Identifying the Building Blocks of Disruptive Innovation in Cornell Cooperative Extension: A Grounded Theory

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Abstract
Cooperative Extension (CE) faces significant challenges as it attempts to adapt core business principles to a rapidly changing 21st century landscape. Disruptive innovation (DI) is a powerful organizational change theory that emerged in the private sector but is now being increasingly utilized in the social sector. The study utilized grounded theory methodology to identify examples of programmatic innovation in CE that align with the characteristics of DI and to look for common building blocks supporting and sustaining innovation in CE. A purposeful sample of nine Cornell Cooperative Extension (CCE) program innovators were identified in three categories of innovation: youth development, agriculture economic development, and innovation connected to the Tompkins County CCE office in Ithaca, NY. Data was collected from the CE innovators through face-to-face interviews. The interviews were transcribed and analyzed through qualitative methods to determine if the programs shared common building blocks that help to explain how the innovation emerged across multiple community settings and different programmatic focuses. A preliminary theory, The Ecology of Innovation in CCE, emerged from the data analysis process and is presented in detail, supported by the interview data. The implications of the findings are explored and connected to the original questions about the challenges facing CE and the broader nonprofit sector. The study concludes with a discussion of the relevance of the findings to organizational leadership.
Identifying the Building Blocks of Disruptive Innovation in
Cornell Cooperative Extension: A Grounded Theory

By

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Submitted in partial fulfillment
of the requirements for the degree
Ed.D. in Executive Leadership

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Dedication

I thank my committee chair, Dr. Michael Robinson, and member, Dr. Luvelle Brown, for their guidance throughout this process. Dr. Robinson provided steady support, humor, and timely input every step of the way, not only as my chair but also as the steward and guardian of the entire first cohort in Syracuse. Thanks to my advisor, Dr. Theresa Pulos, and executive mentor Scott Sears, who provided support and insight to three excellent field assignments. I extend thanks and congratulations to my entire Ed. D cohort, it was an honor to travel the path with all of them. In particular, I am grateful for the companionship of Wandah Gibbs, Asif Padela, and Najah Salaam Jennings-Bey.

I am indebted to the many colleagues who inspired me to continue to push forward in my career and accept new challenges. Dr. Glenn Applebee in particular has been a constant and supportive presence throughout my career. I acknowledge the many friends who collaborated with me through all of the major stages of my career in Rockland, Greene and Columbia Counties, and the new partnerships now growing at Cornell. Without family support I would not have made it through the past 28 months. My parents, Allan and Barbara, and my wife’s parents, Ken and Hope, added strength to the journey through their words of encouragement. Most of all, I thank my wife, Anne, and daughter, Madeline, for their constant love, understanding, tolerance for my exhaustion, and for believing in me throughout the journey.
Biographical Sketch

Andrew Turner is currently serving as the Director of the New York State 4-H Youth Development Program in the College of Human Ecology at Cornell University. Mr. Turner began a long career with Cornell Cooperative Extension in 1989 and worked in Rockland, Greene, and Columbia Counties prior to moving with his family to Ithaca, New York in 2012 to accept a position with Extension Administration, and he was named 4-H Director in 2015. Mr. Turner attended SUNY Cobleskill from 1986 to 1988 and graduated with an Associate Degree in Fishery and Wildlife Technology in 1986. He attended Cornell University from 1986 to 1988 and graduated with a Bachelor of Sciences degree in Natural Resources from the College of Agriculture and Life Sciences in 1988. Mr. Turner attended Cornell University from 1992 to 1993 and graduated with a Master of Professional Studies in Agriculture in 1993. He enrolled in the St. John Fisher Ed. D program Executive Leadership in the summer of 2013. Mr. Turner pursued his research in identifying the building blocks of disruptive innovation in Cornell Cooperative Extension under the direction of Dr. C. Michael Robinson and Dr. Luvelle Brown and received the Ed.D. degree in 2015.
Abstract

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A purposeful sample of nine Cornell Cooperative Extension (CCE) program innovators were identified in three categories of innovation: youth development, agriculture economic development, and innovation connected to the Tompkins County CCE office in Ithaca, NY. Data was collected from the CE innovators through face-to-face interviews. The interviews were transcribed and analyzed through qualitative methods to determine if the programs shared common building blocks that help to explain how the innovation emerged across multiple community settings and different programmatic focuses.

A preliminary theory, The Ecology of Innovation in CCE, emerged from the data analysis process and is presented in detail, supported by the interview data. The implications of the findings are explored and connected to the original questions about the challenges facing CE and the broader nonprofit sector. The study concludes with a discussion of the relevance of the findings to organizational leadership.
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Chapter 1: Introduction

Introduction

Christensen (1997) introduced the theory of disruptive innovation (DI) in a study of large and successful firms that failed to recognize and adapt to emerging disruptive technologies threatening their core market. Through in-depth research in the rapidly evolving disk drive industry, Christensen uncovered consistent behaviors on the part of established companies facing the emergence of disruptive technology. The patterns, dynamics, and resulting consequences revealed by Christensen’s study developed into what is now referred to as DI theory. Scholars have expanded on the original theory, broadening the scope of DI to include business model innovations (Chesbrough, 2009) and to explore the influence of leadership in developing an innovative culture (Lucas & Goh, 2009). Moreover, DI theory has become increasingly influential as a frame for exploring organizational change and innovation in the nonprofit sector (Christensen, Baumann, Ruggles, & Sadter, 2006; Franz & Cox, 2012; Weerawardena & Mort, 2012).

Since its inception, the Cooperative Extension Educational System has played a major role in economic, agricultural, and community development in the United States (Rasmussen, 1989). The development of Cooperative Extension (CE) is directly related to the emergence of the land grant college system, a movement to democratize higher education that began with the signing of the Morrill Act by President Abraham Lincoln in 1862 (Rasmussen, 1989). The land grant vision was extended in 1914 with the passing of
the Smith-Lever Act, establishing federal funding for the dissemination of research based knowledge from the land grant colleges to communities through CE (Rasmussen, 1989).

The creation of the land grant college system and CE represent a major innovation in public education. New York State was a forerunner of this system, preceding the Smith-Lever Act through the initiation of CE work in 1911 in Broome County (Smith, 2013). Maintaining a nimble posture towards innovation and supporting the development and evaluation of new educational approaches has been recognized as a critical competency for CE for decades (McCormick, 1967). The ability to adapt to rapid change is highly relevant today as CE faces fundamental changes in funding patterns, and dramatic shifts in the demographics of target audiences (Morse, 2009).

Problem Statement

CE, the nation’s largest and oldest non-formal educational system, has played a major role in economic, agricultural, and community development in the United States for more than 100 years (Rasmussen, 1989). CE faces significant challenges as it adapts to major shifts in funding patterns and the potential impact of online educational platforms on all facets of education and information sharing (McDowell, 2001). For example, more than 60% of agricultural producers, one of the major audiences for CE programming, now have Internet access and are using the Internet to inform their agricultural practices (Niles, Hoefner, Lotti, & Obudzinski, 2013).

In addition, a study from Idaho found that more than 90% of farmers were using email and text messaging, and 90% were using YouTube (Lubell, Meredith, & Hoffman, 2014). Embracing these technologies to extend the mission to the next generation of learners, including the use of smartphone and tablet applications, will be a critical test for
CE in the coming years (Niles et al., 2013). CE will also be increasingly challenged to maintain political support considering that it originated at a time when agriculture accounted for 30% of the workforce, compared to less than 2% today (Lubell et al., 2014). The key to CE’s continued relevance may rest with its ability to translate the traditional mission to the broader challenge of food system sustainability in the 21st century. A broad focus on agricultural and food systems has the potential to translate to an increasingly urban, tech savvy generation concerned about climate change, local food systems, and sustainable economic development (Lubell et al., 2014).

CE grew out of the land grant college system, emerging from the landmark Morrill Act signed into law in 1862 by President Abraham Lincoln (Rasmussen, 1989). The creation of the land grant college system, envisioned by Senators Justin Morrill of Vermont and Jonathan Baldwin Turner of Illinois, dramatically altered the landscape of higher education. The driving vision of the land grant movement was to extend the reach and influence of the university beyond the economic elite (Rasmussen, 1989). The movement was driven by the belief that no part of community life and labor should be excluded from the virtues of higher education (McDowell, 2001).

The initial drive that created the land grant colleges was extended in 1887 with the passing of the Hatch Act. The Hatch Act authorized federal funding to support the development of agriculture experiment stations (Rasmussen, 1989). The next major evolution in the system occurred in 1914 with the passing of the Smith-Lever Act, establishing federal support for further diffusion of research based knowledge from the land grants through a CE System in every State (Rasmussen, 1989).
McDowell (2001) wrote that with the passing of the Smith-Lever act the federal government embraced the goal of “aiding in the diffusion among the people of the United States useful and practical information . . . and to encourage the application of the same” (p. 7).

CE represented the first example of a mandated public service function in higher education designed to direct the scholarship of the university at the everyday challenges of individual citizens, households, businesses, and communities (McDowell, 2001). The basic business model of CE, extending the knowledge out to the people in a largely expert model paradigm, worked very well throughout the 20th century and was replicated in many other parts of the world. Educational historian Stephen R. Graubard (as cited in McDowell, 2001) commented on the important role of the land grant movement and its global influence on higher education.

Without wishing to deny the importance of the influences of the German and British universities, the uniqueness of the American system needs to be emphasized, and not only because of the Morrill Act and the innovations introduced by the land grant principle, with its emphasis on research in agriculture and many other fields as well. The concept of “service” took on a wholly new meaning in state universities that pledged to assist their citizens in ways that had never previously been considered. (p. 7)

Although the land grant college movement, the Hatch Act, and CE all represent major innovations in the history of education in the United States, they are all facing significant challenges today. Specifically, CE has been identified by scholars as change resistant, a characteristic that may be hindering its ability to adapt to challenges and
disruptive innovations that have emerged in higher education (Franz & Cox, 2012; McDowell, 2001; Morse, 2009). These challenges threaten to undermine Extension’s ability to deliver its mission of applying evidenced based knowledge to societal challenges in food and agriculture, nutrition, youth development, and environmental sustainability (McDowell, 2001; Morse, 2009).

Although there are examples of innovation in CE, scholars have suggested that the innovation is often incremental in nature and driven by reductions in core government support (Morse, 2009). In addition, scholars have found in CE an organizational culture that is risk averse and likely to support the maintenance of traditional approaches over more risk oriented innovation (Franz & Cox, 2012; Morse, 2009). These trends are magnified by an emerging web of highly complex domestic and global challenges in agriculture, health, socioeconomic conditions, and environmental sustainability that require significant shifts in how research, education, and extension priorities are identified and delivered (Niles et al., 2013).

Extension scholars Franz and Cox (2012) proposed that Christensen’s theory of DI could be applied to the challenges attacking the sustainability and relevance of CE. Christensen’s original research, which documented the struggle long standing and successful companies face in adapting to market disrupting technology, has been extended to challenges in education, nonprofit organizations, health care, and government (Christensen et al., 2006; Rotheram-Borus, Swendeman, & Chorpita, 2012). The interest in DI theory has grown in the social sector as nonprofits and government sponsored programs adapt to a rapidly changing and highly competitive funding environment (Weerawardena & Mort, 2012). It is within this context that DI theory has emerged as a
highly influential lens to view organizational change, leadership, and the process of creating and responding to innovation.

As the theory has expanded scholars have begun exploring the characteristics that allow organizations to adapt to DI, as well as the major factors inhibiting their adoption. Assink (2006), and Sinkula (2002) identified the critical role of organizational unlearning in the process of adopting and sustaining innovation. In addition, Assink proposed that successful adoption of DI requires organizations to develop and nurture an internal passion to explore radical new ideas and solutions that effectively leverage and re-direct both internal and external resources. Finally, the critical role of leadership in the DI process has been identified by many scholars (Christensen, 1997; Elenkov, Judge, & Wright, 2005; Lucas & Goh, 2009).

This research explored the intersection of the following three phenomena:

1. The emergence of significant external disruptive forces that challenge the core business model of CE.

2. The finding by established CE scholars that the organization has a culture that is resistant to change and slow to adapt to innovation.

3. The emergence of Christensen’s DI theory as an effective lens to view change management challenges in the nonprofit, social, and higher education sectors.

The study explored the applicability of DI theory to the change management challenges facing CE. The New York State branch of CE, Cornell Cooperative Extension (CCE), served as the research setting. The results of the inquiry contribute to an ongoing national dialogue regarding change strategies and sustainability within CE. In addition, the study further extends the exploration of DI theory in the nonprofit, government, and
higher education sectors. Specifically, the study utilized qualitative methods to identify several emerging examples of programmatic innovation in CCE that fit well with major tenets of DI theory. Utilizing a grounded theory approach, the research examined the identified innovative programs to determine if there were common building blocks that can be documented and developed into a theoretical model of innovation that can be applied more broadly in CE.

**Theoretical Rationale**

Christensen, Horn, and Johnson (2008), defined DI as a product, service or business plan that changes the existing trajectory of improvement within a particular market, and redefines what customers think of as high quality. Assink (2006) expanded the definition and scope of DI scholarship by describing it as “a successfully exploited new product, process, or concept that significantly transforms the demand and needs of an existing market or industry, disrupts its former key players, and creates whole new business practices or markets with significant societal impact” (p. 218). DI theory, although only in existence for 18 years, has become a highly influential lens to view the challenges of adopting and adapting to disruptive technologies, processes and products in business, nonprofit, health care, government, and education.

Christensen (1997) introduced the theory in a study of successful corporations that failed to recognize and adapt to emerging disruptive technologies. Christensen’s work revealed the counter-intuitive finding that large and successful companies are rarely blindsided by the disruptive technology. In fact, established, successful firms are often responsible for the creation of the disruptive technology. However, the firms usually minimize the energy and resources devoted to the innovation due to lack of interest from
current customers in their established market area. In addition, the downfall for incumbent firms is usually not poor business planning, failed leadership, or the lack of creativity (Christensen, 1997). Christensen’s research demonstrated that firms are susceptible to disruptive innovation precisely because they have developed a long track record of success in a core business area with established customers (Christensen, 1997).

Long term success in an established market encourages companies to focus on sustaining innovation (Christensen & Raynor, 2003). Sustaining innovation is the practice of seeking incremental improvements in a core product area in order to entice additional market share over the long term (Christensen, 1997). The tendency for market leaders to focus on sustaining innovation means that the disruptive technology must find another pathway into the marketplace.

DI almost always emerges in smaller markets, from newer companies with profit margins far less lucrative than the products they will eventually replace (Christensen, 1997; Christensen & Raynor, 2003; Lucas & Goh, 2009). These smaller, more flexible companies are committed to bringing the disruptive technology to new customers, even if it is by trial and error (Christensen, 1997). Eventually, the new entrants begin to move into the existing market as main stream customers begin to embrace the new product. At this stage, established firms often attempt a belated and rarely successful effort to compete by introducing their own version of the new product (Christensen, 1997).

**Criticism of the theory.** The most important critique of the theory when considering the problem being explored in this study, is the applicability of DI theory in the public service sector. Although Christensen and others proposed that DI does apply in the social and educational sectors, significant questions have been raised that must be
explored more deeply (Christensen et al., 2006; Christensen et al., 2008; Meyer, 2011). Wood, Pfotenhauer, Glover, and Newman (2013) explored established public service organizations in higher education, health care, and space sciences to test how Christensen’s theory unfolded in real time. The organizations they studied, although pursuing DI, seemed to be operating in contrast to the core principles of Christensen’s theory. The organizations were intentionally pursuing DI in ways that could impact negatively on their established core markets, a practice in stark contrast to the patterns revealed in the private sector. The study proposed two closely linked explanations for this finding (Wood et al., 2013).

First, there are aspects of the public service sector that differ significantly from private firms and create unique innovation dynamics. For example, there is far more scrutiny and tighter regulation of public sector organizations due to their focus on producing public goods and services. As a result, it is more difficult for an innovative service or product to move quickly into established markets, leaving the incumbents with more time to respond. Second, there are additional public sector dynamics in play that blunt the advantages that new entrants experience in the private sector. A good example can be found in higher education. Universities with long standing histories have the advantage of prestige. In the higher education market consumers are attracted to prestige and name recognition, allowing the incumbent to remain relevant and able to introduce innovation on their own terms (Wood et al., 2013).

Although this critique is logical, and the higher education example is compelling, it may not apply to the challenges facing CE. Unlike higher education, it is unclear that the factor of prestige is applicable to the non-formal community based educational
paradigm in which CE operates. The innovations that are disrupting non-formal education, such as the Internet, have more to do with the process of delivering the product to the public and less to do with the value of the product itself.

CE’s mission of applying research based knowledge to 21st century challenges in agriculture, sustainability, health, nutrition and youth development remains highly relevant. However, the approaches the organization relies on to deliver the mission, such as face-to-face expert model methods that have dominated for decades, are far less viable in the digital information age (Lubell et al., 2014). In summary, there is ongoing scholarly debate about the applicability of disruptive innovation theory in the social sector. However, the ongoing debate ultimately strengthens the case that further research should be conducted in this area.

