) according to an index that measured change in economic well-being using employment, wages and metropolitan domestic product (Furdell & Wolman, 2006). It also consistently ranks toward the bottom of regions on various measures of innovation activity, such as patenting, startups and the proportion of high-tech workers (Atkinson & Gottlieb, 2001; Clark, Huang, & Walsh, 2010). Today, census data indicates the region is less educated and poorer than the national average (see Table 4-2). In 2010, about a quarter of Dayton's adult population held a bachelor's degree and 16 percent lived below the poverty line. Comparable national figures are one-third and 14 percent, respectively.

Table 4-2. Demographic Characteristics of the Regions, 2010

Metropolitan Statistical Area	Population (per sq. mile)	With college degree	In poverty	Foreign born	Job-less	Self-employed (inc/un)	Un-incorp only
Raleigh, NC	1,100,000 (4,900)	41%	13%	12%	10%	9.0%	4.8%
Dayton, OH	800,000 (5,300)	24%	16%	4%	11%	7.5%	5.0%

Source: U.S. Bureau of the Census, American Community Survey, 2010

In contrast, the Raleigh region has seen dramatic population growth—41 percent—between 1990 and 2010 and now stands at 1.1 million inhabitants. Raleigh is the capital city of North Carolina, a state in the Southeastern section of the country. Three major universities in Raleigh and the adjacent Durham-Chapel Hill region comprise the Research Triangle, which is most well-known for its innovations in biotechnology. The Raleigh region formerly had a strong agricultural industry, especially in tobacco growth

and production. And as a capital city, it has always had a strong government sector. Since the opening of Research Triangle Park in 1959, the region has built its identity as a tech-hub, home to a number of health-related and high-tech companies such, as IBM and the SAS Institute. It consistently ranks toward the top of indices measuring innovation (Atkinson & Gottlieb, 2001; Clark et al., 2010). On the index of economic well-being mentioned earlier, Raleigh ranks an impressive 7 of 255 (Furdell & Wolman, 2006). Before the recession, Raleigh's unemployment rate was low for the country, 4 percent in 2007, but in 2010 the figure was comparable to Dayton and below the national average, at 10 percent. Its workforce is highly educated compared to the national average: 41 percent of adults hold a college degree, many of which are graduate degrees. Both its agricultural roots and current high-tech niche have led to a high proportion of immigrants living in Raleigh. Approximately 12 percent of the region is foreign-born. Raleigh is a classic ascendant region.

Entrepreneurs in these two regions should have different experiences due to the different conditions of deindustrialization. As might be expected, the entrepreneurship rate is higher in the ascent than stagnant region. In Raleigh, nine percent of working adults claim self-employment as their primary type of work, while the comparable figure in Dayton is seven and half percent. On the other hand, the rate of unincorporated entrepreneurship—the kind more likely held by traditional entrepreneurs—is nearly identical between the regions. The extent of their different response to the acute shock of the Great Recession is difficult to determine, but given the longer-term trends, it appears that Dayton has done a little better than expected and Raleigh has done a little worse. The Brookings Institution is monitoring the economic recovery of the 100 largest

metropolitan areas, according to changes in the unemployment rate, employment rate, housing prices and economic output (GDP), from the trough (whichever quarter that was for the region) to now (the third quarter of 2012 is the most recent data) (Friedhoff, Kulkarni, & Berube, 2012). Dayton ranks better than average, 44 of 100, meaning its recovery has been better than 56 other regions. Raleigh ranks 25 of 100, which is certainly better than Dayton, but perhaps less than would be expected given its phenomenal economic success over the past 20 years.

Analytic tactics. The interview data collected for this analysis is described in full in Chapter 3. In short, I used U.S. Census Bureau data to identify working class neighborhoods, meaning that they had a below average rate of college graduates for the country, but also fell above the high poverty thresholds used to target federal funding to depressed areas. The Raleigh and Dayton areas visited were thus much more similar than the regional comparison in Table 4-2, with college graduation and poverty rates between 14 and 17 percent. I interviewed 27 traditional entrepreneurs who I selected by walking into local establishments, among other methods. Interviewees represent a variety of ages, races, genders, and some are foreign born (see the summary statistics in Appendix 3).The interviews were one hour and followed a semi-structured format (see interview protocol in Appendix 4). They were transcribed and uploaded to Dedoose.com. I look for similarities and differences between the regions in how respondents experience their entrepreneurship and how they respond to challenges and changes in their environment. I generate analytic findings that can be developed into testable hypotheses in larger settings about the relationship between traditional entrepreneurs and regional resilience.

The comparative case study approach is common in the resilience and regional development literature. Some of the seminal insights into innovation networks were gleaned from Saxenian (1994) comparison of technology clusters in Silicon Valley and Route 128 in Boston. Since then, researchers have used a mix of methods to better understand the growth and development of regions through a comparative lens. For example, Wolfe (2010) compares the response of two very large technology cluster cities in the Ontario province of Canada to the 2001-2002 and 2008-2009 recessions using interview data. In contrast, Welter, Trettin, & Neumann (2008) compare two stagnant industrial neighborhoods in the Ruhr area of Germany, the Essen District VI and the Gelsenkirchen-Bismarck district. They combine document analysis and in-depth interviews with a standardized questionnaire for entrepreneurs to determine why the former has fared better in state-sponsored renewal programs. Other studies have looked for similarities or difference across very different economic contexts. Klepper (2010) applies his in-depth knowledge of the institutional differences between Silicon Valley's semiconductor industry and Detroit's automotive industry to conduct econometric analysis that explains the emergence of these two industrial clusters through regularities in firm entry and exit patterns. The findings below add to this growing comparative regional studies methodology.

Findings

1. **There are more similarities than differences in the experience of traditional entrepreneurs in ascendant and stagnant regions.**

This research design was premised on the idea that traditional entrepreneurs in differing economic contexts would respond and contribute to their environment in

distinct ways. What was surprising then, was the extent to which the challenges they described were similar. In both regions, entrepreneurs experience slow-burn challenges that impact their business. Changes in import availability, online sales, big box stores, immigrant labor, customer preferences and radical technologies were all cited as challenges in their competitive landscapes. These challenges were not obviously mitigated by Raleigh's phenomenal growth, nor were they more prominent in Dayton's stagnant economy. Indeed, environments of both growth and stagnation provided opportunities for entrepreneurs. George said his hardware and power lawn equipment business has done well given Raleigh's rapid expansion into previously agricultural areas, but Tray thought the more depressed Dayton economy had provided him a low cost of living and easy access to knowledgeable machinists to help grow his gun accessory business. Conversely, both environments posed barriers. Jim felt that the astronomical internet use and education in Raleigh has meant fewer customers want to establish a personal relationship with him to meet their car import accessory needs. Ellie has been in the self-employment business as long as Jim (they are both in their 70s) and found that in Dayton, the constant outflow of corporate executives due to plant closures means little residential house-cleaning exists anymore and there is no new construction house cleaning.

Seasonal droughts, plant closures, and gas price hikes are some of the short term challenges described by interviewees. Experiences of acute shocks were also surprisingly similar in Dayton and Raleigh, although Dayton entrepreneurs more often cited specific corporate closures and a direct impact on their customers as the source of their troubles. For example, Phil's transmission shop saw a drop in repair revenue since a Dayton-based

car manufacturer closed and Phil linked it to his long time customers retiring and not driving since the closure. Hanna has seen more pricing complaints in her sewing business—a fact she considered a challenge—because customers buy more second-hand clothing since the recession that costs less than the alteration. In Raleigh, Ed's car repair shop has felt the effects of the recession, but via suppliers. He has dealt with slow and more expensive parts delivery, as suppliers reduce their routes and add surcharges due to rising gas prices. The housing bust was problematic for entrepreneurs in both regions, but they were also equally likely to recognize the short term benefits that the boom had brought their business. George's hardware store in Raleigh first benefited and then suffered from the bust:

George: In this business, we're somewhat recession proof. We don't take big hits because we have a lower average dollar sale. And we sell things that people need generally. It's more home repair items. Where we took our hit was on the building side. We had a pretty good business going with builders. We were selling, you know they're building houses with nail guns, they don't hammer nails anymore, they shoot them. So we had carved out a pretty good niche that we were stronger than Home Depot and Lowes on is the nail business. We got to the point that we could buy container loads, shipping container loads of nails and sell to Hispanic framing contractors…

Jen: But that's the part that took the hit in the recession?

George: Yeah, we lost 95% of that when the housing stopped.

Thinking about cluster theory described in Chapter 3, one hypothesis is that groups of traditional entrepreneurs establish networks where sharing or learning generates positive externalities that help them withstand regional shocks and contribute to

the long-term ascendency of Raleigh. This would be revealed in differences in the likelihood of group entrepreneur behavior between the regions. The clustering behavior assessed in Chapter 3 is broken down by region in Table 4-3. Although Chapter 3 found little evidence of neighborhood level differences, this analysis again holds one variable constant to better interpret differences in the other variable. Here, I hold the neighborhood context steady by comparing the Dayton cluster neighborhoods to the Raleigh clusters. It shows that inter-industry, intra-industry linkages and spinoffs are all more common in ascendant Raleigh than stagnant Dayton, but the differences are quite small. The regions are identical on their inter-industry group linkages (five out of nine), which were posited as the most likely contributors to resilience. If we assume cluster versus non-cluster neighborhood type has no influence and compare all the cases in Dayton to Raleigh, the regional differences become slightly larger for each of the three cluster dynamics, which is more supportive of the notion that entrepreneurs relate to resilience.

Table 4-3. Percentage of Entrepreneurs in Each Region that Described an Explore or Exploit Response or an Inter-firm Linkage

Cluster dynamic	Raleigh (n=9)	Dayton (n=9)	Example interviews
Inter-industry linkage	5	5	Knowledgeable equipment shop and lawn care entrepreneurs
Intra-industry linkage	4	2	Subcontractors joining forces for home remodeling
Spinoff	5	4	Passing supplier/pricing strategy to former employee
Response to challenge			
Explore and adapt	6	5	Operating as a home-based or retail shop as needed

Exploit and hold course	5	3	Refusing to take credit cards

Note: Categories are not mutually exclusive

Beyond grouped entrepreneurs, another potential difference in the regions is the individual entrepreneur's response to a challenge. One could hypothesize that entrepreneurs in ascendant regions are used to identifying new opportunities in the midst of growth, weighing the costs and gains of exploration and business adaptation. Organizational research has shown firms that pursue an explore and diversify strategy over an exploit and specialize one tend to go too far (Sorenson, Mcevily, Ren, & Roy, 2012). Thus it is unclear what the optimal balance of explore and exploit behavior is, but the balance is expected to be different in the regions. Again, the difference is slight between the regions. Both Raleigh and Dayton entrepreneurs explore more often than they exploit. But Dayton entrepreneurs demonstrate a less equally balanced approach than Raleigh entrepreneurs (see Table 4-3). If a more equal balance is better for resilience, it may support that traditional entrepreneurs bear some relationship to regional resilience. Unlike the cluster dynamics, if we assume neighborhood types have no effect and compare all Dayton entrepreneurs to Raleigh, the two regions become more similar in their balance of exploit and explore behavior.

One of the most adaptive traditional entrepreneurs I encountered was Jim. Jim began his (now 30 year old) business in import cars in his back yard and moved into a retail space as it grew. When his investors cheated him, he moved his inventory back to the house and sold products from his front room. He returned to house sales again 10 years later when a series of break-ins at his (second) retail store forced him to close. Even within the retail store he adapted. Though he started with import car parts in the 1970s, he

moved into sports car art (paintings and drawings) when imports flooding the American market. When the art business tanked due to a rise in corporate intellectual property claims, Jim simply moved the art out of the fore of the retail store and replaced it with bucket seats and larger car part items. The most common example of explore and adapt behavior was to alter inventory or services due to changing customer preferences. Entrepreneurs in both regions are very likely to respond to requests for new products or services and to do so quickly.

A common example of staying the course and exploiting known strategies is to wait out slow periods. Entrepreneurs described a natural ebb and flow to their work so they held the course more often than they acted to drum up business during slow periods. The down times might bother them or make them nervous, but they viewed it as a bad year or season and continued with their normal advertising and pricing. As Derrick put it:

Derrick: Summer time is always busy, everybody is ready to do stuff. Usually right after Christmas you're dead. You're lucky if you can get a basement that will take a little while. And you get jobs, you know, smaller ones usually coming in. Yeah, once everybody spends all their money at Christmas, it dries up.

Jen: What do you do? Since you know it's coming, do you save for that?

Derrick: Yeah kind of. You know, I worry every year but I always have enough work to get me through. You know what I mean. Some days, you may only work 4 days a week, or you might work two weeks straight and then you got a couple days until the next job comes. It's just, that's how it is.

Other instances of exploiting a known expertise rather than searching for new strategies were mentioned as a purposeful stand against (what they might consider) mal-

adaptation, such as refusing to change the belt requirements of martial arts training to increase customers. It can be difficult to identify how an entrepreneur responds to a slow-burn challenge because it unfolds incrementally over long periods. He or she may have mentioned the problem but did not necessarily identify a response. Moreover, self-transformation, where a major business change was not a response to external stress, is a potential source of resiliency to lock-in. There are just a few examples of self-transformation (not shown). Gwen auctioned off her woodworking inventory to start a military memorabilia store simply because she desired a new challenge. Kenneth significantly expanded his lawn service territory for the same reason. Rebecca recently found a building she plans to buy so that she can combine her tanning and hair salon clients under one roof and cut out her commuting time. There is not a marked regional difference in rates of self-transformation.

The behavior of traditional entrepreneurs appears quite similar in ascendant and stagnant regions, according to the most basic indicators of types of challenges, responses to challenges and types of group linkages. This is surprising because the regions have seen such different macro conditions in the past 30 years. On the other hand, similar behavior during the acute shock of the recession may be consistent with their similarly moderate unemployment outcomes when compared to other regions (Friedhoff et al., 2012). Interviewee comments suggest that the more important differences in adaptation may be between them and their corporate competitors. For instance, Greg in Dayton felt his new business in cleaning kitchen equipment was taking off because he could respond to restaurant problems faster than his out of state competitors due to his location and willingness to take emergency calls. George described his ability to ramp up nail sales

quickly and conveniently for the Hispanic framers as was what gave him this edge over Lowes and Home Depot. Both Greg and George's adaptability were vital to the success of other traditional entrepreneurs in the area. The next two findings introduce ways that traditional entrepreneurs are similar to each other, but potentially unique from other types of firms. They report all statistics based on the full sample of 27 interviewees. The findings are suggestive of how traditional entrepreneurs contribute to resilience.

2. Charitable profit-seeking: an organizational routine that offers resilience through variety.

Traditional entrepreneurs offer goods and services that are in high demand during tough economic times. Thus their mere presence in Raleigh and Dayton may help residents maintain their quality of life during acute shocks. For example, Derrick noted that his remodeling business recently had its best year because the mortgage crisis forced home owners to make small upgrades rather than buy new. Adam and Ed made similar statements about their electronics repair and mechanic services, respectively. People opt for repairs over new purchases. However, the type of service appears less important than the manner in which it is delivered. Traditional entrepreneurs may contribute to regional resilience through an organizational routine that is unique compared to the dominant economic paradigm.