**Evidence supporting the theory.** There are numerous examples of how Christensen’s (1997) theory has played out in the marketplace in devastating ways for incumbent firms. A powerful case study is Eastman Kodak’s inability to respond effectively to the digital photography revolution. Lucas and Goh (2009) applied disruptive innovation theory to Kodak in a study that documented the key decisions executives made in the face of the emergence of digital photographic technology. The goal of the study was to determine just how closely DI theory mirrored the actual timeline of events at Kodak, a company that lost more than 80% of its workforce as digital technology disrupted the camera and film market (Lucas & Goh, 2009). The study focused on the dynamics and behaviors that occur within a company as a disruptive challenge emerges, and the critical role of senior management in the effort to move the company forward (Lucas & Goh, 2009).
Lucas and Goh (2009) built their case study by reviewing publically available data on Kodak, combined with targeted interviews, to document the key events in the development of digital photography and the Kodak response. Analysis of the sales data for film and digital cameras reflects DI theory quite powerfully. In 2000, the sale of film cameras reached a record peak of nearly 20 million units. At the same time digital camera sales remained below 5 million units (Lucas & Goh, 2009). By 2005 the numbers were reversed, with digital cameras surpassing the 20 million barrier and film cameras dropped to below 5 million (Lucas & Goh, 2009). Ironically, but not surprisingly based on Christensen’s original research, Kodak created the first digital camera in the 1970s (Gustin, 2012). How well did the events unfolding at Kodak align with the theory of disruptive innovation?

Lucas and Goh (2009) hypothesized that middle managers play a pivotal role in a company’s ability to respond to disruptive innovation. Middle managers are often the first to encounter new ideas and decide which innovations they will champion with senior management. Kodak’s middle managers held firm to the Company’s core process of selling high quality film, ignoring the vast potential of digital technology by sequestering Kodak’s digital developers to a separate organizational unit (Lucas & Goh, 2009). The study revealed that although 1990s Kodak CEO George Fisher had some success changing the culture at the top of the organization, his efforts did not become internalized among the mass of middle managers committed to sustaining innovation within the traditional film camera market (Lucas & Goh, 2009).

Lucas and Goh’s (2009) study of the fall of Kodak reinforced the core concepts of Christensen’s original theory. The study contributed to growing scholarship that
extended the theory into the area of organizational culture, business planning, and leadership behaviors. Scholars have continued to look more deeply at the DI process, building on the foundation of the original theory, to identify the barriers to the adoption of innovation and identify the patterns of organizational behavior that explain why so many firms are lulled into complacency at the pinnacle of their success.

The theoretical rationale has explored the origination of DI theory and examined a critique that is particularly relevant in the context of social sector organizations. Although there is far more empirical evidence validating the core concepts of DI in the private sector, the key tenets of the theory appear to be highly relevant to the challenges facing CE. The study will apply the core concepts of DI theory to the change management challenges facing CE and in the process add another layer of empirical evidence to this growing area of research.

**Statement of Purpose**

The purpose of this study is to identify programmatic innovation in Cornell Cooperative Extension (CCE) and attempt to document emergent themes that may allow for the development of an innovation model that can be applied more broadly in New York State and beyond.

**Research Questions**

1. What current CCE programs will a panel of CCE administrative and programmatic leaders identify as having characteristics that align with core elements of disruptive innovation theory?
2. Which of the identified innovative CCE programs demonstrate the strongest alignment with disruptive innovation theory based on interviews with the lead program architects?

3. What common themes emerge from the data that can be developed into a working model of the building blocks of disruptive innovation in CCE?

**Significance of the Study**

As discussed in earlier sections CE has been identified as change resistant (Franz & Cox, 2012) and in need of considerable evolution in order to effectively deliver its mission in a rapidly shifting economic, social, and educational climate (Niles et al., 2013). Furthermore, a journal article on DI and CE by Franz and Cox (2012) generated considerable interest among CE administrators throughout the land grant system. A qualitative analysis that identifies shared characteristics and processes that support the development of innovation in CE will be of significant interest to programmatic and administrative leaders across the nation.

Moreover, considering the massive environmental, agricultural, and economic challenges posed by the coming age of climate disruption, the nation will continue to rely on a system like CE that can rapidly translate research into practice in a timely and responsive manner (Niles et al., 2013). In addition, the findings from the study will contribute to the growing interest in the applications of DI in the nonprofit sector.

**Chapter Summary**

The theory of DI has been introduced and positioned as an effective tool for looking at the challenges facing CE. The expansion of the original theory into the nonprofit sector was examined with a particular focus on how long standing
organizational beliefs, norms, and culture can impact on an organization’s ability to respond to or support innovation that may be occurring within its own walls. The national CE program is facing significant external innovations that threaten its ability to continue to achieve its core purpose.

Does DI have the potential to address the change averse culture of CE and provide the foundation for processes that could help the organization adapt core business practices and educational methods for success in the 21st century? These questions support the value of a study that will apply DI theory directly to the challenges facing CE. The literature review in Chapter 2 will expand considerably on the core principles established in this introduction and establish a firm foundation for the study. Chapter 3 will outline and provide justification for a grounded theory approach. Chapter 4 will present the results of the research, presenting a preliminary theory of the building blocks of DI in CE. The implications of the preliminary theory are explored in depth in Chapter 5.
Chapter 2: Review of the Literature

Introduction and Purpose

The literature review will establish a firm foundation for the study. The following major components will be explored:

1. Background on Cooperative Extension history, current challenges, and input from contemporary Extension scholars regarding the organizations culture and impact on innovative capability.

2. Overview of DI theory and its potential application to CE.

3. Exploration of organizational change theories particularly relevant to CE and DI.

4. Review of critical foundational elements that support the development of innovation, including organizational unlearning (OU), organizational learning (OL), and the role of leadership in the innovation process.

Reviews of Literature

The first section of the literature review provides background on the history and evolution of the CE system at the national level, explores the organizations current challenges, and position disruptive innovation theory as a viable lens in which to guide organizational responses.

The history and current challenges facing CE. The CE Educational System has played a major role in economic, agricultural, and community development in the United States for more than 100 years. CE represents a major expansion of the land grant
college system that began with the signing of the Morrill Act by President Abraham Lincoln in 1862 (Rasmussen, 1989). The vision of Vermont Senator Justin Morrill and Jonathan Baldwin Turner of Illinois was to extend the power of the university beyond the economic elite to address the needs, dreams and aspirations of the masses (Rasmussen, 1989). The Morrill Act sought to establish a land grant college in every state, creating a social contract with the people of the still young nation. The driving vision was that no part of community life and labor should be excluded from the virtues of scholarship (McDowell, 2001). McDowell (2001), cites Liberty Hyde Bailey, the leading force behind the development of the discipline of horticultural sciences and the dean of the College of Agriculture at Cornell from 1903-1913, who described the significance of the land grant.

Education was once exclusive: it is now in spirit inclusive. The agencies that have brought about this change of attitude are those associated with so-called industrial education, growing chiefly out of the forces set in motion by the Land Grant Act of 1862. This Land Grant is the Magna Carta of education: from it in this country we shall date our liberties. (p. 4)

The initial vision was extended in 1914 with the passing of the Smith-Lever Act, which established federal support for further diffusion of research based knowledge through CE (Rasmussen, 1989). New York State was a forerunner of the system, preceding the Smith-Lever act through the initiation of county based CE work in 1911 in Broome County (Smith, 2013). A partnership had developed between local farmers, the Broome County Chamber of Commerce, Cornell University, and the Delaware, Lackawanna, and Western Railroad companies, that led to the hiring of John H. Barron
from nearby Livingston County as the first county-based extension agent in the nation (Knapp & Leonard, 2011).

The organization was established under the name Farm Bureau with a mission to improve the economic circumstances of area farmers and encourage the application of agricultural sciences and improved farm practices that would benefit the farmers well-being as well as improve the general economic conditions of the county (Knapp & Leonard, 2011). Knapp and Leonard (2011) outlined the goals of this first county program.

To undertake propaganda work in the agricultural district in the vicinity of Binghamton, New York, to make an agricultural survey of the territory, study the farmers’ problems, find their solution by a study of the practices of successful farmers, study the relation of types of farming to local conditions of soil, climate and markets and demonstrate systems of farming used by successful farmers of the district, and conduct demonstrations with farmers, do educational work through the media of institutes, advising with farmers individually and otherwise as to best methods, crops, cropping systems, stock, labor, tools, and other equipment. (p. 6)

Between 1911 and 1915, new farm bureaus were formed in many parts of the state. This proliferation led Cornell University and the USDA to collaborate on the appointment of Lloyd S. Tenny as the first state leader of county agents, of which there were now nine (Knapp & Leonard, 2011). The farm bureau movement continued to accelerate over the decade with a total of 55 of the 56 counties outside of New York City.
forming farm bureaus by the end of 1918 with a total citizen membership of approximately 45,000 (Knapp & Leonard, 2011).

Although the initial focus of extension work was agricultural, Liberty Hyde Bailey and other early leaders at Cornell, brought Martha Van Rensselaer to Cornell to initiate extension work with farm women in 1900 (Smith, 2013). The efforts of Van Rensselaer and other women in home economics grew quickly and by the end of World War I the USDA was proposing that the farm bureau associations consider changing their names to county farm and home bureaus (Smith, 2013).

The third major component of extension programming, youth development, began to take form in the early part of the 19th century, once again highly influenced by Liberty Hyde Bailey (Smith, 2013). Bailey worked with Anna Botsford Comstock and others to create Junior Naturalist clubs in rural schools. The goal of the program was to increase youth interest in farming and rural life through the study of nature. The early efforts in rural schools developed into a program first called Junior Home Project Work, and then later as 4-H club work, under the direction of Van Rensselaer (Smith, 2013).

Initially the 4-H program was supported by funds from the State Department of Education, with county administrative units that included representatives from the farm and home bureaus and the district superintendent of schools. In 1930, the financial support from the Department of Education was eliminated and the 4-H program became an administrative division of the Extension Service at Cornell (Smith, 2013). At this point, the three main programmatic areas of CE were in place: agriculture, home economics, and 4-H youth development, supported by Extension organizations in nearly every county of the State.
Cornell Cooperative Extension (CCE) continues to be one of the largest and most successful State Extension programs in the nation with programs occurring in every county of New York State and the five boroughs of New York City. CCE reached approximately three million NYS residents in 2013, employed approximately 1,400 staff, and worked with 32,000 volunteers (CCE At a Glance, 2013). The modern day mission of CCE, updated in its 2013-2017 strategic plan (CCE People, Purpose, Impact, 2012), is “to put knowledge to work in pursuit of economic vitality, ecological sustainability and social well-being. We bring local experience and research based solutions together, helping New York State families and communities thrive in our rapidly changing world” (p. 1).

CCE provides research based programming to individuals, businesses, and communities in the following program areas:

1. Agriculture and Food Systems
2. 4H Youth Development
3. Health and Nutrition
4. Community Economic Vitality
5. Environment and Natural Resources

Extension, both nationally and in New York State, faces significant challenges. The organization must adapt to major changes in the external environment in order for its mission of applying evidenced based knowledge to major societal challenges in food and agriculture, nutrition, youth development, and issues of environmental sustainability to remain relevant. On the national level, CE has been identified by scholars as change
averse, potentially limiting its ability to emerging challenges (Franz & Cox, 2012; McDowell, 2001; Morse, 2009).

Although Extension work in the U.S. has encompassed a wide range of educational paradigms, including approaches that resemble community development and action research approaches, the dominant paradigm has been a top-down knowledge transfer approach (Lubell et al., 2014). The basic theory has been that the knowledge is generated at the university and then delivered to farmers, or other extension clientele, through the professional CE educational specialists working and living in communities across the country (Lubell et al., 2014). The public value of the information transfer model of Extension is seriously challenged by the power of the Internet to bring knowledge to people all over the world nearly instantaneously. The Internet and other major disruptors, such as the vastly changed approach to learning and community engagement exhibited by the millennial generation, and shift to a more competitive funding environment for public sector organizations, threaten to undermine the long standing success and relevance of CE.

Christensen et al., (2008) defined DI as a product, service or business plan that alters the existing trajectory of improvement and redefines what customers define as high quality. Although developed in the corporate sector, the theory has demonstrated applicability to organizations in the nonprofit, education and government sectors as well (Christensen et al., 2006). The quest for social sector innovation is increasing in response to a rapidly changing and highly competitive funding environment (Rotheram-Borus et al., 2012; Weerawardena & Mort, 2012).
CE, with its mission of applying the research based knowledge of the land grant college system to a broad range of societal challenges is a strong candidate to benefit from DI concepts. The organization’s long tenure, adherence to a dominant business model, and existence of a culture that may discourage innovation, places Extension in a vulnerable position when it comes to the ability to create and sustain DI (Franz & Cox, 2012). The argument can be made that CE itself fit the description of a DI in the early stages of its inception and development. In addition, maintaining a nimble posture towards innovation and supporting the development of new educational approaches has been recognized as a critical competency for Extension for decades (McCormick, 1967).

The ability to adapt to rapid change is highly relevant today due to fundamental changes in funding patterns and dramatic shifts in the demographics of target audiences (Morse, 2009). Moreover, scholars have identified a complex web of U.S. and global challenges in agriculture, health, socioeconomic conditions, and environmental sustainability that require significant shifts in how research, education and extension priorities are identified and delivered (Niles et al., 2013). Franz and Cox (2012) were the first scholars to apply DI theory to the challenges facing CE. Although there are examples of innovation in Extension, they are largely driven by budget reductions (Morse, 2009), and are often unsupported by a culture that supports the status quo over innovation (Franz & Cox, 2012). The next step is to explore DI theory in more depth, starting from Christensen’s original research and then exploring more recent expansions of the theory and applications in the government, education and nonprofit sectors.

**Background on DI theory.** The theory of DI, first introduced by Christensen (1997), has become a highly influential lens to view the challenges of adopting and
adapting to disruptive new products, technologies and core business strategies in business, nonprofit, health care, government and education. Christensen et al. (2008) defined DI as a product, service or business plan that alters the existing trajectory of improvement and redefines what customers define as high quality. Christensen (1997) introduced the theory in a study of successful corporations that failed to recognize and adapt to emerging disruptive technologies. The study documented the conflicts that arise in long standing and successful firms as prevailing business models are challenged by emerging innovation (Christensen, 1997).

Christensen’s (1997) work revealed that companies are not usually blindsided by the disruptive technology. Companies and organizations are often victims of their current and past success, unwilling to invest time and resources in products or services that will at first be far less profitable and successful than their current core process (Bolman & Deal, 2013). Managers often take a dim view of innovation efforts, concerned that they will pull resources from ongoing efforts to improve current products. Christensen referred to this as sustaining innovation, describing it as slower, more incremental improvement of current products and services targeting existing customers (Christensen, 1997).

Christensen’s (1997) extensive interviews with over 80 managers embedded within the disk drive industry revealed a consistent decision making pattern that illustrated why successful firms excelled at implementing sustaining innovation but were unable to respond effectively to DI. Interestingly, he discovered that the disruptive technologies were almost always developed within established and successful firms. The innovations were typically shared by marketing personnel with the current lead
customers, who usually demonstrated little to no interest in the products. The established firms then inevitably returned to their focus on making incremental changes and improvements to the existing products in order to satisfy existing clients (Christensen, 1997).

Christensen’s (1997) research revealed that the next development is the emergence of an entrant firm that may include frustrated engineers and executives from existing industry leaders. These smaller, more flexible companies often find a way to bring the disruptive technology to new customers, even if it is by trial and error (Christensen, 1997). The new entrants begin to move into the existing market as mainstream customers begin to embrace the new product. At this point the established firms are likely to attempt a belated effort at competing by introducing their own version of the new product. This effort is rarely successful since the new entrant has likely developed more efficient production systems, and increased profit margins, leaving the former industry leader in a very vulnerable and untenable position (Christensen, 1997).

A key concept that Christensen (1997) discovered during the research process was the importance of the value network. The value network describes the context the organization is working in and the successful niche within that market that the company has established for their products. Christensen’s research demonstrated that companies are very reluctant to make decisions that could negatively impact on their existing value network (Christensen, 1997). It is this dynamic that so often makes it very difficult for established firms to overcome the barriers that impede the innovation process. A DI rarely looks like a sure thing during the early phases of its emergence. Therefore, it is
very easy for an established firm to view an early phase DI as irrelevant to the existing value network (Christensen, 1997).

However, an existing value network can shift suddenly when the established boundary between the needs of the dominant customers and the disruptive technology break down and the new technology is suddenly able to move aggressively into the established market. This is a critical phase in the DI cycle. The entrant firm with the disruptive technology has a huge advantage when this boundary is broken down because they are pushing their own product forward with zeal and enthusiasm whereas the established firms find themselves in a reactive mode. The established firms in this scenario are forced to enter their own version of the disruptive technology in a late and usually unsuccessful bid to maintain market share (Christensen, 1997).

It is at this point in Christensen’s (1997) work where DI theory extends beyond a focus on the disruptive technology itself to the advantages that the emergent companies have due to the strength of their business strategies, cost structures, and marketing. Once the DI process reaches this stage it is very difficult for established firms to overcome this major advantage, even if their version of the disruptive technology are of equal or even greater quality than the emergent firm (Christensen, 1997). Before moving on from Christensen’s foundational research it is important to explore what the research revealed about the critical role of senior and middle management in the DI process.