Most entrepreneurs in both regions (20 of 27) saw their business as more than an economic entity. They recognized their social value and so are, at once both a profit-seeking and charitable venture. The most common implication was that they charged less than (what they saw as) market rate for their product or service, even giving it away under some circumstances. Entrepreneurs who were not looking to "be a millionaire" or

to “make a killing” were the norm. Rather than maximizing their profits, stories like the one told by Kenneth below, indicate a minimum threshold used to determine appropriate price and resource allocation given the service’s social value. Kenneth’s comments about his lawn service fees are representative of interviewees’ in both their sentiment and specificity:

Kenneth: Yes, I would say, I wouldn't want to put the word greedy, but you can become greedy. I had to just take a step back and gather myself a couple of times and say you know, I've made a mistake here and could have done better with this as far as my judgment.

Jen: Do you, can you be more specific? Do you have any examples?

Kenneth: I would say an example, say like if I go bid on a job that I know is worth $1500 and I can do it comfortably for $800-$900 and still come out good. And for another example, say the person could be a senior citizen or elderly or you know, and I didn't use good judgment on that. All the sudden something will start tapping in mentally. I could have done better with this. But nine times out of ten, I would turn right back around and call or go back and say… look, they hand me the money and I say, well look just give me $700. That will be fine.

Jen: How do you decide that? Like when you were saying you could do the job comfortably for $900. Do you mean comfortably as in you'll still be able to pay the bills that month?

Kenneth: Yes. When I say comfortably, I'm looking at 2-3 things. As far as labor time, you know like physical labor. Not only that but paying my workers. And then me coming out as a pretty good profit. I don't have to make $500-$600 off that. If I come out with

$400 that day, as far as like expenses and paying my health, I'm ok. I felt that I have done a good gesture in helping someone. And we come across that a lot.

Fred and his business partner sell eyeglasses. After witnessing what they view as an industry-wide practice of ripping people off, they created a 4-part business contract promising to have fun, charge reasonable prices, make a decent living for their families and grow their friendship. A mutual concern with community value is a major reason for the joint business venture.

Fred: But the other thing that really drives it is that he really cares about people. And that is the part I was really struck with. Here's somebody that's really compassionate. And we can charge a lot more for our glasses than we do, we can double our prices easily. And we don't do it because it's not fair.

Some instances of social value were conveyed as a long run economic strategy for the business, such as a customer appreciation BBQ in the parking lot of Sam's convenience store or Stuart's efforts to retain students by reducing membership fees at the martial arts studio for families who had fallen on hard times. But as the previous comments indicate, many others expressed their actions as a business norm to do the "right" thing. Previous research has found a similar tendency among entrepreneurs in less affluent areas of the U.S. and Europe (Moore, Petty, Palich, & Longnecker, 2010; The Aspen Institute, 2004; Williams & Nadin, 2011). They distinguish social entrepreneurship, not by a lack of concern with making money, but by an expanded set of goals and motives in their business venture. Doing the right thing went beyond fair pricing. Some interviewees provided small pockets of short-term funding for their employees to attend college. In working class communities with few wealth reserves,

such flexible funding can make the difference between completing college or not. Participating in charitable organizations was a popular activity. Twenty-two percent of the 18 Dayton entrepreneurs and 11 percent of Raleigh's brought up charity work as important to their business and often said it was made possible by their ability to control their own schedule. For example, through his membership in the local Rotary Club, George spent every Friday for four years overseeing a gym after hours to help turn a crack invested neighborhood around. Similarly, Hugh commented on the significant time spent feeding the homeless through his American Legion membership. Harris seemed to fall into a charitable role based on the location of his Dojo.

Harris: So I had to change myself to service the community in here. I had to change myself.

Jen: How could you tell that your other style wasn't working?

Harris: Because I was too intimidating. I taught the class, I didn't really engage into the personal level. 'How you been, how's your family?' I was just here to teach martial arts. Although the other challenge was I opened up to their own drama. That's the bad part. The bad part is there's drama, the good part is it turned out that they have family problems, issues, and also children that were having problems. I was able to use that stage of openness to be able to help people…With all [my] bad experiences, what has helped me is to be stronger inside in this kind of work and also to tell others my story. Because we've had divorced kids, I mean excuse me divorced parents, and kids with no father around. When I tell them the story, that you're going to be ok that you don't have the father. I grew up not knowing my father. So when I tell them that story, they would feel a lot better. The mother would come to me and say, I don't know what you did to my

two kids, and this is a true story, but their outlook on life is different now. Because they're bitter towards their father and I tell them, you're going to be ok, I'm ok.

Whereas the micro-economic view of rational firms conveyed in the business literature is that they maximize profits and produce the most efficient system over the long run, traditional entrepreneurs in this study adopted a more community focused approach to commerce. When viewed as an informal institution, the blending of social and economic activities is suggestive of a successful organizational routine borne in working class environments (Boschma & Frenken, 2006). That such a routine is not a major factor in regional resilience to slow-burn challenges is evident by the Dayton areas' history and long-term experience as a stagnant region. It may in fact be a contributing factor to Dayton's inability to turn things around. Yet it is equally evident that entrepreneurs that operate under a charitable profit-seeking norm relates to the area's resilience. Acute shocks that change the purchasing power in working class neighborhoods are more easily absorbed by traditional entrepreneurs because negotiating and evaluating a customer's ability to pay is part of their ongoing routine. It need not be learned in the midst of what is already an uncertain and difficult time.

These data cannot tell us whether charitable profit-seeking is unique to traditional entrepreneurs. The fact that over a quarter of the interviewees discussed a difficult road to viable self-employment, including periods of homelessness or growing up a foster child, suggests that the businesses of traditional entrepreneurs may be more likely than other types of firms to adopt a routine that balances individual profit and community. It may also be their structure (e.g. single-employer) over personal attitude that fosters a charitable profit-seeking routine. In either case, the extent to which it offers variety in the

organizational routines of the region's firms could predict a positive relationship between traditional entrepreneurs and regional resilience because resilience calls for variety to provide the agents of a system alternatives for adaptation (Axelrod & Cohen, 1999). In this instance, traditional entrepreneurs and their charitable profit-seeking provide established and vetted alternative services for those outside the neighborhood when a downturn prompts widespread lay-offs or belt-tightening. Fred's optical shop, for example, gives the young architect a more inconvenient, but less expensive alternative to his stop at the local mall. Adam can tell the accountant hoping to upgrade his computer that trading repairs for tax service is perfectly acceptable. Thus traditional entrepreneurs are not just useful for the type of service they provide, but for the way in which they provide it.

3. **Trial and error learning: a behavior that fosters resilience through more adaptation material.**

A major theme in the stories of almost all entrepreneurs interviewed was that their knowledge of what works is gained through personal experience rather than the classroom or information sharing in formal social networks, two avenues thought to be crucial in innovation research. Some 'trials' proceed incrementally. For example, Derrick in home construction and Ed in automotive services use electronic manuals to look for information, but the variety and rate of change in their industries means experimenting is often the more efficient, and sometimes the only method for problem solving. Major changes occur in home construction every decade so a successful remodeler must be comfortable with constant trial and error learning to retrofit material. It may be common knowledge that older houses used plaster, but Derrick laughed as he explained that there

was no one to ask how to remodel a bathroom built in 1912 to current drywall standards and blend the renovation to be structurally sound and visually pleasing.