Chief executive officers (CEOs), particularly from larger companies, have often risen to their position after years of allegiance to the current business model, making it very difficult for them to lead a change process that requires a major shift in the core business model (Assink, 2002). Smaller, nimbler operations lacking long-tenured
allegiances to current products and value networks are often better positioned to absorb the initial slow pace of profit until their innovation becomes competitive. In fact, according to Christensen’s (1997) research, effective management and wise decision making in sustaining innovation within the value network is a major reason why the incumbent firms are so susceptible to disruptive innovation. Christensen identified four major themes that work against the ability of a larger firm to embrace disruptive innovation.

1. Larger, established firms are focused on finding sustaining innovations to satisfy existing customers. This means that in these firms the customers essentially control the major decisions about resource allocation.

2. DI usually start out in small markets. Large companies rarely look for their growth to come from small, higher risk markets.

3. The research and case studies reveal high levels of unpredictability when it comes to DI. It is very unlikely that the anticipated market for a disruptive technology ends up being the primary market in the long term.

4. The very qualities that keep a disruptive innovation from being initially competitive in an established market are usually the characteristics that drive their success in an emerging, or unanticipated market (Christensen, 1997).

Christensen (1997) discovered that managers dealing with disruptive technology have essentially two paths they can pursue within the firm. The first option is to attempt to push hard for an aggressive response to the emerging technology. As outlined in the last section it is very difficult to overcome organizational inertia and dedication to the current value network, which means that the aggressive approach is rarely successful or
sustainable. The second option is to create a distinct organizational unit with the freedom to nurture and grow the disruptive technology outside of the constraints of the existing core business model. Christensen found that successful launching of DI requires more action and doing and less detailed planning since it is nearly impossible to predict where the market will ultimately be for a DI.

Furthermore, the evidence suggests that successful introduction of disruptive technology has more to do with determination and flexibility in business planning and marketing and less to do with the process of tweaking the design in the lab in an attempt to perfect it for an existing market. At some point however the new product will be in a position to compete with established products for resources and will inevitably be pushing against established norms and approaches that have been successful for many years.

The case of Eastman Kodak Company. There are numerous examples of how Christensen’s (1997) theory has played out in the marketplace in devastating ways for many large companies. A powerful case study of how this process unfolds is the story of Eastman Kodak Company’s (Kodak) inability to respond effectively to the digital photography revolution. Lucas and Goh (2009) applied disruptive innovation theory to Kodak in a study that documented the key decisions Kodak executives made in the face of the emergence of the digital photography revolution. The goal of the study was to examine just how closely disruptive innovation theory mirrored the actual timeline of events at Kodak, a company that lost more than 80% of its workforce as the digital photograph revolution disrupted the camera and film market (Lucas & Goh, 2009). The study focused on two of Christensen’s main themes: the tension that builds up within a
company facing a disruptive challenge, and the critical role of senior management in the
effort to move the company forward (Lucas & Goh, 2009). The study extended DI
theory into the arena of organizational culture and leadership behavior.

Lucas and Goh (2009) built their case study by reviewing publically available
data on Kodak along with targeted interviews to document the key events in the
development of digital photography and the Kodak response. Analysis of the sales data
for film and digital cameras reflects DI quite powerfully. In 2000, the sale of film
cameras reached a record peak of nearly 20 million units. At the same time digital
camera sales remained below 5 million units (Lucas & Goh, 2009). By 2005 the numbers
were reversed. Digital cameras had pushed over the 20 million barrier and film cameras
dropped to below 5 million (Lucas & Goh, 2009). Ironically, but not surprisingly based
on Christensen’s (1997) original research, this rapid decline in market share was taking
place inside the company that created the first digital camera in the 1970s (Gustin, 2012).
What were the main factors that prevented Kodak from responding more quickly and
embracing DI?

Lucas and Goh (2009) hypothesized that middle managers play a pivotal role in a
company’s ability to respond to DI. Middle managers are often the first to encounter new
ideas emerging either within the company or externally and decide which innovations
they will champion and carry forward to senior management. In the case of Kodak
middle managers exhibited denial, pushed Kodak’s own digital developers to a separate
organizational unit, and held firmly to the company’s long-standing core process of
selling high quality film (Lucas & Goh, 2009). The study also revealed that although
1990s Kodak CEO George Fisher had some success changing the culture at the top of the
organization, his efforts did not become internalized among the mass of middle managers who remained committed to the dominant paradigm of producing high quality film (Lucas & Goh, 2009).

Lucas and Goh’s (2009) study of the fall of Kodak reinforced the core concepts of Christensen’s original theory. The study also contributed to growing scholarship that extends the theory into the area of organizational culture, business plan processes, and leadership behaviors. Scholars have since looked more deeply at the DI process to identify the barriers to the adoption of innovation. What are the patterns of organizational behavior that explain why so many firms are lulled into complacency at the very pinnacle of their success?

**Organizational culture, axioms, and unlearning.** Sinkula (2002) used the term axiomatic knowledge to describe the lens through which an organization views the external environment and develops market sensing capability. According to Sinkula, axioms help to explain why organizations behave in certain ways, and the positive and negative consequences that result. The axioms often extend from the core beliefs and values of the CEO, sometimes the founding CEO, and eventually become deeply ingrained in the organization. The result over time is the development of a powerful lens through which a business or organization views its environment (Sinkula, 2002). Once these axioms have taken hold they are very hard to change.

The process of letting go of axioms and mental models that are no longer working and potentially holding back the process of embracing new opportunities has been labeled by scholars as organizational unlearning (Sinkula, 2002). According to Sinkula (2002), organizations can learn to replace established routines and embrace new approaches that
result in superior results for their customers by embracing the process of unlearning. Sinkula (2002) suggested that the majority of organizational change takes place as accretion, incremental changes to the existing model that are unlikely to result in true unlearning. The ability to unlearn and leave axioms behind is one of the most critical competencies people and organizations must overcome in order to produce DI (Sinkula, 2002).

Assink (2006) expanded DI theory into the arenas of organizational culture and change, and the role of leadership in guiding the process. Assink expanded the definition and scope of DI scholarship by describing it as “a successfully exploited new product, process, or concept that significantly transforms the demand and needs of an existing market or industry, disrupts its former key players and creates whole new business practices or markets with significant societal impact” (p. 218). Organizations that succeed in innovation adoption exhibit a process that is non-linear, rhythmic, and made up of patterns of searching, exploring and experimenting, with unlearning just as important as learning (Assink, 2006).

Assink (2006) examined existing research on large corporations to identify the major inhibiting factors to the adoption of DI. Since there are actually relatively few established companies that succeed in adopting DI, the study instead focused on clear failures in order to identify common themes and construct a theoretical framework. Three of the major inhibiting factors of DI identified by Assink were:

1. The Adoption Barrier – The adoption barrier describes the tendency for businesses and organizations to limit themselves to incremental, or sustaining innovation. An organizations long term success often leads to the
development of risk averse behavior and an unwillingness to break out of strategies and patterns that have served the entity very well for a long time.

2. Organizational Dualism – Companies often find themselves in conflict, seeking a balance between decentralization and centralism as some parts of the operation seek efficiencies in the long term successful business model while other parts of the operation are seeking to create and incorporate DI that will enable the company to be competitive in the future. Very few organizations have an effective process for resolving these conflicts in a way that allows the DI to take hold.

3. Excessive Bureaucracy – Long standing organizations often develop cultures that demand allegiance to rules and procedures that ultimately frustrate creativity. An organizational culture of this type can create employees who are reluctant to react to emerging opportunities and less willing to take risks (Assink, 2006).

Chesbrough (2009) explored similar territory by identifying the barriers to business model innovation that emerge in the majority of companies. The business model is the avenue by which the company articulates the value proposition. The value proposition defines what the product or technology is designed to do for the end user (Chesbrough, 2009). In addition, the business model identifies the market segment and revenue generation mechanism, cost structure, and profit generating potential of the product or service (Chesbrough, 2009). Chesbrough explored the role of the business model in the innovation process by analyzing existing studies and conducting original
research at Xerox Corporation. The findings supported the hypothesis that the business model is a critical component of innovation.

Chesbrough (2009), in a finding that mirrors Lucas and Goh’s (2009) work, pointed to the critical role that mid-level managers play in the innovation process. Xerox created a research and development division outside of the mainstream of the company that was responsible for developing a number of highly innovative products. This approach fits well with the recommendations from Christensen’s (1997) original study. However, the innovations developed by the division were not taken seriously since they lacked clear connections to the dominant business model of increasing the volume or quality of copies made by a Xerox copier (Chesbrough, 2009).

Chesbrough’s (2009) study recommended concrete approaches that mid-level leaders could adopt that would help overcome the barriers to innovation. The approaches included the use of conceptual maps of new approaches that can be shared with senior leadership in a way that clarifies the underlying process. Another approach is to create opportunities to experiment with new business models and products in real market conditions (Chesbrough, 2009).

Chesbrough (2009) identified the critical role the CEO plays in the innovation process, suggesting that CEOs from smaller, emerging organizations may be better suited to lead innovative change. CEOs from older, larger companies are more likely to have risen to the position via the current business model and they may find it very difficult to embrace changes that run counter to the products and services that helped them rise to senior leadership. In addition, the transition to a new core process, or major business model transformation, requires a period of coexistence between the current and the
emerging model. The decision to shift resources from the former approach to the new model is a time of risk and uncertainty with potentially damaging career consequences for the managers involved (Chesbrough, 2009).

The work of these scholars has expanded the powerful concept of DI into the realm of organizational culture, and the important role that unlearning plays in the ability of companies and organizations to stay in sync with changes in the marketplace. An emerging theme from the research literature is the critical role of organizational culture. In particular, the powerful impact of a culture that allow for unlearning and taking calculated risks in order to overcome powerful barriers to change (Assink, 2006, Christensen, 1997; Sinkula, 2002). Furthermore, DI is unlikely to survive in an established firm without the existence of intentional processes that protect the innovation from dominant core business practices that are ingrained in the organization (Christensen, 1997). The scholars also introduced the critical role that organizational leaders play in the disruptive innovation process.

The question that emerges from this analysis, one that has not been addressed so far, is why is the development of innovation so critical in the first place? What are the major changes in the broader global context that are driving organizations, institutions, and their leaders to stay ahead of the innovation curve? The next section will set the stage for a deeper analysis of the building blocks of change and innovation through the lens of several organizational change scholars who have recognized the need for a fundamental shift in our understanding of how the world and organizations actually work.

The dawn of a new age. Influential scholars have called attention to fundamental changes in the understanding of physics, and how the evolving understanding of quantum
physics significantly alters the way we should think about how human systems operate in
the world (Porter O’Grady & Malloch, 2011; Senge, 2006; Wheatley, 2006). Porter
O’Grady and Malloch (2011) described this paradigm shift as a move away from a
reductionist, or Newtonian orientation, to an embrace of quantum physics.

The quantum view of the universe has begun to supplant the reductionist world
view. Quantum physics is based on the concept of holism: the understanding that the
smallest components within an organization are inexorably linked to all of the other
components. The result is an incredibly complex aggregation, or system, that is
connected to everything else in the universe (Porter O’Grady & Malloch, 2011; Imparato
& Herari, 1994). A major consequence of this paradigm shift is the realization that the
top-down managerial approaches to organizational change and leadership that dominated
in the 20th century have far less relevance in a world that is becoming incrementally more
competitive, diverse, and shaped by rapid fire developments in communication
technology (Imparato & Herari, 1994).

According to Imparato and Herari (1994), the role of the effective leader in this
context shifts from an orientation towards command and control to a focus on developing
a culture that stresses transparency, ensuring that all levels of the organization have
access to the information they need to make strategic decisions. Porter O’Grady and
Malloch (2011) concurred, suggesting that change should be driven from the point of
service, not from the top of the organization. The effective executive leader in this
context seeks to build processes that create organizational trust and integrity and promote
synergy around the mission, vision, purpose, and strategy (Senge, 2006).
Senge (2006) described this approach as systems thinking: a framework that allows the leader to observe the larger system and the interrelationships among the parts instead of just focusing on isolated components. A key component of Senge’s systems thinking orientation is the concept of mental models. According to Senge, mental models are based on experiences and assumptions that over time become lenses that influence how we view the world (Senge, 2006). In addition, all mental models are incomplete and flawed in some way (Senge, 2006). According to Senge effective leaders are aware of this reality and have the capability to objectively examine their mental models while remaining actively engaged in the world. The ability to incorporate this level of self-reflection into daily practice is a core characteristic of the systems oriented, or quantum leadership, that is better suited to the challenges and realities of the 21st century (Senge, 2006; Wheatley, 2006).

Wheatley (2006) explored similar territory, encouraging leaders to be open to the patterns that exist amidst what may appear to be pure chaos if viewed through a narrowly focused lens. According to Wheatley, the behavior of a chaotic system will eventually develop into a pattern and order will begin to emerge. Wheatley also embraces the idea that leaders need to shift from the Newtonian thinking, such as viewing an organization as a sum of the parts, and embrace non-linear thinking. A key component in making the shift is the recognition that all complex systems, both natural and human made, consist of repeating patterns and forms known as fractals (Wheatley, 2006).

Wheatley (2006) described a fractal as any object or form created from repeating patterns evident at many levels of scale. Fractals are visible in natural systems such as the organization of clouds, the patterns of flow in rivers, leaf patterns in plants, and even
in the layout of the human brain, lungs, and circulatory system (Wheatley, 2006).

Furthermore, all organizational cultures and practices both reflect and are influenced by the reality that we live in a fractal universe (Wheatley, 2006).

According to these principles, leaders who recognize the existence of the forces described by the authors in this section and understand how they shape organizational behavior have an advantage in today’s rapidly changing world. Is there a connection between systems thinking and innovation? The system thinking leader may have a greater chance of successfully facilitating the process of building shared purpose, vision, and values: creating an organizational culture where individuals feel empowered to create their own path and make their own unique contribution. The remaining sections of the literature review will build on this foundation and document what scholars have learned about organizational efforts to create environments and practices that lead to increased innovation.

**Entrepreneurship and innovation in the private and social sectors.** Previous sections of Chapter 2 have explained what disruptive innovation is, how the process unfolds, and provided context to better understand the factors driving the need to re-think the role of leaders in a 21st century context. The literature review will now examine empirical studies that have explored foundational elements of the change and innovation process. The first section explores research into the behaviors of individual leaders and thinkers that create innovative new products in both the private and social sectors.

Dyer, Gregerson, and Christensen (2008) expanded a long line of inquiry regarding the nature of entrepreneurship through a study that attempted to identify the leadership traits, skills, and behaviors of disruptively innovative business leaders. Dyer
et al. (2008) defined an innovative entrepreneur as the founder of a new venture offering a unique value proposition relative to incumbents. The study attempted to identify the factors that contribute to an innovative entrepreneur's ability to recognize an innovative new business idea, and to determine if their behaviors differ significantly from those of more typical executives.

Following an inductive grounded theory approach, Dyer et al. (2008) developed three open-ended questions to probe for a behavior-based theory of innovative entrepreneurism. Innovative entrepreneurs were asked to describe the most valuable strategic insight generated during their career and how the idea formed. In addition, the entrepreneurs were asked if they believed they possessed particular skills critical to generating novel business ideas, and if the skills were learned or personality based. Finally, they were asked to describe the techniques they employed regularly to generate innovative ideas (Dyer, Gregersen, & Christensen, 2008).

The interview process identified four common behavior patterns shared by the entrepreneurs: (a) questioning, (b) observing, (c) experimenting, and (d) idea networking. The study produced the theory that innovative entrepreneurs utilize these behavior patterns in ways that stimulate the cognitive process, allowing them to recognize opportunities for innovation more readily than their less entrepreneurial peers. Working from this hypothetical base, Dyer et al. (2008) constructed an empirical study to validate the findings of the initial inquiry, surveying a broad sample of CEOs and emerging entrepreneurs. Controlling for age and education, the research revealed that all four behaviors were significantly correlated with starting innovative new businesses, with
correlations ranging from a low of .30 for idea networking to a high of 1.0 for questioning with \( p < .05 \) in all cases.

The findings support the hypothesis that innovative entrepreneurs engage in a proactive process that leads to the identification of opportunities at a much higher rate than their peers. However, the results would be more convincing if they had included a control group of executives who were not considered to be innovative entrepreneurs. In addition, the self-reporting methodology and relatively modest correlations for idea networking and experimenting suggest that further research is needed to validate these results.

Vasakarla (2008) designed a qualitative study to explore entrepreneurial behavior, but in this case the sample consisted of social sector entrepreneurs from India. Vasakarla collected data from 75 Indian entrepreneurs representing 60 organizations. The entrepreneurs were asked to rank what they believed to be the most critical behavioral attributes for successful social entrepreneurs (Vasakarla, 2008). A Likert type scale with a range of 1 to 5 was utilized, with 5 representing strong agreement with the importance of the attribute. The top four attributes identified were: (a) the importance of high ethical standards (mean = 4.8), (b) self-discipline (mean = 4), (c) optimistic thinking (mean = 4.12), and (d) willingness to take risks (mean = 4.31) (Vasakarla, 2008). Although the attributes of self-discipline, risk taking and optimism mirror traits admired by private sector entrepreneurs, the results did not identify what the social entrepreneurs are actually doing that leads to more successful ventures, or if they are different in any significant way in comparison to private sector entrepreneurs.
Lukes and Stephan (2012) designed a study to compare the psychological profiles, characteristics, and motivations of nonprofit and for-profit entrepreneurs. A strong research base exists regarding the profile of private sector entrepreneurs. Prior research has identified the attributes of sociability, achievement orientation, conscientiousness, and openness to exploring new ideas as common behavioral characteristics of entrepreneurs (Lukes & Stephan, 2012). However, very little parallel research exists for nonprofit leaders.