When he started, Greg offered his kitchen cleaning services for free so that he could learn-by-doing and build a customer referral base at the same time. Many interviewees recognized the importance of creating or seizing opportunity to start or evolve their business. Gwen has changed her retail business three times over almost 20 years and each time she started small and built her inventory and knowledge of the subject as she went. Even when done incrementally, setting your own course and learning-by-doing carries more risk than imitation. Tray is pursuing a number of small ventures with friends, from gaming software for electronic devices to a mat for disassembling and cleaning a popular gun used in the U.S. He had this to say about his entrepreneur experience:

Tray: I would say that in any of the three businesses the biggest challenge to overcome, and it's probably for entrepreneurship in general, is having that idea and not being afraid to try it. Believing that you can do something. Believing and understanding that it's ok if you try something and fail. As long as you don't put your entire life savings in it or something like that. That's really been the only challenge.

And several entrepreneurs I interviewed have 'failed' in some sense. Both Julie's hair salon and Nick's beer shop stocked up with gift shop inventory to balance their offerings and both quickly determined they needed to minimize or eliminate the side business. Interestingly, it was the salon not the gift shop that a local business training program advised against. Sam has branched out into three convenience stores, but after three months of changing tires and oil at a mechanic garage he bought, he had to admit,

"look, this is not my kind of thing" and he returned to his store and rented the garage to a more suitable entrepreneur. They initially made a bad choice between exploiting and exploring, but recognized it in time to reverse course.

Other, far less incremental trials, ended positively. It is also not uncommon for entrepreneurs to try something risky at a seemingly bad time. George inherited a small hardware store from his dad. When Home Depot moved into the neighborhood, his business dropped. In response, he built a new, larger facility with the hope of growing his power equipment niche. Harris used the economic downturn to expand his Dojo and attached customers he lost when the GM plant closed. Each of these stories ended positively, with a stronger business for the individual and greater investment in the local area. George and Harris both felt that their choices were to die as a business, or to become more of a 'player' in the industry, more competitive.

The system level benefit of trial and error learning is that some trials produce the big pay-off, an innovation in service delivery or product. This view would describe trial and error behavior as learning in the Doing, Using and Interacting mode rather than learning codified scientific and technical knowledge (Jensen et al., 2007). Tim is counting on this method. He refused to adopt the methods taught to him in barber school, such as aiming for efficiency over quality time, and he believes it has been key to building his customer base. Adam had never seen it done, but his computer repair business has only survived by bartering services. Greg is waiting to see whether his experiment pays off in the long run. When he started his kitchen equipment cleaning business, he was shocked to find the degreasing chemicals were dumped down the city drains. He worked with the city chemists to develop the first citric-based solvent, which

the city estimates would save them $200,000 a year and reduce residential flooding if used industry-wide in Dayton. An amazing innovation, but it took someone who was willing to fail, as Greg tells it:

Greg: But I talked to [a friend that worked in the industry] before because I spent almost all my money setting up the company to be identical to my competitors. And what I found out after the first job we did, was that I was going to have to invest in this new chemical. Not only that, I needed a bigger trailer because my stuff wasn't set up enough to haul that kind of weight. And I needed to haul multiple 55 gallon drums. That's another $5000 worth of equipment that I didn't have the money for. .. I went again and just spent every penny I had left and got all that stuff we needed. Took a chance on it. It's been much more successful going with this. They suggested that I didn't, that I just did it like everybody else. And it just wasn't, I think when companies get bigger they don't take chances as much.

Whether it is local problem solving in one's day to day job or more radical trials in starting a business venture, the tendency of traditional entrepreneurs to reject institutional knowledge may help avoid lock-in and path dependent decline. Cognitive lock-in stems from too close a connection among a region's main actors (e.g. policy-makers, chambers of commerce, higher education institutes or within an industry cluster) and too little connection to knowledge outside of that network (Hassink, 2005; Martin & Sunley, 2007). Traditional entrepreneurs are likely to search for unconventional solutions through their own trial and error in business. Indeed, entrepreneurs in Raleigh and Dayton referred to a special commitment, something different about being an entrepreneur than being self-employed. Eli described entrepreneurship as "a different

kind of drive." They talked about there being a moment when one has to decide whether they planned to be a real entrepreneur. In Kenneth's crowd, they say you have "established yourself" when that moment comes and you commit to "going out and getting it" each and every day. Perhaps it is counter-intuitive that being established means commitment to an ongoing search effort. But it is the search behavior associated with entrepreneur personality traits that make traditional entrepreneurs an interesting potential component of regional resilience.

Again, these data cannot speak to whether this search behavior is unique to traditional versus high skill entrepreneurs. But the variety they can potentially add by accessing knowledge from informal sources is a departure from the literature on high skill entrepreneurship. Although business networks were reported as an important information source by 44 percent of interviewees, a number of other sources were also very common (see Table 4-4). Moreover, sixteen of the 27 interviewees had negative things to say about formal business organizations, even when they took part in them.

Table 4-4 Percentage of Interviewees that Discussed the Network

Network type	Percent (n=27)	Example
Other networks	63%	Acquired money from old friend/family; learned of available real estate from State Licensing Board representative
Customer or supplier	56%	Learned of a new, top-selling product for the local market from a customer
Succession	48%	Had a parent/close relative entrepreneur
Business organization	44%	Got a new business idea from another member- Chamber of Commerce, Transmission Association
Industry competitor	33%	Got new customer through a competitor referral

Former colleague	26%	Met a business partner in trade school
Service organization	19%	Accessed new markets through the group-Knights of Columbus, Veterans Club, church
Anti-formal networks	59%	Disliked the growth focus of the Chamber of Commerce

A handful of interviewees were fully anti-institution in their views. Fred felt the chamber of commerce was a waste of money and his required continuing optical education classes taught how to cheat customers. Similarly, Sam believed business groups focused too much on economic growth when he was looking to make his mark in the community. That is not to say that the sources of knowledge for traditional entrepreneurs are not limited in their own right. But from a regional perspective, having a business contingent that is committed to going their own way helps maintain needed knowledge diversity. Still, this contingent is present in regional environments of ascent and stagnation. Thus, the question for resilience at the regional level is the extent to which traditional entrepreneurs are connected to actors outside their working class neighborhood.

4. **Turnkey spinoffs and second hand startups in stagnant regions warrant further investigation.**

Although it was surprising how often the same themes arose in conversations with Dayton and Raleigh entrepreneurs, two variations on how businesses are started are noteworthy. Both phenomena are unique to Dayton (see Table 4-5). Spinoff firms are a well-studied method of cluster growth in regional development (Boschma & Frenken, 2011; Klepper, 2010). Traditional entrepreneurs had many examples of passing on or receiving vital resources or information from a parent firm. For example, Harris felt he

passed on a necessary survival strategy to a martial arts student/instructor, which was to balance adult classes with offerings for children. That person's refusal to follow the strategy led to the Dojo's quick demise, according to Harris. But strategies and routines are not the only mechanism for spinoff creation in Dayton. Harris called it a "turnkey operation" when students paid him to physically establish their Dojo and clientele, an activity he has done several times. Fred is a successful eyeglass store owner who has been asked to start similar stores on a number of occasions. He negotiates the lease and gets the new entrepreneur a good deal. He also sets up the interior. He created a turnkey operation for free for his apprentice, but he typically charges significant money for this service (up to $33,000) to those he meets in the optical trade organization.

Rather than passing along a substantive piece of knowledge, as was the case in spinoffs in Silicon Valley and Akron's automotive industry, successful parent companies in Dayton are passing on more general entrepreneur skills and information. Turnkey spinoffs may be a useful means to develop entrepreneurs in a stagnant environment, but they may also serve to reduce the variety within the system by limit the search behavior. Traditional entrepreneurs that copying past routines through turnkey spinoffs may result in less resilient regions, a conclusion supported by the chronic slow-burn challenges in Dayton that are not evident in Raleigh.