Lukes and Stephan (2012) hypothesized that nonprofit leaders would not differ significantly from for-profit entrepreneurs in general personality traits. In addition, the researchers did not expect to find differences between nonprofit and for-profit entrepreneurs in task-specific personality traits such as self-efficacy, internal locus of control, personal initiative, risk-taking, and taking responsibility. However, Lukes and Stephan (2012) did expect the study to reveal differences in motivation in the case of nonprofit leaders that would distinguish them from their for-profit peers.

The research setting was Prague in the Czech Republic. Data was collected from 117 for-profit entrepreneurs and 72 nonprofit leaders through face-to-face interviews and questionnaires. The for-profit and nonprofit organizations did not differ significantly with regard to the number of years they existed, the number of employees, or based on the age distribution of employees. The researchers decided on a relatively short 20 item measurement tool in an attempt to maximize response rates, assuming that entrepreneurs were less likely to fill out long surveys. Standard scales were used to measure task-specific personality traits. A process of inductive analysis led to the creation of 11 entrepreneurial characteristics shared by both groups (Lukes & Stephan, 2012).
Leaders from both groups described themselves as extraverted, agreeable, conscientious, emotionally stable, and open to new experiences. They also described themselves as having high self-efficacy, an internal locus of control, personal initiative, and willing to take risks. Lukes and Stephan (2012) conducted multivariate analyses of covariance to compare the leader’s general and task-specific personality traits, controlling for gender by treating it as a second factor and for education as a covariate. This analysis yielded no significant differences in personality traits between the two groups. However, significant differences were found with regard to their motives.

Private sector entrepreneurs mentioned independence and autonomy as a primary motivation, whereas the nonprofit leaders ranked it eight out of 11 motivating factors. Income and profit was the second most frequently mentioned factor for the entrepreneurs but was mentioned as a principle motivator by less than 1% of the nonprofit leaders (Lukes and Stephan, 2012). Achievement and success were similar for both groups, with nonprofit leaders slightly higher at 14% to 10% for private sector entrepreneurs. The importance of helping others was much higher for the nonprofit leaders at 24% compared to 2% for the for-profit group. The study provided further evidence that the demand for innovation is a requirement for leaders in both nonprofit and private sector organizations. Although the motivations driving the entrepreneurial process appear to be different for the two groups, the research suggests that future research on innovation should be directed more uniformly between the profit and nonprofit sector.

The studies reviewed in this section demonstrate promising research developments in innovation that are bridging the gap between for-profit and nonprofit research. However, the studies are focused on the role of individual entrepreneurs, and
do not provide any context for how the broader organizational structures and culture impact on the innovation process. The next section of studies will explore deeper, more fundamental approaches, including efforts to unlearn current mental models and shift the current dominant business model in established organizations.

**Organizational unlearning and innovation adoption.** Becker (2005) described organizational unlearning (OU) as a process that allows individuals and organizations to recognize and release the limitations of prior learning and create space for new information, ideas, and behaviors. Akgun, Byrne, Lynn, and Keskin (2007) performed an extensive review of research in OU and the innovation process with the goal of learning how organizations conceptualize and operationalize unlearning during periods of rapid change. Akgun et al. (2007) defined OU as a catalytic and embedded component of the change process; not performance improvement in and of itself but a building block that can develop into performance improvement in the future. Akgun et al. (2007) identified four types of OU that provide an excellent foundation for this section of the paper.

Re-inventive unlearning describes a radical and fundamental form of unlearning necessary when an organization is facing highly competitive disruptive innovation. There is a high level of uncertainty and risk involved in re-inventive unlearning. The second type, formative unlearning, involves the development of new mental models accompanied by incremental organizational change (Akgun et al., 2007). Akgun et al. used the term *adjustive unlearning* to describe a third, more incremental OU that can be either administrative or market oriented.

The fourth type, operative unlearning, consists of modest but ongoing changes in beliefs, routines, structures and processes. The study suggests that operative unlearning
is most effective during periods of relative stability. The study provides a firm foundation in OU typologies and establishes the link between OU and innovation efforts that will now be explored further through two empirical studies.

A study by Mieres, Sanchez, and Vijande (2012) reiterated the importance of OU in the change and innovation process. The authors hypothesized that successful OU processes are more likely to emerge when organizations engage in a process known as internal marketing (IM). IM is defined as an intentional effort to overcome organizational resistance to change (Mieres et al., 2012). The study analyzed the effect of IM and OU on the innovative activity of knowledge intensive business services (KIBS), a competitive field where innovation is in high demand (Mieres et al., 2012).

Mieres et al. (2012) hypothesized that the adoption of OU attributes would positively affect the intensity of innovation, and that the IM approach would lead to OU. The authors used an existing database, narrowed by size criteria and the existence of an IM approach, to develop a sample. Completed questionnaires were obtained from 154 CEOs and general managers from KIBS firms in Northern Spain. The response rate was 32%. Scales were developed to measure OU, the intensity of innovation, and the impact on business performance (Mieres et al., 2012).

The results indicated that OU attributes had a modest impact on innovation with a t-value of 1.96. The relationship between the existence of an IM process and the development of OU attributes was very significant, with a t-value of 5.66. Finally, the relationship between innovation intensity and business performance was significant with a t-value of 5.19. In addition, the results indicated that IM alone had a minimal impact on innovation intensity.
The findings related to IM are of particular interest in this literature review and raise two key questions. What is the missing element that connects organizational development efforts, in this case IM, to the emergence of an OU culture? Are there particular situations, external factors, or typologies of OU that are more conducive to the development of innovation?

Sandberg (2009) also explored the role of marketing in innovation but in this case the focus was the importance of external marketing during the introduction of innovation. The study is included due to its focus on the role of proactive behavior at the early stages of an innovation. Sandberg (2009) defined proactive behavior as an organization that is constantly looking for opportunities to initiate change within established strategic areas as opposed to reacting to events. The definition fits closely with the opportunity recognition attribute discovered by Dyer, Gregersen, and Christensen (2008) in their study of disruptive innovators but takes it to the level of an organizational attribute.

Sandberg (2009) suggested that a proactive orientation is particularly critical at the launch stage of a DI. According to Sandberg (2009), products or services that are radically different from existing standards require extensive marketing and education in order for the customer to successfully adopt the new product. Another key point was the potential value of targeting early adopters in the marketing and educational effort. According to Sandberg, early adopters tend to be visionary, less price sensitive, and more tolerant of the learning curve required in acclimating to a new product or service.

The study was designed to examine and document the role of market proactivity in creating a market for a DI. The author identified a clear case of emerging DI and adopted a case study approach that included interviews, evaluation of company...
documents, and analysis of external articles and reports. The DI studied was a highly anticipated pain killer utilized in veterinary medicine to treat horses and other large animals. The drug completely altered the practice of large mammal veterinary medicine by allowing an animal to be treated without being anaesthetized, restrained, or transported to an animal hospital (Sandberg, 2009).

The research revealed how the market for the product was being created long before the actual product launch date. Large research universities were identified as likely early adopters, allowing research tests to occur and research papers to be published that helped to advertise the value of the product to the target audiences. The study represents a unique and useful analysis of how a successful DI launch was handled by a long-standing company. The paper does not provide much background on the company involved so it is not clear if this process represents a successful implementation of OU, the impact of creative new leadership, or a combination of both. The case study does provide some evidence for internal mechanisms of restraint and reflection that helped the company resist an overreaction to initial criticism of the product and focus their energy on educating the early adopters who in this case turned into ambassadors for the product within the broader target market.

A study by Becker (2010) examined the challenges that arise during the implementation of new technology and the role of OU during such a process. The study attempted to identify key factors at the personal and organizational level that influence unlearning during technology implementation. Becker (2010) focused on a government owned corporation about to launch a new information technology system within the Australian energy industry. The organization had 5,000 employees with $2.2 billion in
annual revenue. The participants in the study were all significantly impacted by the technology change that was underway (Becker, 2010).

The methodology was a sequential exploratory design that looked for internal consistency among organizational characteristics and OU. An online survey tool was returned by 238 people in the organization for a response rate of 80%. The survey, which was pre-tested by an expert panel, contained 41 statements relating to the perceptions of employees before, during, and after the implementation of the new technology (Becker, 2010). A total of eight organizational factors emerged from the analysis. All eight factors had a Cronbach’s alpha of .6 or greater and therefore were considered generally reliable and useful for further analysis in a follow-up quantitative exploration.

Positive prior outlook (PPO) emerged as a strong predictor of OU and adaptability to the change process. PPO described the attitude of individual employees prior to the change effort. Employees in the PPO category demonstrated a thorough understanding of the process, realistic expectations going into the process, and an understanding of why the change was needed. A second relevant finding was the category of feelings and expectations (FE). Employees in the FE category were very comfortable with the prior technology and expressed apprehension about the change and were not predisposed to the adoption of OU. Employees in this category had negative expectations entering the process and were experiencing an emotional response to the loss of the prior system (Becker, 2010).

The findings of these studies, although narrow in organizational diversity and geography, suggest that focusing on the feelings and emotions of individual employees is essential to building an organizational culture supportive of OU. Moreover, an early
theme from the literature is the importance of an intentional organizational process capable of shifting mental models and changing the behavior of the people within the organization. The next section focuses on the role of organizational learning (OL), leadership approaches, and the innovation adoption process.

Organizational learning (OL) and the role of leaders in innovation adoption.

Scholars have defined OL as a process of continual development and renewal that facilitates the integration of new knowledge and capabilities, and improves organizational performance (Garcia-Morales, Llorens-Montes, & Verdú-Jover, 2006). Empirical studies have established a link between OL, organizational performance, and innovation adoption (Hurley & Hult, 1998). Hurley and Hult (1998) integrated previous work on organizational culture and innovation with new research on market orientation and learning organizations. Market orientation was defined as the creation, distribution, and systematic implementation of knowledge capable of predicting current and future customer needs (Hurley & Hult, 1998).

Hurley and Hult (1998) hypothesized that market orientation could enhance innovation but only when it occurs in conjunction with a robust OL culture. OL culture was defined as a set of employee assumptions about the way an organization works and the degree to which this knowledge brings the organization together as a unified whole (Hurley & Hult, 1998). Hurley and Hult proposed a distinction between innovativeness and the capacity to innovate, suggesting that innovativeness is present when there is receptivity to new ideas and a discernable orientation towards innovation. The capacity to innovate refers to an organizations ability to move from orientation to successful adoption and implementation of new ideas, processes, or products (Hurley & Hult, 1998).
Hurley and Hult (1998) tested their hypothesis by studying a large research and development agency of the U.S. Federal Government. The entity was described as a loose federation of autonomous organizations with a total employment base of 20,088. The data for the study emerged from 9,648 questionnaires returned from 10 distinct sectors within the overall agency, ranging in size from 21 to 2,229 employees. Four independent variables descriptive of OL culture were compared to the dependent variable of innovative capacity. The independent variables were:

- Emphasis on participative and open decision making;
- Emphasis on a culture that supports collaboration;
- Emphasis on a culture of power sharing; and
- Emphasis on a culture that supports individual employee learning and development (Hurley & Hult, 1998).

Participative decision making and learning and development were found to be highly correlated to innovative capacity. Support, collaboration, and power sharing did not correlate to innovative capacity in this study. The study demonstrated that at least in the case of one large social sector agency, and after controlling for size, there is a relationship between innovative capacity and the development of two key aspects of OL culture. In addition, the study supports the finding from the OU section that an intentional process that considers the emotional needs of the employees is critical to developing an OL culture. Scholars have since taken the work further to explore the effect of specific strategies designed to develop OL culture.

Lopez, Peon, and Ordas (2006) examined the role of human resource management practices and OL. According to the authors, organizations fall short in the quest to create
OL culture when they rely too heavily on technical solutions to problems. The study by Lopez et al. (2006) was designed to determine how certain human resource strategies might contribute to the generation of OL culture. Lopez et al. described OL as a process that includes knowledge acquisition, distribution, interpretation, and transferal of these processes to the organizational memory. Organizational memory only occurs when the first three phases are internalized and sustained through the development of new systems, policies, and procedures. Lopez et al. looked at four independent variables, or factors, within the general category of human resources and hypothesized that all four practices would be positively correlated with OL.

The first factor was the value of selective hiring practices designed to identify employees with strong interpersonal skills and high levels of initiative who would not require extensive coaching and mentoring. The second factor was the existence of effective training programs that clearly define the mission, built shared vision and teamwork, and linked the knowledge management framework to the overall company strategy. The third factor was the belief that contingent approaches to compensation and reward, such as connecting the achievement of organizational values to compensation increases, would positively influence learning. Finally, the research explored the role of a participatory climate, looking at the degree to which management encouraged employee participation in the development of policies, goals, and vision. The researchers hypothesized that high levels of employee engagement would lead to increased levels of OL (Lopez et al., 2006).

Lopez et al. (2006) developed and distributed a questionnaire to the managing directors of 2,740 Spanish firms, resulting in 215 completed surveys for a very modest
7.8% response rate. The authors claimed that the low response rate was comparable to similar studies conducted in the United States and the United Kingdom. Structural equation modelling was employed to examine the independent variables and compare them to the dependent variable of OL culture.

The results revealed significant correlation between selective hiring practices and OL ($\beta = .19, t = 1.97$), effective training strategies and OL ($\beta = .23, t = 2.724$), and high levels of employee participation in decision making and OL ($\beta = .5, t = 5.133$). The null hypothesis was accepted in the case of OL and contingent compensation strategies. The results contribute to the body of evidence tying OL culture to the development of internal mechanisms that support employees in the OL process.

The importance of effective hiring practices are compelling and noteworthy. The finding suggests that organizations with a clear commitment to OL may be able to put this perspective to work in the hiring process, resulting in more effective recruitment and selection of employees with an existing capacity for OL and innovation. In addition, the study revealed the importance of a culture that supports participatory decision making processes, a finding that aligns with the Hurley and Hult (1998) study.

Raj and Srivastava (2013) contributed another data point regarding human resource management practices and the impact on OL and OI. In this study the hypothesis was that performance appraisal systems, rewards and recognition policies, and training and development practices would be positively related to OL and OI. A data set of executive level employees of public and private entities was created from a random sample of organizations from throughout India. The researchers approached the human resources departments of each organization for a list of employees appropriate for the
study. These efforts resulted in 352 completed questionnaires and a response rate of 70.4%. A panel of experts was employed to oversee survey development and piloting and to review for response and social desirability bias (Raj & Srivastava, 2013).

The results indicate that rewards and recognition were positively and significantly related to OL ($\beta = .268$), and innovativeness ($\beta = .275$). Performance appraisal systems did not demonstrate a significant relationship with OL, but did show a positive and significant relationship with innovation. Training and development were positively correlated to both OL and innovation, aligning with the findings from Hurley and Hult (1998) and Lopez et al. (2006). Effective human resource strategies, particularly employee training efforts and developing a participatory culture, are emerging as significant factors in the development of OL and innovation across a wide spectrum of organizations.

Marci, Tagliaventi, and Bertolotti (2002) investigated the patterns of behavior that lead to change resistance, particularly in smaller organizations. The researchers employed a qualitative approach to explore resistance to change in a small Italian manufacturing firm. Macri et al. (2002) observed that over time many organizations align internal structures with external demand and bureaucratic mandates at the expense of creativity and innovation. This can lead to a crisis when market or industry-wide conditions change, disrupting a long-standing successful business model, or with the arrival of new leadership (Macri et al., 2002). The study utilized a grounded theory approach to document how this process unfolds in a small organization.

The study focused on 13 key players within a small manufacturing firm that produced stairs for businesses and residences in an economically stagnant region of Italy.
The data collection consisted of document review, interviews, and participant observations. The study uncovered a complacent organization offering a product that seemed resistant to external change and immune to demands for innovation. The employees performed their roles with high levels of autonomy, low levels of interaction, and very little questioning of processes or procedures. The study revealed little in the way of OL culture. To the contrary, the study revealed an unwritten agreement among the workforce that self-preservation was preeminent and self-preservation could be threatened by a culture that shared knowledge openly and allowed employees to see beyond their own specialization (Macri et al., 2002).

The construction of stairs in Italy may not directly connect to a study of innovation in CE but there are interesting comparisons. Although the small company in this study may appear to be insulated from market changes, a DI could be imminent, and as other studies have demonstrated, it is not easy to quickly build a culture of OL and innovation during a period of strain and external demands for change. The challenge for leadership may be to determine when there has been just enough of a change in the external market environment to begin a paradigm shift.