Table 4-5. Percentage of Entrepreneurs in Each Region that Described a New Firm Behavior

Interview code	Raleigh (n=9)	Dayton (n=18)
Turnkey spinoffs	0%	22%
Second hand startups	0%	39%

A second variation on a known concept is the use of second hand goods and discount items to "startup" a new venture. Over a third of the entrepreneurs interviewed in Dayton mentioned their use of thrift stores and pawn shops to buy needed equipment, such as tools and shelving. Adam even sought second hand goods from customers and other local owners to keep his business afloat.

Adam: But I've kind of got the gift of gab. And I like to barter a lot too. And bartering has gotten me a lot of stuff that I've needed.

Jen: Like what?

Adam: Just going to these local business. Like, you get to know somebody and they need some help. For instance, the car place across the street, we do some electronics work for them. Their computers break down, we give them a good deal and if we have a car issue, then we can trade out that way. They hook us up, like no labor charges, just the parts. So I go around a lot, especially if I know someone is in need. And they go 'oh I don't know if I have the money to do that' and I go, well what do you have to trade? Do you have old computers sitting at your house? Because we'll recycle those and get money for them. So it's a lot of bartering too to get me to where I've been because I haven't had the money in my pocket to really spend out for anything.

Although Raleigh entrepreneurs also started their business with low overhead, such as buying tools on payment plans or using friends to help set up their store, no Raleigh entrepreneurs discussed a strategy of buying second hand goods. These secondary markets, as they appear to be, could increase regional adaptation by lowering the financial risk of firm creation. Angel investors and other flexible capital programs are promoted to advance innovation. But it should be no surprise that traditional

entrepreneurs also lack small and flexible programs to access financial capital (Servon et al., 2010). Servon et al. (2010) also found that many entrepreneurs were unlikely to apply to the microloan programs that do exist, which resonates with the anti-institution sentiment I found among my interviewees. Positive intervention in a second hand goods market offers an alternative way to promote successful business development within the milieu of traditional entrepreneurs in stagnant regions. It also supports a more charitable firm routine, as discussed early and demonstrated again in Adam's comment. These data do not allow for closer analysis, but regional variation in the character of spinoff and startup businesses warrants further investigation.

Conclusion

This analysis used interview data to explore potential relationships between traditional entrepreneurs and regional resilience. A systems framework suggests that a region's capacity for resilience to external challenges can be found in the amount of variety available in the system, an optimal amount of connectivity between types of variety, and the balance of exploring and exploiting behavior in the system agents. Given the economic climates of Raleigh and Dayton, it seems the behavior of traditional entrepreneurs should be different in these contexts. Where Raleigh entrepreneurs work within, and potentially help generate a forward-moving economy, Dayton entrepreneurs must work within, or are potentially contributing to, a macro environment of stagnation.

Based on findings in Chapter 3, I was first interested in whether there were regional differences in how the entrepreneurs' worked as a group. I found that collaborative relationships help entrepreneurs alter their services when times got tough and keep them afloat when their own advertising efforts were not producing. If industry

linkages that demonstrate positive externalities are more likely in the ascendant region, it would argue for a positive relationship between sub-regional clusters and regional resilience. It would also suggest that cluster theory could be usefully extended from economic growth outcomes to resilience, when the theory is applied to traditional entrepreneurs.

It was surprising then, that the results of this analysis show many more similarities than differences in Raleigh and Dayton entrepreneurs. The challenges they described, their balance of exploiting and exploring and instances of cluster behavior (generating spinoffs) were not markedly different. As the literature review makes clear, resilience is a complicated concept and it lacks the standard metrics used in economic growth analyses. For example, are entrepreneurs important for recovering from slow-burn or acute shock challenges, and are they important for recovery or for avoiding them in the first place? The networks described by entrepreneurs in this study are more likely important for faster recovery from downturns than for preventing them. They most clearly argue against a role for traditional entrepreneurs in avoiding or recovering from slow-burn challenges. But even this conclusion is premature. It could be that traditional entrepreneurs are key to combating lock-in, and they are better connected to other parts of the economic system in Raleigh than in Dayton and that explains their ascendant and stagnated conditions, respectively. Alternatively, traditional entrepreneurs may have no impact in ascendant regions, but are a major contributor to why stagnant regions do not fully descend into chaos. The answer is difficult to determine, even without the limitation of a small sample and short time frame. These data do not yet offer an extension of

cluster theory to regional resilience, but their potential relationship to acute shock resilience is promising.

Importantly, the analysis found that traditional entrepreneurs, at the individual level, demonstrate resilience characteristics commensurate with complex adaptive systems theory. Thus, the findings inform resilience theory on its own, outside of cluster theory. I found that entrepreneurs in both regions offer a potential source of variety in the balance of economic and social logic they use to pursue their business (i.e. charitable profit-seeking). They also demonstrate search behavior that may be particularly effective at generating variety because it is often established through trial and error. These behaviors describe how traditional entrepreneurs may help regions continually adapt and transform, through short and long term challenges. Their effect is most evident at the sub-regional level because their social networks appear limited to similar working class neighborhoods, but depending on their connection to other parts of the region, their resilience contribution could be region-wide.

Although this analysis is intended to be exploratory, a limitation of the study and threat to these conclusions is that I cannot determine if these behaviors and attributes are unique to traditional entrepreneurs, versus corporate competitors or high skill entrepreneurs for example. There are some factors supporting their uniqueness. Entrepreneurs that work in high tech industries do not often provide a direct service to a customer. Thus they do not have the opportunity to enact community focused business goals by how the business is operated. Corporate service providers may interact directly with customers, but they are limited by company policy on some matters. Another word of caution is that 'unsuccessful' firms are excluded from the analysis. Entrepreneurs I

interviewed have been in business since 1996 on average. The rate of non-adaptive behavior could be found in higher failure rates in one region over the other.

CHAPTER

5 –IMPLICATIONS AND CONCLUSION

The wealth of research on industry clusters and innovation networks is in stark contrast to the considerable gap in our knowledge of traditional entrepreneurship. This dissertation has offered some of the first evidence of spatially clustered networks in the home remodeling, lawn care services, hair dressing, and other traditional businesses. It rounds out the large literature that documents regional clustering among entrepreneur start-ups and export-oriented firms (e.g. Acs & Armington, 2006; Glaeser, Kerr, et al., 2010; Powell et al., 1996). It also makes fuller the urban affairs and sociological studies on disadvantaged entrepreneurs by highlighting the positive aspects of their collaborative work conditions (e.g. Fairlie, 2005; Valdez, 2011; Sassen, 2001). Together, these contributions point to the commonalities among entrepreneurs, outside of and regardless of their educational attainment. Perhaps most important for policy, the study identifies a role for traditional entrepreneurs—clustered or not—in regional resilience. Until now, this literature too has failed to incorporate entrepreneurs outside of the university context (e.g. Saxenian, 1994; Simmie & Martin, 2010).

Innovation scholars have not only conceptualized entrepreneurial activity in a way that ignores a sizable portion of the entrepreneur population, but qualitative case studies have been confined to very large cities on the East and West coasts, which are largely anomalies in the American landscape. This research and its findings are a unique contribution to the conversation on innovation because the neighborhoods under study are unlike the large and densely populated New York City neighborhoods studied by scholars like Jane Jacobs and Saskia Sassen, or the Boston region studied by Walter

Powell and AnnaLee Saxenian, or even the Silicon Valley area, with its density and proximity to San Francisco. Raleigh, North Carolina and Dayton, Ohio better represent typical American regions and neighborhoods because they are mid-sized, have average population densities and have no major public train transport. This means they rely significantly on cars to travel between different parts of the metropolitan area, which has implications for the frequency and diversity of network building. In turn, different network structures have implications for the types of cluster policies enacted in different regions.