Mano (2010) explored organizational change in nonprofits through the lens of crisis management. Does organizational crisis stimulate learning that can lead to a greater degree of preparation as measured by crisis preparedness (CP) and crisis controllability (CC)? Does crisis create energy for the process of OL institutionalization, the final phase of OL that has been discussed in many of the studies outlined in the literature review? Mano (2010) suggests that the theory of double loop learning can help nonprofits build on past crises. Unlike single loop learning, which is focused on
stabilizing and maintaining existing systems through error detection and correction, double loop learning takes a deeper dive. Double loop learning, akin to the concept of OU explored in the earlier part of the literature review, encourages the questioning of organizational norms and structures, evaluating their relevance within the current context (Mano, 2010). As with OU, double loop learning is described as an ongoing process of exploration that raises questions about the relevance of long standing organizational beliefs, challenging their validity based on changing circumstances.

The research was conducted in Israel with a sample of managers drawn from 225 nonprofit organizations. The dependent variables in the study were CC and CP. There were three components to both CC and CP and a 10-point Likert scale was used to allow the interviewees to state their level of agreement with the questions posed about CC and CP. The independent variables included aspects of organizational context, managerial characteristics, and organizational structure. The researcher utilized a correlation matrix to evaluate the degree of relationship between the examined variables. Regression estimates were presented to predict the direct effect of each of the analysis variables on the dependent variables of CC and CP (Mano, 2010).

The main hypothesis was supported. Learning from past organizational changes significantly and positively enhanced CC (β= 8.229, p=.002). However learning did not have a similar effect on CP, suggesting that awareness of past failures can have positive and negative consequences. Reflecting and attempting to learn from past crises seems to facilitate learning, but it may also remind employees of factors that are difficult or beyond the ability of the organization to control, leading to increased anxiety in some cases (Mano, 2010).
Colville, Hennestad, and Thoner (2013) looked at OL and change through a case study of a successful 175 year old Norwegian organization that seemed to have changed very little over that time. The researchers viewed OL from a process perspective; envisioning OL as a set of dynamic, interrelated processes that represent constant striving as opposed to an end point. The authors suggest that change, organizing, and learning can occur simultaneously, and that learning in particular often takes place in the spaces between major periods of disorder (Colville et al., 2013).

Similar to the Sandberg (2009) OU study on disruptive innovation, Colville et al. (2013) explored an organization going through change and innovation in real time and attempted to document the events and their meaning. Colville et al. described their process as *sensemaking*, a process of documenting how members of an organization create a collective answer to profound questions. What is the story of this organization and what should happen next? Colville et al. put these ideas to practice through a study of the Lilleborg company, a Norwegian based soap and hygiene industry leader since its inception in 1833.

The research explored the inner workings of a company that did not seem to be changing in any obvious way yet seemed to have found a way to remain relevant, successful, and even innovative after 175 years of existence. Interviews were conducted with 19 Lilleborg employees; including the CEO, project managers, the heads of marketing and personnel, the division heads, and front line unionized workers. The research method was phenomenological, described by the researchers as a naturalistic inquiry into a shared phenomenon, in this case the experience of change and innovation at Lilleborg. The process led to the creation of four major categories of shared meaning.
that emerged from the data: (a) anxiety and doubt, (b) improvement and quality orientation, (c) accountability and rationality, and (d) living culture (Colville et al., 2013).

The research revealed that feelings of doubt and anxiety permeated the organizational culture. Even when things seemed to be going quite well the pervasive feeling was that the possibility of disaster was right around the corner. The result of this culture was a sustained sense of urgency that kept employees on the edge and looking out for challenges and opportunities. Colville et al. (2013) uncovered an organization that had found a way to be fully cognizant of past successes and accumulated experience but always ready to doubt if that past experience continued to be relevant to current challenges. They described this trait as a living culture. This approach allowed creativity to be encouraged but also to be countered by a strong dose of pragmatism.

An and Reigeluth (2005) suggested that individual learning must be accompanied by thoughtfully designed organizational systems in order for OL to occur. As in other studies the authors describe OL as a process of continual improvement as opposed to a destination. The role of the leader is de-emphasized and replaced by the search for a deeper process of collaborative inquiry (An & Reigeluth, 2005). An and Reigeluth designed an ethnographic study that allowed them to explore how an individual organization, in this case a hospital in a small college town, develops an OL culture, facilitates team learning, and encourages the development of shared vision.

The research setting was a 2,800 employee hospital serving a nine county region in a city with a population of approximately 70,000. The researchers focused their interviews on six employees who were responsible for training and education programs in the various branches of the hospital, a decision that allowed for a much broader view of
overall hospital approaches to OL. Interviews were conducted over a 2-week period following a basic set of interview questions that were adapted based on the flow of the individual conversations (An & Reigeluth, 2005).

The findings revealed that individual learning was supported through the creation of interdisciplinary teams that focused on recurring process challenges, financial support for seminars and training programs, and highly standardized training programs designed for specific hospital function. There was also a formal mentoring program that matched new employees with more experienced employees performing the same functions. However, the study revealed very little evidence that individual learning was leading to OL (An & Reigeluth, 2005).

Instead, the interviews revealed a culture focused on the efficient and effective transfer of very specific content oriented knowledge from the experts to the employees that would allow them to succeed in their current role. There was no evidence that individuals were learning how to correct deficiencies on their own and bring them back to the hierarchy to adopt new mental models. There was a missing link. The intentional development of human resource practices and leadership development programs designed to encourage OL and OU promoted in other studies were not evident in this situation.

Ismail (2005) examined the perceptions of employees from two distinct organizational categories; multinational corporations (MNCs) and locally based organizations, to identify differences in organizational climate and culture that might be impacting on innovative capability (Ismail, 2005). Ismail developed a random sample of 467 Malaysian senior, middle management, and technical level staff. A response rate of 57% resulted in 252 usable questionnaires. The study looked at two independent
variables; creative climate and learning culture, and attempted to determine the effects of creative climate and learning culture on innovation both separately and simultaneously. The creative climate variable included 10 sub categories, or elements of creative climate, allowing each factor to be independently analyzed for a relationship to innovation. Independent elements of OL culture were also independently analyzed against innovation. The results were compared between the MNCs and the locally based organizations and among the employee categories to see if there were any significant differences across these factors (Ismail, 2005).

Each of the 10 factors of creative climate were found to have a modest ($p<.05$) relationship with innovation. The relationship between OL dimensions and innovation was more significant. All seven of the OL dimensions were found to have moderate to high relationships with innovation. Regression analysis suggests that approximately 57% of the contribution towards innovation could be accounted for by learning organization variables. Furthermore, the study revealed no significant differences in the perceptions of creative climate, or OL factors between MNCs and locally based organizations, nor among the employee categories (Ismail, 2005). Multiple regression analyses were performed to explore the interaction of creative climate, OL factors, and overall innovation.

Three factors from the OL variables were found to have the most predictive power for innovation. First, the existence of embedded systems to promote OL was related to innovation at $\beta = 6.12$. The existence of systems connections was correlated to innovation at $\beta = .313$, and the element called continuous learning was correlated to OI at $\beta = .125$. The Ismail study is the first in the literature review to intentionally look for
differences across two distinct organizational typologies. As with other studies, the importance of having an intentional process to promote OL culture among employees emerged as a critical factor in the development of innovation capacity. Ismail (2005) described embedded systems as an effort within the organization to capture the intellectual capital of individuals and embed it in the organizational memory. The next study will explore similar territory, introducing an additional factor that will become more dominant as the literature review moves along: the role of leadership in the process.

Garcia-Morales et al. (2006) built on previous efforts examining the role of OL in successful change management. The researchers attempted to establish an empirical basis for a positive relationship between OL and innovation through the lens of five key organizational capabilities: personal mastery, transformational leadership, shared vision, proactivity, and the environmental context. In contrast to the studies reviewed so far, Garcia-Morales et al. focused on the fundamental role of the chief executive officer (CEO) in the process.

A questionnaire was developed based on interviews with CEOs, consultants, and academics in the field of entrepreneurship. The questionnaire was distributed to 900 CEOs and managers of Spanish-based companies in the food and agriculture, manufacturing, construction, and service sectors. The researchers found significant positive correlations between the strategic variables of innovation and OL and overall organizational performance. For example, personal mastery was correlated to innovation at .156 and OL at .151, with \( p < .01 \). Proactivity was correlated with innovation at .336 and OL at .255, with \( p < .001 \). Transformational leadership had a correlation factor of
.156 to innovation and .151 to OL, with p<.01. As in earlier studies, organizational size
did not have any noticeable impact on the results (Garcia-Morales et al., 2006).

The study had limitations, including being based on self-reported data that could
be subject to social desirability bias. However, the study introduced the role of the leader
in the process of OL and innovation. The study suggests that there is a correlation
between leadership approaches and adoption of OL and innovation. Furthermore,
transformational leadership is positioned as particularly effective. The emergence of
transformational leadership as a potential missing ingredient and catalyst for OL and
innovation requires further clarification and exploration as the literature review
continues.

According to Jaskyte (2004), many theories and models have been constructed
and promoted by scholars that link leadership behavior and innovation adoption.
However, there are very few empirical studies that explore the role of transformational
leadership, organizational culture, and innovation in the nonprofit sector (Jaskyte, 2004).
Jaskyte defined innovation as the implementation of an idea, service, process, procedure,
system, structure, or product new to the prevailing organizational practices. The study
focus was 247 employees from 19 Association of Retarded Citizens (ARC) organizations
in Alabama.

The research questions included exploring the relationships between
transformational leadership behaviors, organizational culture, and innovation.
organizational innovation, the dependent variable, was defined as the number of
innovations put into practice over the past two years by the ARC branch.
Transformational leadership was measured using the Leadership Practices Inventory
(LPI) assessment tool. Organizational culture was measured using an existing tool called the organizational culture profile, or OCP (Jaskyte, 2004).

Correlations between innovation and transformational leadership subscales showed no significant relationship. Jaskyte (2004) explored the relationship between leadership and organizational culture by obtaining bivariate correlations between the five transformational leadership scales, cultural consensus, and content of cultural consensus. Cultural consensus was significantly positively correlated with transformational leadership practices, \( r=.728, p<.01 \) and with each of the specific transformational leadership behavior variables tested. No relationship was found between transformational leadership and innovation, however a strong correlation was found between transformational leadership and cultural consensus. Cultural consensus, characterized by stability and team orientation, was negatively correlated to innovation in this study, raising significant questions about the role of transformational leadership and innovation. Moreover, all of the transformational leadership behaviors, with the exception of challenging the process, were correlated to cultural consensus.

It would be easy to dismiss this study due to its limited scope in terms of geography, sample size, organizational specificity, and unexpected findings regarding transformational leadership and innovation. However, some of the results do resonate with earlier studies suggesting that leaders must take the time to understand the existing organizational context and culture in order to lead an organization in an innovative direction. Furthermore, the study could be easily replicated in other settings to compare the results. One area in particular that calls out for further study is whether the focus on
team building and consensus decision making is more important in the nonprofit sector that it is in the private sector.

Amitay, Popper, and Lipshitz (2005) developed a study with many similarities to the Jaskyte (2004) study. In addition to looking at the role of leadership style and OL the researchers considered a phenomenon they referred to as organizational learning mechanisms (OLMs) (Amitay et al., 2005). OLMs are described as an observable organizational structure or system that allows individuals to reflect on how things are working at both the individual and organizational level and to develop and share this knowledge broadly across the organization (Amitay et al., 2005). The researchers were interested in learning about the connections between OLMs, leadership style, and the ability of these elements to lead to the creation and sustaining of an OL culture. The study design called for isolating the leadership factor in order to assess the relationship to OL culture development.

To accomplish this, Amitay et al. (2005) narrowed the research focus to 44 community health clinics from the same organization, doing largely the same work, and employing similar staffing patterns, minimizing other external variables in the process. The Multifactor Leadership Questionnaire (MLQ) was used to measure transformational leadership. The sub-factors of leadership were the independent variables in the study and included inspirational motivation, idealized influence, and intellectual stimulation. The dependent variable in the study was OL. OL was measured using an existing methodology called the Organizational Learning Questionnaire (OLQ) (Amitay et al., 2005).
Amitay et al. (2005) expected to find a positive correlation between transformational leadership and OL. Furthermore, they believed that as the rating for transformational leadership increased so would the rating for OL. Amitay et al. also expected to find a positive correlation between OL values and OLMs with a direct correlation between higher OL values and more intensive OLM efforts.

The results demonstrated very high correlations between transformational leadership, OL values and OLMs, and negative correlations between transactional leadership behaviors and OL variables. For example, transformational leadership and transparency were very highly correlated ($p < .001$) as were transformational leadership and formal learning processes ($p < .001$). In addition, the results demonstrated that higher organizational learning values were correlated to effectively operated OLMs. For example, the OL value of transparency was highly correlated to the OLM value of knowledge dissemination ($p < .01$). This study was very straightforward, logically designed, and convincing. Amitay et al. (2005) have added a convincing study to the body of research suggesting that leaders do play a major role in the development of organizational values and OL culture. The study also reinforces the importance of creating intentional organizational systems, in this case labeled OLMs, to build and sustain learning at the individual and organizational level.

Wang and Rhode (2010) explored transformational leadership through a slightly different lens, looking at how the overall organizational climate and nature of the relationship between employees and leaders influences the impact of transformational leadership on creativity. The authors cite the existence of a plethora of studies linking transformational leadership to job satisfaction and individual employee performance, but
very few studies that explore the relationship of transformational leadership to employee creative while also accounting for organizational context. Wang and Rhode (2010) hypothesized that employee creativity is positively influenced by leaders who encourage questioning and are open to challenges to the status quo. Furthermore, they predicted that leadership is critical to the process of cultivating creativity in organizations that do not support risk taking and questioning the status quo (Wang & Rhode, 2010).

The data emerged from a wide range of organizations in a large city in the Southern United States. Wang and Rohde (2010) engaged with managers at each company, asking them to rate the creativity of three of their immediate subordinates. The managers were instructed to pick a high performer, average performer, and a poor performer. Surveys were then sent to each of the subordinates. The process resulted in 296 total surveys. The final sample represented 55 organizations, including the sectors of retail, governmental, educational, and professional services. The data set included 71 supervisors and 212 subordinates. The research design controlled for employee age, education, organizational tenure, and the employees tenure with the leader (Wang & Rhode, 2010).

The MLQ was once again used to measure the independent variable of transformational leadership characteristics. Employee creativity was the dependent variable. Although the results of the regression analysis demonstrated a relationship between transformational leadership and creativity, the relationship did not reach the level of p<.05, so the main hypothesis was not supported. The hypothesis that transformational leadership was critical to the cultivation of creativity in organizations lacking an overall climate of risk taking and questioning was also not supported. The
results did suggest that employee creativity is enhanced when the three factors of strong individual identification with the leader, transformational leadership, and an innovative climate are all present (Wang & Rhode, 2010). The notable finding from this study in relation to the overall literature review is the lack of clarity emerging regarding the importance of transformational leadership and the development of OL culture and innovation.

Currie and Locket (2009) explored the role of transformational leadership within the British public school system in a study that included quantitative and qualitative methods. Currie and Locket expressed concern that politicians in England were embracing and investing in transformational leadership as a major solution to public sector challenges in the absence of empirical data. In addition, the authors cited the lack of scholarly consensus regarding the efficacy of transferring private sector models to the public sector. Finally, they cited a line of scholarship that has raised significant questions about aspects of transformational leadership that could be viewed as perpetuating earlier leadership theories that focused too heavily on the power of the individual (Currie and Locket, 2009).

Currie and Locket (2009) proposed that additional forms of leadership should be considered when evaluating effectiveness in the setting of public school systems. In particular, they were interested in a style of leadership defined as professional leadership. Professional leadership was characterized as highly active and involved with defining the mission, managing the curriculum, and creating a positive school climate. In addition, professional leadership is characterized by a deep understanding of the context the school
is operating in and the ability to adapt the leadership style to fit the circumstances (Currie & Locket, 2009).

The research was designed to determine if different leadership styles could be empirically tied to school achievement levels. The research setting was a geographically diverse sample of 200 schools from four regions of England that included rural and urban settings. The study looked at the independent variables of leadership type and school performance. The six leadership styles of transformational, professional, contingent, managerial, moral, participative, and business were considered (Currie & Lockett, 2009).

All of the schools in the study had recently gone through an extensive review process which included a section describing the leadership culture observed in the school. Currie and Lockett (2009) were able to combine this information with analysis content techniques to create a primary and secondary leadership dimension for each school. In the case of school performance, they were able to tap into existing public standardized testing data to develop a performance rank for each school. Control variables included budget size, region, school size, and whether or not the school had a religious focus (Currie & Lockett, 2009).

The professional leadership style was found in 86 schools. Transformational leadership was found in 26 schools. The quantitative phase of the study utilized regression analysis, with each model testing one leadership style against all of the remaining leadership approaches. The results revealed that professional leadership ($r=.380, p<10\%$) was positively correlated to higher school outcomes. Managerial and participatory leadership styles were negatively correlated to performance outcomes and transformational leadership was positive but not significant (Currie & Locket, 2009).
Currie and Locket (2009) had doubts about the efficacy of what they described as a managerial variant of transformational leadership they felt had arisen from a combination of overtly ambitious political views about transformational leadership and the realities of leadership in a public school setting. They expected the professional dimensions of leadership to do well since it sits more comfortably with long-held values in the teaching profession. Once again the role of transformational leadership and organizational innovation is questioned by a quality research study.

Elenkov et al. (2005) examined the role of transformational leadership and innovation and the influence and role of the organizations top management team (TMT). Elenkov et al. broadened the research on leadership and innovation beyond the question of style alone to include the role of culture, social networks, and how these issues play out among TMTs. The researchers were interested in two elements from transformational leadership theory in particular: a) the role of the leader in creating an environment supportive of intellectual curiosity and exploration and b) the ability of transformational leaders to determine the developmental needs of individual team members and create opportunities for their growth and development (Elenkov et al., 2005).

Elenkov et al. (2005) designed an empirical study to discover if social culture affects the relationship of executive leadership and innovation adoption, and if TMT tenure heterogeneity, defined as the amount of time the group has been working together, influences the relationship between executive leadership and innovation. They created a cluster sample from an existing database of 290 firms from the United States, United Kingdom, Germany, Austria, Russia, and the Ukraine. The CEOs were recruited to
participate in the study and provide the names of up to five key people from their senior leadership teams. Two versions of a questionnaire were sent out, one version for the CEOs and one version for the other members of the TMT. The result was a total of nearly 2,000 respondents and a response rate of 80% (Elenkov et al., 2005).

Elenkov et al. (2005) also used the MLQ to measure the transformational leadership behaviors and transactional leadership behaviors. The independent variables charismatic influence, inspirational motivation, intellectual stimulation, individual consideration, contingent reward, and management by exception were compared to the dependent variables of executive influence on market level innovations and executive influence on administrative innovation. Among the set of independent variables, the strongest correlation was found between idealized influence and inspirational motivation, \( r = .52 \) and \( p < .001 \), and intellectual stimulation and vision development, \( r = .35 \) and \( p < .001 \).

Elenkov et al. (2005) also performed multiple regression analyses. All of the measures of strategic leadership behavior proved to be related to increases in market based innovation. A second important finding was that TMT tenure homogeneity had a moderating impact on leadership behavior for both market and administrative innovation. This finding suggests that diversity and contrasting views and perspectives among a TMT can be conducive to innovation if the CEO has the ability to turn conflict into energy and forward momentum.

Atwood, Mora, and Kaplan (2009) also looked at the social and team aspects of OL culture and the role of leadership in facilitating interactions. Atwood et al. (2009) were interested in discovering how leaders shape an environment conducive to the
growth of OL culture, and whether intentional efforts by management to build leadership capacity could contribute to building OL culture. Atwood et al. approached the research with a positive bias towards the value of transformational leadership in creating an OL climate. They proposed that the emerging concept of distributive leadership should be emphasized as well. Distributed leadership is characterized by its sensitivity to the situational context, and an emphasis on the interaction among multiple leaders and subordinates in a highly complex organizational environment (Atwood et al., 2009). The description of distributed leadership has a great deal in common with the definition of professional leadership found in the study by Currie and Locket (2009).

The goal of the study was to test the hypothesis that exposure to a distributive leadership model would lead to increases in transformational leadership behaviors. In addition, Atwood et al. (2009) predicted that regular exposure, or familiarity, with leadership principles would be the most important predictor of success in OL culture development. The research setting was the United States Geologic Survey (USGS). The USGS developed an organizational leadership program that had reached over 1,000 employees at the time of the study and fit the leadership model of interest to the researchers. The study involved surveying 3,500 program alums and coworkers using a 360-degree assessment tool.

Atwood et al. (2009) employed an analysis of variance (ANOVA) approach to compare levels of leadership behavior across co-worker groups based on exposure to the leadership curriculum. The independent variables included motivation, knowledge, experience, and familiarity. The results for the ANOVA test on leadership behavior
yielded a significant difference between low exposure and high exposure co-workers to the leadership curriculum.

The low exposure analysis revealed motivation, knowledge, and familiarity directly predicted behavior change ($\beta = .22, p = .001$), ($\beta = .12, p = .032$), ($\beta = .46, p = .00$) respectively. Familiarity with the leadership material was, as anticipated by the researchers, the most important facet of adopting new leadership behaviors. The study, although restricted by the focus on one organizational context, indicated that the participants in the leadership program returned to the workplace with the ability to facilitate leadership diffusion among their co-workers. The leadership program developed by the USGS is another example of a deliberate organizational approach to build capacity and OL culture among employees. Earlier studies have labeled this as IM, market orientation, and embedded systems, but the substance is the same and the importance of active processes to change the culture is the common element.

Jaskyte (2011) explored the effects of human resources and structural factors on two types of innovation: administrative and technological in a sample of nonprofit organizations. Similar to the study conducted by Currie and Locket (2009) the goal was to explore if aspects of innovation cultivation studied in the private sector could be applied effectively in the nonprofit sector. In addition, like Currie and Locket (2009), Jaskyte suggested that nonprofit organizations face unique challenges that can make innovation more difficult to achieve. These challenges include controversial ethical issues, operating in a context of significant cultural barriers, and struggling to address problems that are deeply woven into the fabric of communities, cultures and institutions.
Jaskyte (2011) defined administrative innovations as a new structure, process, or system developed by senior leadership and delivered in a largely top-down manner, or more of an internal organizational innovation. Technological innovations were described as new services, programs, or products that are new to the organization, or more of an external customer-related innovation. Jaskyte hypothesized that high levels of centralization would have a negative relationship to technological innovation but a positive relationship to administrative innovation. Furthermore, Jaskyte anticipated that formalization, or the degree to which an organization emphasized rules and regulations, would be negatively correlated to technological innovation, but positively related to administrative innovation.

In addition, Jaskyte (2011) was interested in examining the role of leadership in the creation of an innovative culture, in particular the leaders' ability to maintain external legitimacy, obtain adequate resources, and effectively facilitate the change process. In this study, Jaskyte expected to find that transformational leadership practices were positively related to both types of innovation. This is interesting considering that in a previous study included in this paper, the same researcher found no relationship between transformational leadership and innovation.

As with the earlier study, Jaskyte (2011) focused on human service nonprofit organizations, in this case a large network of 79 affiliated nonprofit organizations. Although the organizations were all part of the same system, the programs were highly individualized based on local needs and resources. The study sample included 980 people representing employees, executive directors, and board members. Response rates from the participating organizations ranged from 12% to 100% with a mean response rate.
of 43.5%. Executive directors filled out an organizational innovation questionnaire followed by a personal interview designed to learn about the number and description of both technological and administrative innovations introduced over the past several years. Questionnaires were left behind for all employees and board members at each location to provide further and richer data (Jaskyte, 2011).

Technological innovations were more common (mean=10.51) than administrative innovation (mean=5.94). The most common technological innovations were new programs and services and events to support target audiences, volunteers, and staff. The most frequently mentioned administrative innovations were new human resources approaches related to incentivizing and rewarding high performance, or significant adaptations to the organizational structure. Hierarchical regression models were run for each innovation type to test the research hypothesis. As expected, centralization was found to be positively correlated to administrative innovation and transformational leadership was positively related to technological and administrative innovation (P<.05) (Jaskyte, 2011). Once again we find that the role of transformational leadership characteristics is not consistent across research findings. In addition, the study had the major limitation of not including any external validation of the potency and sustainability of the innovations identified by the participating nonprofit organizations.

Weerawardena and Mort (2012) contributed to the growing literature on the characteristics of socially entrepreneurial NPOs and the key aspects of social innovation. Social innovation, which might appear at the product, process, or social level, was defined as the generation and implementation of new ideas for solving social problems (Weerawardena and Mort, 2012). According to Weerawardena and Mort, NPOs that
exhibit high levels of market orientation and innovation are also likely to have the ability to move smoothly between these orientations as they pursue their social mission. The research design consisted of a purposeful selection of nine long standing and successful socially entrepreneurial NPOs.

The NPOs had existed on average for at least 5 years and had been recognized by peer organizations as innovative. In-depth interviews were conducted with key decision makers, including the CEO. Weerawardena and Mort (2012) sought triangulation of data by conducting follow-up interviews to clarify points, collecting relevant supportive documents and archival data, and recording field observations. All of the data was subjected to coding, chunking, and cross-case analysis. Four major themes emerged from the process:

1. Wide-ranging innovation is necessary in highly turbulent environments.
2. Characteristics of social innovation contribute to NPO effectiveness.
3. External and internal learning are prerequisites for innovation.

The findings advance the social entrepreneurship literature in several ways. The results suggest that socially entrepreneurial NPOs that perceive their operating environment as highly competitive tend to find new ways to perform value-creating activities, in particular raising much-needed capital, and relentlessly pursuing the development of innovative services. Entrepreneurial NPOs appear to have the ability to pursue incremental and more radical innovation at the same time.
Prugsamatz (2010) investigated the influence of individual motivation to learn, team dynamics, and organizational culture on OL and organizational sustainability. Prugsamatz based the study on the theory that learning takes place at three levels in the organization: individual, team, and organizational. Learning reaches the stage of transformational when there has been a noticeable shift of mental models, altering the way people view themselves and the world (Prugsamatz, 2010). The independent variables for the study were individual motivation, team dynamics, and organizational cultural practices. The dependent variable was OL sustainability.

Prugsamatz (2010) employed quantitative and qualitative methodology in order to develop a textural-structural description of the data. Questionnaires and interviews were utilized to gather data from a random sample of five international nonprofit organizations. Two existing and respected approaches, the Dimensions of the Learning Organization Questionnaire (DLOQ), and the Learning Environment Questionnaire (LEQ) were utilized. The questionnaires were distributed to 257 employees with a response rate of 51.75%. Reliability statistics indicated a .974 level reliability for all of the constructs included in the questionnaire (Prugsamatz, 2010).

The data analysis led to the development of clusters within the major theme areas of individual motivation to learn, team dynamics, and organizational culture practices. The relationship between individual motivation to learn and OL sustainability was correlated at .693 and \( p < .01 \). In other words, the more respondents affiliated with individual motivation to learn, the more they related to OL sustainability. Two of the clusters within individual motivation to learn in particular, personal fulfillment and
mastery, were highly correlated to OL sustainability and to one another (c=.758 and p<.01).

A positive correlation also emerged between team dynamics and OL sustainability (c=.597 and p<.01). Two of the clusters within team dynamics, team expertise and empowerment, were highly correlated to OL sustainability. The highest cluster variable correlation was found between trust and interpersonal communications, (c=684 and p<.01). Finally, a highly positive correlation was found between organizational cultural practices and OL sustainability (c=.812, p<.01).

The Prugsamatz (2010) study was very complex, with many elements and variables to interpret, and challenging to connect to the majority of the studies cited in the paper. However, the results related to the relationships, communication patterns, and trust building interactions among organizational players fits well with the dominant them of intentionality and OL adoption. The final study explores similar territory but with greater focus on the role of leadership.

A study by Swart and Harcup (2012) explored the role of leadership from a different perspective. The study looked at the effect of executive coaching programs to find out if they helped leaders more effectively transfer individual learning to organizational level learning. The definition of OL, a process that allows individual learning to be transferred to the organizational level and the achievement of broad goals, was generated iteratively from the research process. Swart and Harcup proposed that learning moves from the individual to the collective level through intuiting, interpreting, integrating, and institutionalizing (Swart & Harcup, 2012).
Swart and Harcup (2012) cited empirical evidence indicating that coaching has been shown to positively impact creativity and innovation at the individual and organizational level but that little is known about the mechanisms by which OL occurs or is enhanced through coaching. The authors hypothesized that coaching might be contributing to increased awareness of the organization from a systems level, allowing the executives to better understand and appreciate previously ignored relationships and adjust their approaches accordingly. In addition, they speculated that coaching might provide valuable space for reflection and re-framing, allowing the executives to develop new metaphors and strategies for challenging and re-creating organizational culture (Swart & Harcup, 2012).

The research was situated in two large law firms in England that had well-developed executive coaching programs for new partners and unit leaders. The coaching program in the first firm had a primary goal of providing change management support aligned to strategic goals and a secondary goal of creating a culture that embraced feedback and coaching in order to improve retention. The second firm had a more wide open and big-picture goal of unleashing potential and improving the performance of established high achievers (Swart & Harcup, 2012).

Swart and Harcup (2012) employed a phenomenological approach to develop an understanding of the mechanisms that allowed individual learning to be translated to collective learning through coaching. Multiple perspectives were taken into account through a total of 23 interviews with executives undergoing coaching, team members, and managers in a position to observe the effects of coaching, and the external coaches. The results revealed a significant connection between coaching and individual learning.
outcomes, characterized by significant changes in the way the executives thought about themselves.

The executives reported increased self-awareness, dedication, proactive behavior, confidence, focus, flexibility, and positive state of mind. These cognitive changes were tied to new behavioral patterns that included spending more time and energy on people management and adapting personal communication style to fit individual circumstance (Swart & Harcup, 2012). In the case of increased dedication, proactivity, and a more positive outlook, individual learning was transferred to collective learning. Interviews with observers revealed that these attitudes and behaviors resulted in more effective project management, improved supervision, and a noticeable increase in the generation of new ideas and innovative initiatives (Swart & Harcup, 2012).

Swart and Harcup (2013) utilized the results to propose the 3E model for collective learning. The first E is described as enacting new behaviors and describes the observation that in some cases the behaviors of the executive were transferred to the team or collective level as peers began to mirror the behavior of the executive. The change in behavior of the team leader was found to instigate a culture change over time for the entire work group. The challenge to this was whether or not it could be sustained if the new behavior did not fit within the overall dominant culture of the firm (Swart & Harcup, 2012).

The second E describes a process Swart & Harcup (2012) labeled as adopting the coaching approach. The research identified a shift in the behavior of the executives that featured more efforts to build consensus at the expense of an outcome oriented philosophy. The third E was called embedded collective learning and consisted of
focused efforts to build and maintain effective teams by building the value of teamwork into the process of recruiting and selecting new staff. Intentional processes were developed in many cases that would allow the firms to identify candidates that would bring strong team values with them and further enhance this organizational value (Swart & Harcup, 2012).

The study was compelling and influential within the overall literature review. Swart and Harcup (2012) had a very intriguing and focused research question, and the qualitative methods they employed allowed for the identification of very specific mechanisms that allowed individual learning to transform into collective learning. The 3E model includes both cognitive and behavioral manifestations of coaching and demonstrated that one significant change in behavior, in this case participating in executive coaching, can lead to major changes in the way the leader thinks. This in turn can lead to behavior changes that have the potential to change the culture of an entire work unit, or even an entire organization in some cases.

The question that remains is one of sustainability, or the institutionalizing of OL. Would the results found in this study hold up over time? Is there something specific to the coaching model that is more effective than a curricular approach to leadership development? The study reinforces the most resonant theme from the literature review; the processes referred to as the institutionalizing phase of OL in this last study. Institutionalizing can be thought of as the glue that holds together the organizational culture through policies, principles, shared expectations, and well developed human resource strategies.
Chapter Summary

In addition to providing an in-depth exploration of DI theory and the overarching context pushing organizations towards a goal of constant adaptation and innovation, the literature review explored foundational elements that scholars have identified as crucial to the development of organizational innovation. Three significant threads emerged from the literature on OU, OL, innovation adoption, and the role of leadership. The first major theme is the importance of intentional organizational practices designed to build and sustain and OL culture.

The practices, although varied in many ways, were carefully designed, intentional, and focused on the needs and growth of individual employees. The terms internal marketing, market orientation, embedded systems, the USGS leadership program, intentional human resource management policies, and the 3E model of executive coaching, all referred to intentional processes to build a learning organization culture. In a number of studies these processes represented a culminating stage of OL referred to as institutionalizing, which in many cases could be categorized as progressive human resource management policies that were thoughtfully designed and executed with goals that included a focus on both individual and collective learning.

The second major theme was the number of studies that identified a strong correlation between the development of OL and the existence of an open and participatory culture within the organization, often described as participatory decision making or cultural consensus. Finally, the studies as a whole were not conclusive regarding the role of transformational leadership. Overall the studies provide a solid foundation from which to launch a study of DI in CCE. Chapter 3 will outline the
research approaches, research questions, and methodology that will be employed to explore DI in CCE.
Chapter 3: Research Design Methodology

Introduction

The chapter includes the rationale for a qualitative study most closely aligned with grounded theory. The methodology is outlined in detail and aligned with the research setting, participants, and data analysis methods, including a detailed description of the coding techniques that will be utilized. The research problem and research questions are presented and positioned within the overall research design and context. Finally, the chapter outlines the timeline that was followed for the data collection and analysis phase of the study.

Although the land grant college movement and CE represent major innovations in the history of education in the United States, the system faces significant challenges today. For example, CE faces fundamental changes in funding patterns, the impact of online educational platforms, and dramatic shifts in the demographics of target audiences (Cox & Franz, 2012; Morse, 2009). Moreover, CE has been identified by scholars as change resistant, a characteristic that may be hindering its ability to adapt to a rapidly changing landscape in higher education (Cox & Franz, 2012; McDowell, 2001; Morse, 2009). Extension scholars Cox and Franz (2012) proposed that Christensen’s (1997) theory of disruptive innovation (DI) could be a useful and timely lens for developing strategies to address contemporary CE challenges.