In this final chapter, I summarize the findings from all parts of the dissertation and offer their implications for both research and practice. The parts include the quantitative and qualitative answer to the question of whether traditional entrepreneurs cluster (concentrate) in particular working class neighborhoods and whether firm relationships, linkages and spillovers (agglomeration) explain clustering. It also includes the implications regarding how traditional entrepreneurs contribute to the resilience of regions or neighborhoods. I conclude with some brief reflections on the future of traditional entrepreneurship in a knowledge-based economy.

Future Research and Policy Implications of Traditional Entrepreneur Clusters

The first part of this dissertation was focused on the locational Gini coefficient calculated for 12 representative regions in the United States and found that self-employed workers do cluster in neighborhoods more than other types of workers, but it is a very minor degree of clustering. Further analysis indicated that the regional Gini coefficients were somewhat unreliable. This may be attributable to data reliability issues that the 2010 Decennial Census can help confirm or dispute, but my sense is that self-employment

clustering in working class neighborhoods is indeed minor and variation in neighborhood self-employment (outside of densely populated and walker-friendly regions) is attributable to other factors, such as unusually high numbers of government workers in neighborhoods near a military base. This is further supported by the fact that the important networks and industry linkages that the entrepreneurs themselves described were not confined to the neighborhood of their residence or business.

The interviews, however, indicated that the geographic component of entrepreneurs' social networks did matter. The competitors, customers, service organization members and other local business owners in their networks were not from across the metro area, but were most often located in other working class neighborhoods, rather than in well-off suburbs or areas of extreme poverty. The results suggest widening the geographic scope of traditional entrepreneur cluster analysis to something larger than a neighborhood or census tract, but smaller than a metropolitan region. Entrepreneurs in traditional service industries are likely to have incomes that restrict their housing options to particular neighborhoods, so in some sense it is no surprise that their social networks have spatial limitations. But within those areas, we may still find regions whose business owners have closer cognitive, social and institutional proximity that lead to more learning and sharing, and more supportive environments for entrepreneurship. The clustering process would be similar to that found in Silicon Valley and any other regional clusters: there is not necessarily a natural (sub)regional advantage or disadvantage to traditional entrepreneurship. However, historical circumstances can start a trend in self-employment that, after building in a self-reinforcing cycle over the years, eventually results in a bifurcation into clustered and non-clustered entrepreneur regions.

This research uncovered previously unknown linkages and spillovers among traditional entrepreneurs that mirror the positive externalities at the heart of regional clusters. One person's investment in a storefront or in a reputation of quality and fairness, can be shared at a lower cost with the group. Now that the basic tenant of those relationships has been identified, much work needs to be done to understand their character in greater depth. An important next step is to go further in identifying the type of proximity that links these workers as an interdependent group, and the extent to which the linkages map to spatial configurations of the city. It was suggested in Chapter 4 that the entrepreneurs in working class areas may share certain norms of charitable behavior within their business, which could be attributed to cognitive proximity (i.e. world views). But future research needs to determine if that is a criterion by which the entrepreneurs build their collaborative networks. Geographic distance would have a minimal influence on traditional entrepreneur networks then, but charitable profit-seeking could be a prerequisite to gaining the information or resources that allow them to be more successful as a group. Importantly, such a situation would directly link entrepreneur clusters with sub-regional or even regional resilience.

Lastly, and along these same lines, if geographic proximity is not the primary facilitator of clusters, the self-reinforcing effects of intra- and inter-industry referral processes should be more closely assessed. Understanding the number, source and strength of these types of ties could offer evidence for how nascent clusters gain their momentum, and why some clusters can withstand external forces, such as a box store locating near them, and some fail. In fact, the 'life-cycle' of clusters is an entire research thread (Menzel & Fornahl, 2009) that could be applied to the traditional entrepreneur

population. This research may help tease apart when in their firm growth that local service providers benefit the most from the collaborative relationships of a cluster, and when in the cluster growth, the region benefits the most.

The policy implications of this research relate to neighborhood or sub-regional cluster initiatives. It seems unlikely that the same policy strategies used for high skill clusters would be effective with traditional entrepreneurs. One lesson that should be taken from regional cluster programs is that new clusters cannot be created from scratch to mirror other regions' models of success. Doing so amounts to putting governments in the position of 'picking industry winners,' which is a highly centralized mode of economic decision-making (Cortright, 2006). Since the evidence and resilience impact of neighborhood clusters is not overwhelming, this is an even bigger risk for traditional entrepreneurship.

Mimicking strategies used in other contexts can also have unexpected results when the underlying motivations of the target populations are different, such as the profit-maximization assumption. A key lesson (which supports other neighborhood-level studies of entrepreneurs) is that 'good' or 'successful' entrepreneurship should not be measured by profits because the measure misses the 'good' outcomes entirely. Traditional entrepreneurs may be purposefully diverting potential profits for social goals and in so doing, intercepting the downward spiral of economic recession, natural disasters and other economic shocks, before their momentum is too great.

As would be expected from a profit maximization standpoint, a handful of entrepreneurs brought up tax and regulation at some point in our conversation, including concerns about health care reform legislation. Slightly more entrepreneurs mentioned

concerns with local policy, such as cumbersome rules on workers compensation and economic revitalization programs gone bad. Still, other interviewees thought tax and regulation were currently more beneficial to their business than not. For instance, John mentioned that he already offered health care to his full-time and part-time employees, but it is expensive and he was glad they would get federal assistance to pay for it. Fred believed that health care reform would allow his optical shop to better compete with corporations for qualified employees. He does not currently offer health care and felt the universal plan would make it less of a disincentive to work for a small business.

One option is to derive no cluster policies from this analysis and to continue to research the appropriate geographic scope of clustering and measure its impacts before acting. On the other hand, one of the most basic but important policy implications from this research is that traditional entrepreneurs, like high skill start-ups and larger export firms, may benefit from group-focused programs, not just the tax and regulation reductions most often discussed in public policy. Traditional entrepreneurs' small firm size and local service focus does not preclude them from demonstrating some of the same group phenomena of interest and concern to policymakers. If we are to heed Gottlieb's (1997) call discussed in Chapter 2, research must go beyond measuring and describing current states, to suggesting what is possible for improving or sustaining neighborhoods. If subregional networks of entrepreneurs could have positive benefits for neighborhoods and individuals, even it is not already occurring, the policy question should be how best to facilitate those networks.

On that note, the other option Cortright advocates besides letting clusters grow without intervention is that cluster strategies should build on the unique strengths and

history of the area. For the traditional entrepreneur population in the areas studied, it seems that the formal industry and business organizations created for regional clusters are not the best fit. However, it is important that interviewees in this study perceived connections to customers and other informal networks as contributors to their success because policy that facilitates these connections will likely come most naturally to the target population. Helping traditional entrepreneurs connect to their customers or to other business owners within service organizations, for example, would be more appropriate because these types of networks more naturally align with the objectives of traditional business owners. This could mean simply advertising these service organizations to business owners. Indeed, policy strategies should avoid working through formal business organizations due to the negative impression many traditional entrepreneurs have of them.

Unlike business development in areas already suffering from high poverty and physical decay, supporting entrepreneur networks could help combat the external forces that ultimately lead to business closures and neighborhood decline. These forces are often referred to as a vicious cycle because the causes of decline are so varied, interdependent, and cumulative, and they are especially resistant to policy interventions. Bottom-up policy interventions can be most effective in these situations because they maximize local information about the nuances of social groups. Policy strategies that effect work conditions rather than target specific places for redevelopment or create incentives toward specific ends allow entrepreneurs (who interviews showed clearly have an attachment to place when they have a physical location) to adapt their business in ways that make sense for their current system of operation.