The study utilized qualitative methodology to identify examples of Cornell Cooperative Extension (CCE) programs that align with major tenets of DI theory and
examined the factors, or building blocks, that contributed to their development and continuation. The data collected through interviews with program architects was analyzed using a grounded theory approach to search for a DI profile, or working model, of the building blocks of DI in CCE. Institutional Review Board (IRB) approval for the research methodology was obtained from St. John Fisher College and Cornell University. The documentation from both institutions are attached as Appendix A (Cornell University) and Appendix B (St. John Fisher College). The research questions provide further clarity on the goals of the study.

1. What current CCE programs will a panel of CCE administrative and programmatic leaders identify as having characteristics that align with core elements of disruptive innovation theory?

2. Which of the identified innovative CCE programs demonstrate the strongest alignment with disruptive innovation theory based on interviews with the lead program architects?

3. What common themes will emerge from the data that can be developed into a working model of the building blocks of disruptive innovation in CCE?

The research design consisted of a three stage qualitative inquiry most closely aligned with grounded theory. A qualitative approach has the potential to uncover the details, nuances, and shared experiences that educators at the point of service delivery believe are critical to the development of innovation in CCE. Grounded theory is an effective methodology for developing a theory about a phenomenon or shared experience from the perspective of the people directly involved (Creswell, 2013). In addition, the core foundations of grounded theory provide sufficient rigor and structure to guide the
research while also allowing for an iterative process that can evolve as data is collected and analyzed (Creswell, 2013).

The first phase of the research process involved the identification of CCE programs that align with major tenets of DI. A key group of CCE administrative and programmatic leaders were engaged in the identification of the innovative programs. The original plan for the second phase consisted of the research process were semi-structured telephone interviews with program architects identified during the focus groups to arrive at a smaller number of programs that demonstrated the strongest alignment with the major tenets of DI theory. The third and most in depth phase of the process were in person interviews with the final list of program architects. This final phase provided the primary data for theory development.

Research Context

Purposeful sampling is a critical component of qualitative research (Creswell, 2013). The goal is to identify and select participants with the greatest potential to contribute to the research questions guiding the inquiry (Corbin & Strauss, 1998). The first phase of the research involving CCE representatives at Cornell University was designed to address the issue of purposeful sampling. There are approximately 40 Cornell based staff who provide support and oversight to the CCE system, a group known as Extension Administration (Cornell Cooperative Extension, 2014). Twelve of the staff participate in a group called Directors Council. This team of programmatic and administrative leaders hold positions that allow them to cultivate extensive knowledge of CCE programs and systems. They are ideally suited to participate in a process designed to identify existing CCE programs that match with core elements of DI theory.
The data that drove the qualitative process was collected from CCE field-based educators in locations around New York State. The exact locations and individuals of the final list of research subjects emerged from this iterative process. As outlined previously, the CCE system consists of 53 county or multi-county associations, a total of approximately 1,500 employees, and approximately 40,000 volunteers (Scholl, 2010). The architects of the programs identified as sharing characteristics of DI emerged from the approximately 200 CCE educators who provide local leadership in program development and delivery within one or more of CCE’s five major program areas of 4-H youth development, nutrition, agriculture and food systems, environmental sustainability, and community economic vitality.

**Research Participants**

The interviews with the innovative program leaders were conducted in locations convenient to the interviewees. The researcher utilized an audio recording device to capture the full content of the interviews for transcription and data analysis. The transcripts and audio recordings will be kept on file for at least 3 years beyond the conclusion of the research. In all phases of the research the participants were informed that this process was not confidential and that their names and locations will appear in the research findings. However, if interviewees requested confidentiality regarding any comment made during the interview process the request was honored in all instances.

Corbin and Strauss (1998) suggest that a grounded theory study should begin with the identification of a group of individuals who have shared a similar experience. Identifying individuals in this manner is referred to by qualitative researchers as purposeful sampling (Creswell, 2013). Purposeful sampling is a critical step in
qualitative inquiry, particularly in grounded theory (Creswell, 2013). In order to examine potential DI building blocks in CCE, both the innovations and the people behind them had to be identified. The CCE Directors Council, as described previously, is an existing CCE entity tasked with supporting, monitoring, and evaluating the entire CCE organization. Members of the Directors Council are ideally situated to identify innovative programs in CCE.

The researcher conducted two focus groups and an additional one-on-one meeting with 12 members of the Directors Council. A total of 18 people were invited to participate in any one of three focus group sessions through an email invitation. Those who agreed to participate were provided with an overview of the goals of the study, the methodology, and a brief summary of DI theory. All of the participants signed the informed consent form. Each focus group session began with a brief overview of the research goals and a PowerPoint presentation that summarized the major components of DI theory. The six core elements of DI in the social sector, as defined by Christensen et al. (2006), served as the framework for a discussion that led to a list of current CCE programs that the focus group participants believed reflected characteristics of DI. The core elements of DI in the social sector are:

1. DIs create social change through scaling and replication.
2. DIs meet a need that was not being served previously.
3. DIs meet customer needs in a simpler and more economical fashion, appealing to customers that currently have more services available to them than what they are actually demanding.
4. The overall level of performance of the DI may actually fall short of existing standards; however, the DI hits the mark from the perspective of the customer.

5. DIs attract new resources, volunteers, or collaborators in ways that may at first be perceived as threatening or unappealing to both competitors and the host organization.

6. DIs are often poorly aligned with the organizations dominant culture. The DI is likely to be perceived by some as a poor fit from a financial or program perspective and may be pushed to the fringes of the organization. (Christensen et al., 2006).

At the completion of the three focus groups the researcher had a list of 26 CCE programs and architects that focus group participants identified as potential fits with at least some of the aspects of social sector DI. The next step in the original research design was for the researcher to contact all of the program architects that emerged from the focus group sessions and ask them if they would be willing to participate in a 30-minute telephone interview. The phone interviews were designed to probe further into the key elements of the programs with questions designed to flesh out just how well the programs align with the six elements of social sector DI as outlined above. The original interview questions for this phase of the process are included as Appendix D.

**Data Collection Instruments**

Effective interviews in grounded theory consist of carefully constructed open ended questions (Corbin & Strauss, 1998). However, Corbin and Strauss (1998) also encourage researchers to explore emergent subjects during the interview process. The importance of combining structure with emergent exploration and researcher creativity
have been carefully considered in the methodology. The final list of CCE DI programs were the focus of the third stage of data collection and analysis. The data collection method consisted of in-depth interviews with the primary architects of the innovative programs. In addition, the design called for interviewing key partners that the architects identified as crucial to the development of the programs. The additional interviewees were to be identified through a modified version of the snowball approach as described by Creswell (2013).

The snowball technique starts with a small number of subjects that expands as interviewees identify additional key players (Creswell, 2013). The plan for this study was to conclude the interviews with the primary program architects by asking them to identify one to three additional key collaborators who they felt should also be interviewed about their experience in starting and supporting the innovative program. The extent of the additional interviews was to be based on how many programs remained at that stage of the process in order to ensure that the study could be completed within the available timeframe.

The interviews in phase three were face-to-face, longer in duration, and designed to collect information about the experiences of each educator in starting, developing, and supporting the program. The questions utilized in this phase of the research are in Appendix E. The interview questions were developed to conform to the recommendations of Corbin and Strauss (1998), and Creswell (2013), providing enough rigor to create a common framework but also allowing for significant deviation from the script as the interviews unfold. The first few questions are designed to develop an understanding of the major factors that led to the development of the innovative program,
providing a common framework that will assist in data analysis. As the interviews proceeded the researcher veered off into more specific areas that emerged and seemed relevant to the particular program and program architect based on the answers to the initial questions.

**Data Analysis**

Grounded theory starts with a subject or hypothesis that is of interest to the researcher, in this case DI theory, and provides a mechanism for theory to emerge from the data collected (Corbin & Strauss, 1998). Furthermore, data collection and analysis in grounded theory are interconnected, with each process influencing the other as the study evolves (Creswell, 2013). In this case, the data analysis process utilized what qualitative methodology experts refer to as open coding of the interview data (Corbin & Strauss, 1998; Creswell, 2013; Saldana, 2013). The codes themselves consist of words or phrases either extracted verbatim from the data or selected by the researcher (Saldana, 2013). The word or phrase represents a summation of the meaning of a section, serving as a link between the raw data and the process of extracting meaning from the data (Saldana, 2013).

In this study, the raw data from interviews was analyzed identify initial conceptual labels representing major themes, actions, and processes utilizing a coding technique known as in vivo coding (Saldana, 2013). According to Saldana (2013) in vivo coding is well suited to less experienced qualitative researchers and particularly effective for grounded theory studies. In vivo is also referred to as verbatim, or inductive coding, since the core idea is to stay as close to the words of the research subjects as possible,
pulling the terms verbatim from the interview data (Saldana, 2013). The process known as analytic memo writing was also utilized extensively.

Analytic memos consist of the thoughts, questions, and initial ideas that rise to the surface for the researcher during the coding process. Analytic memos, both written and audio memos, were used throughout the coding process, allowing the researcher to record emerging ideas and reflect on the data as the process unfolds. According to Saldana (2013) it is the analytic memo writing process that creates a pathway to the development of theory. Analytic memos were created and carefully dated after every session during the coding process.

The initial categories that emerged during open coding were developed further through second cycle coding. Second cycle coding allows the researcher to aggregate the initial list of codes into a much smaller list of descriptive categories that represent the broader themes found in the data set (Saldana, 2013). The goal of this phase was to begin to recognize the relationships between major categories, subcategories, and the process or phenomenon that is being studied (Corbin & Strauss, 1998; Creswell, 2013). In this study the technique known as axial coding was utilized for the second cycle coding.

The goal of axial coding is to identify the major categories that other codes relate to, comparable to the axis of a wooden wheel. The spokes of the wheel represent the smaller descriptive codes that fit within the larger theme, or axis (Saldana, 2013). In this way the data that has been split into small chunks during the initial coding is strategically reassembled into larger categories. The process allows the researcher to make the important transition from initial coding to the final phase of building theory: the culmination of a grounded theory study (Saldana, 2013). The final theory building phase
begins when the researcher reaches a point in the analysis where it does not seem possible to extract any new information from the data. When this point is reached the researcher can move into selective or theoretical coding, the final phase of the coding process (Corbin & Strauss, 1998; Saldana, 2013).

Selective coding begins during the final stages of data collection (Creswell, 2013). At this stage the researcher brings all of the categories and relationships identified during the earlier phases together around a dominant theory (Creswell, 2013). The key is to allow the theory to emerge from the data, not from any pre-conceived bias or hypothesis the researchers have brought with them into the study (Saldana, 2013). It is important to realize that not all grounded theory studies will lead to a dominant theory, or core category. The core category, if it does exist, accounts for all of the codes and thematic categories developed during the analysis phase, demonstrating explanatory reach and relevance across all of the themes and categories that emerged from the data (Saldana, 2013). A core category can attain the level of theory if it meets the following three criteria.

1. Provides a sequential, or if this, then that explanation for the actions occurring in the data.
2. Can logically explain how and why the phenomenon being studied is occurring.
3. Provides insight about how to change the world in a positive way, providing guidance for how to make it happen (Saldana, 2013).

The chapter has provided a thorough overview of the research design methodology, an explanation of the rationale for a qualitative approach, and detailed
account of the data analysis methods and coding techniques employed by the researcher.
Chapter 4 will provide a detailed account of how the research process unfolded and the
preliminary theory that emerged from the data.
Chapter 4: Results

Research Questions

The purpose of the study was to identify Cornell Cooperative Extension (CCE) programs that align with major tenets of DI theory and interview the architects of these programs to explore the building blocks that have facilitated the development and persistence of these innovations. Three research questions guided the study:

1. What current CCE programs will a panel of CCE administrative and programmatic leaders identify as having characteristics that align with core elements of disruptive innovation theory?

2. Which of the identified innovative CCE programs demonstrate the strongest alignment with disruptive innovation theory based on interviews with the lead program architects?

3. What common themes will emerge from the data that can be developed into a working model of the building blocks of disruptive innovation in CCE?

Process for research question 1. Research question 1 was addressed by conducting three focus group sessions with 12 state level CCE administrative and program leaders at Cornell University. It was determined that these individuals were well positioned to look across the highly decentralized CCE system in New York State and identify programs, and the architects of those programs, that represent the best match with social sector DI. The focus group sessions led to the identification of 26 candidate programs and architects for potential in-depth study in phase three of the process. The
full list of participants and titles of the focus group participants is in Appendix F. The complete list of programs identified during the focus groups is included as Appendix G.

**Process for research question 2.** It was determined at this point that a deviation from the methodology was necessary. Telephone interviews with 26 potential research subjects was not determined to be realistic within the timeframe available. Therefore, research question 2 was addressed through follow-up conversations with members of the focus groups, the researcher’s own knowledge of the programs and educators that emerged, and the perceived alignment between the programs and the characteristics of social section DI.

Moreover, an additional follow-up interview was conducted with CCE of Tompkins County Executive Director Ken Schlather. This additional step was included since six of the programs identified during the focus group sessions were affiliated with CCE Tompkins. The purpose of the interview with Schlather was to learn more about the CCE Tompkins programs and assess which of the identified programs were the best fit for the third phase of the research process. Through these steps the initial list of programs was narrowed to nine innovative program architects for phase three of the process.

In-depth, face-to-face interviews were then held with all nine of the research subjects identified by phase one and two of the process. The interviews ranged from 50 minutes to 1 hour and 15 minutes in length and followed the basic format of the interview guide included in Appendix E. The interviews were recorded and transcribed by the researcher, resulting in approximately 300 pages of interview data. The transcripts were analyzed following the process outlined in Chapter 3, resulting in the identification of a preliminary theory. The rest of this chapter will provide additional details on all three
phases of the research process. The bulk of the chapter will center on the findings from the interviews with the innovative educators and the relationship of the findings to the purpose of the study.

**Data Analysis and Findings**

The first section will describe the processes followed and outcomes of the three phases of the research process, with an emphasis on phase three. This section will then focus on the results of the interviews and data analysis, revealing the preliminary theory, major categories, and supporting themes that emerged from the interviews. Connections to established research will be explored, setting the stage for the final chapter.

**Focus group process.** Eighteen CCE programmatic and administrative leaders, all based on the Cornell University campus, were invited to participate in one of three focus group sessions, held at the Bronfenbrenner Center for Translational Research (BCTR) on May 11, 12 and 14, 2015. The focus groups followed the methodology outlined in Chapter 3. A table listing the names and titles of the 12 participating CCE administrative and programmatic leaders is in Appendix F. All of the participants read and signed the approved IRB consent form prior to the focus group session.

Each focus group session began with a brief overview of DI theory and its potential application to CE. The six characteristics of DI in the social sector were shared with the participants. The participants were instructed to use this list of characteristics as a guideline for recommending CCE programs they felt reflected at least some of these characteristics. The six characteristics of DI in the social sector are:

1. DIs create social change through scaling and replication.
2. DIs meet a need that was not being served previously.
3. DIs meet customer needs in a simpler and more economical fashion, appealing to customers that currently have more services available to them than what they are actually demanding.

4. The overall level of performance of the DI may actually fall short of existing standards; however, the DI hits the mark from the perspective of the customer.

5. DIs attract new resources, volunteers, or collaborators in ways that may at first be perceived as threatening or unappealing to both competitors and the host organization.

6. DIs are often poorly aligned with the organizations dominant culture. The DI is likely to be perceived by some as a poor fit from a financial or program perspective and may be pushed to the fringes of the organization (Christensen et al., 2006).

The focus group participants asked questions and made recommendations for programs they felt were a good fit with DI. All of the programs mentioned were noted by the researcher along with the DI characteristics that the participants felt were reflected in the programs they were suggesting. Appendix G provides a complete list of programs mentioned during the focus group process.

**Narrowing the research subjects for phase three.** The second phase of the research was designed to narrow the list of DI program candidates to a smaller list of programs with the clearest alignment with social sector DI principles. The final list of programs and architects would then be carried forward to the interview phase to collect data to address research question 3. It was determined that telephone interviews with all of the candidate programs, as proposed in the original research design, would not be feasible within the timeframe available. However, additional consultation with several of the participants from the focus group sessions, combined with the researcher’s own
knowledge of the programs, contributed to a quick narrowing of the potential research subjects. This process led to the identification of the following three clusters of innovative programming. The categories of social sector DI that the three clusters seemed most closely aligned with are listed in parenthesis.

- Innovative 4-H youth development programs in New York City and Broome County reaching urban, traditionally underrepresented youth. (2, 4, 5, 6)
- Innovative agriculture programming addressing agriculture economic development with a multi-county/regional focus. (2, 3, 6)
- Innovative programming emerging in the CCE Tompkins County Extension office. (2, 4, 5, 6)

The first two innovation clusters were straightforward and led to the selection of six of the nine program architects interviewed in phase three. In the case of CCE Tompkins an additional step was required. The focus group process led to the identification of six different programs that originated in CCE Tompkins County; several of these programs were mentioned numerous times. Therefore, the researcher arranged for an additional interview with CCE Tompkins Executive Director Ken Schlather. Schlather was led through the same process as the focus group participants and asked to review the characteristics of social sector DI and comment on which of the CCE Tompkins programs he felt were most in alignment with the research goals. This conversation led to the selection of the final three research subjects. The final list of programs and architects targeted for phase three of the research process is in Appendix H. In addition, the original idea of extending the interview phase beyond the identified architects, utilizing a snowball technique, was abandoned due to time constraints and
consideration of the additional depth that might be gained from the interviews with nine innovative program architects.