Technology is a great way to affect work conditions without prescribing one-size-fits-all solutions. I found that traditional entrepreneurs were accustomed to using some form of technology, whether it was social media to advertise or software to search car part databases. About half of the interviewees discussed the importance (or love) of learning in their business. Mobile devices are especially useful because the entrepreneurs I spoke with were almost never behind a desk during their work day. Using a cell phone as a credit card processor, for example, has been adopted by taxi drivers, farmer's market sellers, and other local businesses without a physical building. This emerging practice might be a useful approach to share considering some interviewees discussed the difficulty of hunting down payments from customers. Electronic forums are another technology that may facilitate networks. For instance, they could allow home-remodelers to easily and quickly find complementary services for large or unique projects could connect workers from different parts of the region. Websites like TaskRabbit.com allow the same connections for finding people to do small errands (e.g. grocery shopping), while ELance.com and other technical sites allow connections for obtaining professional services. A cell phone application that performed the same function for accessing suppliers, co-workers or information in traditional trades would not be a substitute for the current method of building and trialing inter-personal referrals or old acquaintances, but it could supplement that method when a traditional entrepreneur is in a pinch or needs a unique or differently skilled co-worker.

Future Research and Policy Implications for Regional Resilience

Research on building regional resilience is still new and it has only recently become a big enough policy concern to divert attention away from regional growth

efforts. Prior to the Great Recession, some people found significant gains in the rapid growth of the economy, but few of those individuals, and few of the American's who saw no profits from the boom, weathered the downturn easily. That is why it so important to explore new and varied ways to increase regional resilience. The downward cycle has only recently abated, but with a jobless recovery in which firms saw increased revenue but have failed to hire more workers. In this study, I explored how a significant portion of the workforce—traditional entrepreneurs—adapts to challenges and changes to see what could be learned about resilience from their responses.

The initial cluster analysis revealed that traditional entrepreneur networks are more likely to increase the longevity of a business than to grow a cluster through more employment or profits. This is interesting because withstanding forces that would hasten closure is one part of resilience. I found that clustering activity (e.g. spinoffs, intra-firm linkages) was largely the same in the ascendant region of Raleigh and the stagnant economic environment of Dayton, which could indicate that groups of traditional entrepreneurs do not play a role in preventing long periods of decline caused by challenges like the exodus of manufacturing firms seen in Dayton (and other Rustbelt regions) over the past thirty years. In future research, it will be important to systematically separate different challenges in the study design. Regional shocks, like a plant closure, were also part of the resilience analysis because the entrepreneurs in both environments have been affected by the country's recent recession. It was difficult to disentangle the effects of an acute shock from the long-term trend of deindustrialization, but the current data offer hypotheses (discussed next) for more systematic testing.

Previous research found that lower skilled workers do not prevent a downturn, but their presence can soften it or make recovery faster (Acs & Armington, 2006; St. Clair et al., 2011). This research offers first-hand accounts of how entrepreneurs in traditional trades may contribute to faster recoveries and softer falls. Charitable profit-seeking was a firm routine uncovered in both Raleigh and Dayton. It runs counter to the profit-maximizing entrepreneur that many economic policies rely on inherently. Trial and error learning was also a consistent finding among entrepreneurs in both regions. Their distaste for school and industry-based information and their consistent exploration of new ways to promote firm success is also a rejection of supposed business norms and best practices. Both of these behaviors relate to resilience because they offer, and even increase, variety in the economic system. Variety provides alternatives when dominate firm strategies fail in the face of external challenges, while increasing the amount of variety offers more adaptation material for firms to overcome those challenges.

Specifically, there are two potential hypotheses that take into account the type of challenge described in resilience frameworks. First, it may be the case that charitable profit-seeking is especially necessary for resilience to acute shocks because traditional entrepreneurs have the experience to quickly judge which customers they can and should be more flexible with in terms of amount, timing and form of payment. This—the local knowledge of personal relationships—would provide a nuanced understanding of how limited local resources should be allocated. A second hypothesis is that the search behavior of trial and error learning is especially pertinent for avoiding long-term decline because it instills constant monitoring of local conditions and a high risk tolerance. Future research should identify the ways in which these behaviors are unique from other

types of firm and industry structures. For example, to what extent do export-oriented entrepreneurs rely on trial and error learning, to what extent do corporate service providers in traditional industries exhibit these behaviors, and are the behaviors related both to the small size and to the industries of traditional entrepreneurs? If they prove to be unique, traditional entrepreneurs may hold an unexpected answer to what helps build regional resilience capacity.

In the meantime, policymakers may find ways to facilitate these behaviors. Trial and error experience was described as a vital learning tool by many traditional entrepreneurs. Reducing the costs of failure when exploring for new business strategies will maximize the ability of experience learning to produce innovations or to avoid regional (or at least neighborhood) decline in the face of external changes. A somewhat radical policy option is to facilitate the bartering networks seen in Dayton. This approach has been underway in some Greek towns hard hit by unemployment, where municipalities have created an alternative currency and website for trading services (Poggioli, 2011). The Greek system is a good example because it also addresses the natural problems of tax evasion in bartering networks. These types of informal exchanges can lessen the financial setback of a failed venture. Policies that allow business failure must of course be monitored so that public money is not wasted on bad ideas. But the policy insight is that some amount of 'waste' may be an efficient allocation of resources when viewing them in the context of the larger portfolio of investment. Similar to how a venture capital firm knows that only a portion of its investments will see a positive return, considering a region's overall development portfolio risk will increase tolerance for failure of one policy and thus increase risk-taking, and potentially long-run rewards.

This indicates a different overall policy approach to economic development. Rather than maximizing growth, a better goal may be to manage the variability in neighborhood development life-cycles. It may appear counterintuitive and inconsistent with current policy design, but while alluring and certainly important during some periods of development, fast growth makes regions more susceptible to abrupt or severe downturns that can be much more devastating for the individual worker to bounce back from. Fast growth may also disrupt vital social networks that prevent neighborhood decline because a heavy stream of people relocating to the area affects housing prices and land values. Traditional entrepreneurship is one way to prevent over-investment in growth capacity (e.g. large export firms). These results have broader implications than just entrepreneurs and neighborhood development. Understanding the actions of different players in the system can provide insight into managing variability in other systems. For example, determining a set of common parent responses to falling student test scores may help map the decline of a school to know when a redoubling of efforts will have better than expected gains. Or trial and error learning could be used to induce change in small business when current conditions are problematic, but the path out is unclear. From a policy perspective, it will be important to identify indicators that alert policymakers when a region is moving from a stable and resilient condition to a trajectory in which forward momentum makes a course change more difficult.

These implications of managing economic variability become much more palatable to growth advocates if the benefits of the entrepreneur behaviors identified here extend beyond their own networks and beyond certain groups of neighborhoods, to the region as a whole. Ultimately, to assess the impact of traditional entrepreneurs on

regions, a much better understanding of the connections between component parts of the region is needed. The innovation literature (Martin & Sunley, 2007), the community development literature (Woolcock, 1998) and the social capital literature (Granovetter, 1983) all point to the importance of balancing inward and outward focused connections to thrive economically. The following excerpt from an entrepreneur in Dayton, Ohio describes why. Tim moved his home-based barber service to a nearby shop in 2011 when he finished barber school. He wanted to do things differently than his predecessors. To ensure broader appeal he strategically reaches for clients outside his immediate neighborhood and social group.

Jen: Well you also have the space of the other two [chairs]. Do you think you'll hire somebody?

Tim: We'll see. To hire other barbers, they have to bring something to the table. It's not just putting a guy in there to rent and make some money. I need somebody that brings a different, they have to be an individual. I don't like people that do what everybody else does. I like different individuals. You know what I'm saying?

Jen: Did that work with the Turkish guy you had [working here previously]?

Tim: For sure. It helped the vibe because with us, with our clientele, he had all his guys and I had my guys. And then eventually we kind of interact and the customers kind of switch. Rarely. For the most part they're loyal to whoever they go to. It worked good.

Thus regional cluster research and policy that addresses traditional entrepreneurship would benefit from a sub-regional focus *and* a bridging component. Tim is a good indicator that these communities may be receptive to such a strategy. Bridging is important for the entrepreneur, but also to ensure that traditional entrepreneurship is an

asset in *regional* resilience. Although there have long been social and physical obstacles to connecting different neighborhoods and people in a region, perhaps regional resilience is the policy goal that will help unite different constituencies under the effort.

Conclusion

If policymakers are serious about reducing unemployment and maintaining the American legacy of entrepreneurship, they should not ignore small, traditional entrepreneurs providing local services that communities depend on. This may run counter to mounting arguments that the value created by U.S. businesses is in knowledge production, rather than goods and services. Networks innovating at the frontier are indeed assets to a region. And ensuring that our entire labor force meets basic educational competencies will be necessary to compete in the global economy. However, there is little evidence to suggest that the scores of direct services currently needed on a daily basis are going to become automated or outsourced. In fact, it should be a priority to ensure that they are not because front line service providers are in a pivotal role to respond to variability caused by individual and more global challenges. When economic times are tough, regions benefit from a service sector that can respond with charitable profit-seeking. When a problem arises that has never been seen before, regions benefit from people who are well-versed at going-it-alone and taking risks.

The more that individuals are empowered to act in ways that result in real change, the more wisdom that can accumulate in regions, which are sorely in need of it. This is essentially the goal of bottom-up development policies. Policymakers and analysts have spent many decades trying to solve problems that are either solved until an external condition changes, or never truly solved or even mitigated. It may be worrisome to both

parties to invest in capacities and conditions and reduce investments in aggregate analyses, but it seems that it could be the next great experiment. And job creation is the perfect place to start.

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APPENDIX

1 TERMS AND DEFINITIONS

Term	Definition	Chapter with more information
Traditional entrepreneur (TE)	A self-employed person with a high school degree but no college degree, typically running a very business in the consumer or business services industry	Chapter 2 and 3
TE cluster	A high concentration of traditional entrepreneurs living in the same neighborhood	Chapter 2 and 3
Innovation	New products, new processes and new forms of organization that generate commercial (profit or nonprofit) value	Chapter 2
Regional resilience	The capacity of a city or metropolitan area to respond to social, demographic and economic change	Chapter 4

APPENDIX

2 INTERVIEWEES

Name (alias)	Industry	Start Year	Full time employee	Home based	Age	College grad-uate	Race/ ethnicity
Raleigh cluster							
Jim	Automotive parts and art	1973	No	Yes	69	No	
George	Hardware and lawn store	1980	Yes	No	58	No	
Stuart	Martial arts studio	1982	No	No	40s	No	Black
Eli	Barber shop	1996	No	No	40s	No	Black
Kenneth	Lawn service	1996	No	Yes	40s	Yes	Black
Matt	Online advertising and computer assistance	2001	No	Yes	43	No	Black
Sam	Convenience store	2007	Yes	No	34	No	Non-US
Julie	Salon	2009	Yes	No	40s	No	
Ed	Mechanic shop	2011	No	No	50s	No	
Dayton cluster							
John	Restaurant owner	1967	Yes	No	60s	Yes	
Harris	Martial arts studio	1980	No	No	57	No	Non-US
Phil	Transmission service	1989	Yes	No	50s	No	
Ellie	Cleaning service	1992	No	Yes	70	No	
Gwen	Military memorabilia store	1994	Yes	No	63	Yes	
Fred	Eyeglass store	2002	Yes	No	61	Yes	
Derrick	Home remodeling	2004	No	Yes	40s	No	
Adam	Computer and electronics repair	2011	No	No	39	No	
Tray	Gun accessories and iPad board games	2011	No	Yes	26	No	
Dayton non-cluster							
William	Wedding photography	1978	Yes	No	60	Yes	
Nick	Beer store and sandwich shop	1984	Yes	No	59	No	
Rebecca	Salon and tanning	1986	No	No	40s	No	
Hanna	Sewing alternations	1995	No	No	40s	No	Non-US
Hugh	Janitorial and lawn service	2001	No	Yes	50s	No	Black
Vincent	Mechanic shop	2006	No	No	50s	No	Non-US
Simon	Home remodeling	2010	No	Yes	37	No	

Tim	Barber shop	2011	No	No	32	No	Black
Greg	Restaurant equipment cleaning	2012	No	Yes	30s	No	

APPENDIX

3 ENTREPRENEUR SUMMARY STATISTICS

Entrepreneur	
Age (average)	47
Female	19%
Foreign-born	15%
Non-white	37%
College degree	19%
Firm	
Business start (average)	1996
Has full-time employee(s)	30%
Home-based business	33%
Industry	
Lawn/cleaning service (commercial and residential)	15%
Salon/Barber	15%
Auto service	11%
Food or alcohol sales	11%
Martial arts	7%
Remodeling	7%
Other	33%
Interview length (average)	61 min.

APPPENDIX

4 INTERVIEW PROTOCOL

1. Can you tell me a little bit about your [former] business (e.g. number of hours, split time with wage work, employees, office)?
    a. Do [did] you enjoy it?

2. How did you get started working for yourself (e.g. employment situation, financing)?
    a. When, did you live here, did you move here?
    b. Do you know other self-employed people (relatives, people around here), did that matter?

3. How has your business changed over the years (e.g. hours, locations, employees)?
    a. What about with the recession? Other challenges?
    b. Were there any unique opportunities because of that challenging time (e.g. creativity, new clients, suppliers, employees)?

4. What groups or program have you been a part for your business (e.g. SCORE, industry group)?
    a. Where are they, how did you learn of them, what was experience with them?
    b. What about formal training, classes, education?

5. How do [did] you get new business (e.g. who do you talk to, advertising)?
    a. Are clients from this neighborhood?
    b. Do you use the local businesses around here?
    c. What about competitors in the neighborhood?

6. Have you helped your friends or neighborhoods who have their own business (e.g. advice, encouragement, info, networks, cash, trades)?
    a. Have there been people that have been important to your business?
    b. What do you look for in people that you go to for help or to work with (e.g. old friends, military, family, church members)?

7. Are there things that would be different about your business if you lived in a different neighborhood in this city?
    a. Would have started it in the first place? Would you be more or less success?
    b. *Would you have stopped?
    c. Is this a good neighborhood to live in if you're self employed?

8. Are there things that would be different about the neighborhood if your business wasn't here?
    a. That is, do you participate in government or hire people from around here?
    b. What about before/after the recession?

9. I'm also looking to talk to people in this neighborhood who used to be self-employed or are part-time self-employed. If there's someone you would recommend, would you ask if it is ok that you send me their contact information? They can call me directly at the number on this invitation.

APPENDIX

5 HUMAN SUBJECTS IRB APPROVAL

ASU Knowledge Enterprise Development

Office of Research Integrity and Assurance

To:	Erik Johnston
From:	Mark Roosa, Chair Soc Beh IRB
Date:	03/07/2012
Committee Action:	**Exemption Granted**
IRB Action Date:	03/07/2012
IRB Protocol #:	1203007545
Study Title:	Self Employment in Working Class Neighborhoods

The above-referenced protocol is considered exempt after review by the Institutional Review Board pursuant to Federal regulations, 45 CFR Part 46.101(b)(2) .

This part of the federal regulations requires that the information be recorded by investigators in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects. It is necessary that the information obtained not be such that if disclosed outside the research, it could reasonably place the subjects at risk of criminal or civil liability, or be damaging to the subjects' financial standing, employability, or reputation.

You should retain a copy of this letter for your records.