**The interview phase.** All nine potential interviewees were contacted between May 25 and June 5. All nine of the educators agreed to participate in the process. In-person interviews were then scheduled with all nine educators. Eight of the interviews were held in the offices of the educators in Yates, Tompkins, and Broome counties, and two locations in New York City. One of the interviews was conducted in the office of the researcher at Cornell University at the request of the interviewee. The interviews all took place between June 17 and July 24, 2015. Informed consent forms were collected from each interviewee and remain on file with the researcher.

**Data analysis.** Research question three, identifying common themes from the data that can be developed into a working model of the building blocks of disruptive innovation in CCE, guided the data analysis process. The data collected through the interviews with the nine program architects was analyzed using a grounded theory approach to discover if there is a DI profile, or working model, of the building blocks of DI in CCE.

In the first phase of data analysis, preliminary conceptual labels were developed representing major themes, actions, and processes that were relevant to the research question. The process closely mirrored in vivo coding. According to Saldana (2013), in vivo coding is particularly effective for grounded theory studies. In vivo is also referred to as verbatim, or inductive coding, since the idea is to stay as close to the words of the research subjects as possible, pulling the terms verbatim from the interview data (Saldana, 2013).
The researcher began by breaking down each interview transcript in detail and capturing all of the interview data relevant to the third research question. Each section of relevant data was inserted into a new Word document created for each transcript and every chunk of data was given an initial code capturing the essence of that segment of data. At the completion of this first phase of data analysis, the 300 pages of initial interview transcripts were culled to approximately 50 pages of relevant data with 148 initial codes. A full list of the codes from cycle one of the coding process is in Appendix I. Analytical memos, both written and audio versions, were compiled throughout this process.

The goal of the second coding cycle was to reassemble the long list of initial codes into logical thematic categories. The first step was to analyze all of the initial codes with greater scrutiny in relation to research question 3. The next step was to employ focused coding methodology to categorize the remaining codes into much larger thematic categories that accounted for all of the remaining codes (Saldana, 2013). This process resulted in the creation of four major thematic categories broken down in the following manner:

1. Personal Attributes of the Innovators (13 total codes).
2. Identifying and Shaping Opportunities (7 total codes).
3. Attributes and Characteristics of the Innovative Program (10 total codes).
4. Organizational Supports and Tensions (8 total codes).

The full list of codes under each of the four major themes is in Appendix J.

At this point, the process moved into a third coding phase, axial coding, and the major categories and themes began to take shape. The main point of contention during
axial coding was whether there were actually two, three, or four main categories. The process consisted of looking at the remaining codes and categories from multiple perspectives, analytical memo writing and analysis, and conversations with respected colleagues. Reviewing literature on entrepreneurship collected for Chapter 2 and comparing it to the findings revealed that there were two main categories related to the innovators themselves and a third major category describing the role of the broader organization in the innovation process.

**Summary of Results**

The result of the analysis process is a preliminary theory, the *ecology of innovation in CCE*. The preliminary theory accounts for all codes and categories developed during coding. The preliminary theory reveals a set of interrelated conditions that fit the definition of a core category, or preliminary theory, as outlined by Saldana (2013). The preliminary theory logically explains how the innovative programs developed, and the conditions necessary to replicate innovation. Moreover, the preliminary theory is applicable to the major challenges of relevancy, funding challenges, and CE’s tendency towards risk aversion as outlined in Chapter 1.

Widespread adoption of the findings has the potential to lead to an expansion of the ability of CCE to continue to achieve its mission in the 21st century and contribute positively to major societal challenges facing the United States. The preliminary theory, the *ecology of innovation in CCE*, consists of three highly interconnected major categories, with themes, and dimensions and properties reflecting the results of the third cycle of coding. Table 4.1 provides an overview of the three major categories, sub-categories, and themes.
Table 4.1

*Categories and Themes of the Ecology of Innovation in CCE*

<table>
<thead>
<tr>
<th>Major Category</th>
<th>Sub-Category</th>
<th>Themes</th>
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<tbody>
<tr>
<td>CCE Innovator Profile</td>
<td>Willing to Accept Risk</td>
<td>Leads to opportunity</td>
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<td></td>
<td></td>
<td>Entrepreneurial</td>
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<tr>
<td></td>
<td>Self-Starting Initiators</td>
<td>Aware of strengths</td>
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<td></td>
<td></td>
<td>Stay engaged</td>
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<tr>
<td></td>
<td>Motivated to Change the World</td>
<td>Youth development</td>
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<tr>
<td></td>
<td>This is Personal</td>
<td>Sustainability</td>
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<tr>
<td>Recognizing and Shaping</td>
<td>Proactive Opportunity Seekers</td>
<td>Aligned with interest</td>
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<tr>
<td>Opportunity</td>
<td></td>
<td>Demographic shifts</td>
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<tr>
<td></td>
<td>Attracting New Resources</td>
<td>Market research</td>
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<tr>
<td></td>
<td>Responding to the Customer</td>
<td>Grants/Fee for service</td>
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<td></td>
<td></td>
<td>Understanding needs</td>
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<tr>
<td>Organizational Dynamics</td>
<td>Supportive Leadership</td>
<td>Personally supported</td>
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<td></td>
<td></td>
<td>Culture is supportive</td>
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<tr>
<td></td>
<td>Resistance</td>
<td>Bureaucracy</td>
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<td></td>
<td></td>
<td>Culture</td>
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The data suggests that there are three primary building blocks for CCE programs that align with characteristics of social sector DI. The building blocks work together to create an ecology of innovation in CCE. The first two categories, *CCE innovator profile*, and *recognizing and shaping opportunities*, are descriptive of the personality traits, attributes, and skills of the innovative educators interviewed during phase three. The CCE program architects interviewed in this study are innovative, creative professional
educators who share many characteristics of innovative entrepreneurs identified in the research literature.

The CCE program architects have the ability to identify, imagine, shape, and successfully implement new programs based on opportunities that exist in their communities and areas of program focus. The term shaping opportunity was taken directly from one of the educators and represents a large quantity of data that describes how the educators both identified opportunities and then went about successfully shaping these opportunities into new programs. This category also provides insight into the key factors the educators have employed to grow and sustain the innovative efforts.

The third category, Organizational Dynamics, describes the organizational supports, conditions, and structures surrounding the innovators. The innovative CCE educators believe that their ability to succeed is enhanced by supportive organizational structures and leaders that encourage entrepreneurial approaches, freedom, and autonomy. In addition to support, several educators discussed resistance to their approaches from Extension Administration at Cornell University. This resistance, and lack of receptivity from colleagues involved in more traditional program approaches, suggests that innovators in CCE should expect to encounter some amount of resistance and potential conflict between innovative approaches and the larger CCE organization.

The use of the word ecology in the core category description is very deliberate and highly correlated to the findings. The data indicates that the innovation begins with the individuals and evolves as the educators interact in a dynamic and unpredictable way with their organizations, and with the external environment. The relationships are ongoing and constantly evolving. The innovators are being influenced by the larger
organization and the communities they are working with, and they in turn are clearly influencing the larger organization and the audiences, or customers, involved in the innovative programs. The relationships are complex and dynamic. The use of the word ecology sets the stage for a close examination of what the innovators are doing, the characteristics and attributes they have in common, and how they are identifying and acting on opportunity. The remainder of the chapter provides detailed evidence from the research findings to corroborate and expand on each of the three major categories, sub-categories, and dimensions and properties.

**Category 1: CCE innovator profile.** The data reveals a great deal about the characteristics and attributes of the nine innovative CCE educators. The coding process led to a preliminary portrait, or profile, of the innovative educators. The profile suggests that the educators share personality characteristics and behaviors that align closely with existing research about innovative entrepreneurs from the profit and nonprofit sectors. The first theme from the first category relates to risk taking.

*Willingness to accept risk.* Vasakarla (2008), identified a willingness to take risks as one of the four most common characteristics of social sector entrepreneurs. Moreover, Lukes and Stephan (2012), in a study of the psychological profiles, characteristics, and motivations of nonprofit and for profit entrepreneurs, found that both groups describe themselves as conscientious, open to new experiences, and willing to take risks. The willingness to accept and embrace risk came through strongly in this study. The first example demonstrates how one of the educators connects embracing risk to professional growth and opportunity recognition.
Well my motto Andy has always been when in doubt say yes. Because I think you miss out on opportunities if you are too cautious. I do really believe it’s an opportunity for growth if you can push through the fear. There is always going to be fear but honestly I feel it’s kind of exhilarating. (#2)

A similar philosophy is espoused by another educator, in this case making a direct connection between risk taking and entrepreneurship.

So I consider myself to be entrepreneurial and you know calculated risk is something I am willing to do . . . because I also don’t really believe in failure. A way to look at it is if you are afraid to make mistakes then you don’t actually try and if you don’t actually try there is no way to succeed. (#6)

Another educator connects risk to adopting an entrepreneurial approach. In this case the educator has a leadership and supervisory role and believes it is important to encourage other staff to be entrepreneurial.

I’m not afraid of anything! I guess the way I have actually encouraged my staff and the way I like to work is I encourage us to be entrepreneurial. And I feel like whatever dimension that takes I want us to be innovative. I want people to think out of the box, to come up with new ideas . . . . (#7)

Two educators expressed more caution regarding risk taking. In one case the educator self-identifies as entrepreneurial but makes a clear distinction between private sector entrepreneurship and their position in CE.

Personally in my own life I feel much more secure working this job than starting my own business. I think my entrepreneurship comes out of my nonprofit work
instead. But I’m risk averse. I have to feed my kids and I feel like I have to have health insurance so I’m going to stay here. (#9)

The final example reveals how one of the educators has modified their level of risk taking due to past experiences that were not entirely positive:

I think some people think I’m not a risk taker and I’ll tell you why. There was a period of time where I took a lot of risk. I tried new things, a lot of different things, and then I turn around and there’s nobody back there backing me up. You know, it’s like you’re on the edge by yourself. (#8)

This last comment on risk foreshadows the deeply intertwined relationship between the characteristics of the innovators and the environment of the surrounding organization. This topic will be explored in more depth in Chapter 5.

**Self-starting initiators.** The educators expressed high levels of self-confidence, self-efficacy, and a passion for initiating new projects. The data suggests that the educators believe these characteristics are important to their success and that their approaches to the work may be outside of the norm in CE. One of the educators stated that they like to “initiate things and then I like to pass it along to people who are going to take it further and maybe define things more. I’m a motivator, I’m an initiator, that’s just some of the strengths that I have” (#5).

Another interviewee described a very similar approach:

I mean I want everything to be working really well and know that the things that we’re doing are quality. But once I know that something is quality and I can trust that other people got that. What’s new? What are people talking about now and
how are we going to build that in so people know we’re right with it and on the cutting edge? (#3)

The importance of not trying to be all things to all people is another dimension of initiating, stabilizing, and moving on that was mentioned by several educators. This sentiment is reflected strongly by this educator:

I can’t do what I was doing like I was before because I was everywhere trying to do everything and being everything to everyone. Whereas now I act as more of you know, a supporter of these different programs. So I think I’m kind of an initiator and then you know set up the things that help make things successful and I’ve worked better in that role. (#5)

In this example the innovator connects the issue of focus and areas of strength to understanding their niche and once again not trying to do it all.

And we do have very different things we bring to the table. We have to get clearer about those things and understand our strengths and how we use them in various settings . . . we don’t have to be all things to all people because you know there are other people out there doing very similar things. (#3)

The data suggests that the educators see their approach to the work, and in some cases their actual job description, as somewhat different and outside the norm for CE. The sample size is too small to make any bold claims about this finding but it should be noted that of the nine educators interviewed five are employed directly by Cornell University, as opposed to being employed by one of the 53 county-based CCE associations. Moreover, even in the case of the county CCE employed educators, three of the four work for the Ithaca-based CCE Tompkins Association, literally in the backyard
of the University. The fourth CCE association-based employee is serving in a statewide role in youth development, doing work that is very similar to a previous position the educator held with the College of Human Ecology at Cornell University.

The question raised by this is whether these educators are working in settings that are less restrictive than what might be the norm in CCE and thereby meeting a key criteria for supporting the development of DI from Christensen’s (1997) original research. Christensen stated that long standing organizations often need to create intentional spaces, quite distinct from the dominant organizational culture, in order to stimulate DI. One educator wondered whether or not a more traditional CE position would be a good fit saying, “So I guess like in a traditional Extension role I would almost feel a little bit more tied down, I don’t have that freedom and flexibility to kind of go out and do what I think I need to do” (#5).

Another educator addressed the issue of the association structure, and its potential impact on innovation, quite directly:

. . . the county-based Extension system is, it’s a very big ship and a large ship is very slow to steer in any direction. So I think my concern, not that I am entitled to have one but all of these 57 counties are probably under too much influence from a fairly top heavy bureaucracy and each one of the counties has an Executive Director who logically is most interested in the perpetuation of that county association . . . (#1)

Another educator goes a step further, describing how they were actually encouraged to avoid a career in Extension by an academic advisor.
She said don’t go work for extension. Don’t throw your career away on extension. That was somebody on campus. And I felt the same way. I grew up in a different County in New York State though and my impression of Extension was really low. And coming out of grad school I was not prepared to work for Cooperative Extension. (#9)

Another educator reveals that they probably would have left their Extension position if not allowed to pursue their innovative approaches to the work, stating that, “I am stating that had the University not given me that latitude I don’t think that these technologies that I have been involved in developing . . . I probably would have left the University to do them on my own. (#4)

It is clear from the data that the relationship between the innovators and the organizational environment is complex. The data from this study suggests that these educators see their roles and approaches to the work as outside of the norm and directly connected to their success. Additional research might reveal if this finding represents a bias in the selection process that led to the identification of the nine interviewees, or if there might be something about working more on the outside of the Association structure that is supportive of innovation. These issues will be explored in more depth in Chapter 5. There are two remaining characteristics supported by the data that further define the CCE innovator profile category.

**Motivated to change the world.** The educators are highly motivated to create change in their communities and areas of focus, aligning with other studies of innovative entrepreneurs from the public and private sectors (Dyer, Gregersen & Christensen, 2008; Lukes & Stephan, 2012; Sarason, Dean, & Dillard, 2006; Vasakarla, 2008). The
interviewees consistently connected the outcomes they were striving for through their programs with a broader vision for change in society. One of the youth development educators typified this perspective stating, “First of all you have to know that this field of youth development work, it’s really to me, it so transcends everything that this work is transformative for the health of the country as far as I’m concerned” (#3).

Another example of this view, in this case related to environmental sustainability, is typical of the way the educators connected their work to much broader societal challenges.

What keeps me up at night and the risk is not developing the next program, you know the risk that we have as a society if we don’t kind of institutionalize, kind of get out to everybody this type of programming. This nature connection piece because of things like climate change and global warming and how do you expect the next couple generations to pass any laws or be involved in any knowing way with decisions about natural resources if they literally have no connection to natural resources? (#6)

Another example shows how the educator has connected the local program to a broad and ambitious goal in the agriculture and food system realm.

I want to replace grocery store meat. Like I don’t expect 100% but to me if we can reach enough people and help them understand that this is way more advantageous for them and for local economies, farms, soil, water quality, all the way around. (#9)

*This is personal.* Finally, the data reveals a group of educators who care deeply about the lives and future well-being of the youth and adults they are reaching through
their programs. Aspects of their own life experiences have influenced the development of strong intrinsic motivation, exemplified by one of the 4-H educators who stated that, “I was raised in the housing projects in New York City and I always knew that whatever I did in the future was going to be of benefit to children from communities like the one I grew up in” (#3). Another 4-H educator expressed a strong motivation to give back to the program, stating that, “I was in 4-H as a kid and I also felt, it became more and more clear to me over the years that I had gotten a lot out of my 4-H experience and I felt a responsibility to give back to 4-H” (#2).

In another example it is clear that the educator’s respect, compassion, and close connection to the target audience has grown as the program has developed.

I don’t know so much of this is personal Andy. I really don’t know what to say about it but I really want these people, they are real people to me, real families with real stresses, and the stresses if they are coming from what I am involved in which is their produce farming, I don’t want the stresses to spill into any other parts of their lives. I want it to work for them so I bear that in mind. (#1)

The interviews reveal how in many cases the educators’ personal values align very closely with their work and provide a degree of motivation and satisfaction. A good example comes from one of the youth educators as they describe how they support the development of the young people they work with by sharing what they see as the young person’s strengths and future possibilities:

I would always end up saying you have to hold a mirror before young people. They have to see, and you have to say, what is good about them, what are their strengths, cause you know we write it in reports and this and that but we don’t
verbalize. What is it that you have, what is it that I see in you, where do I see you going. You don’t have to go that path but by you hearing that from somebody that you deem important in your life, it makes you think better about yourself . . .

Another 4-H educator viewed it this way:

To see students who normally would not have done anything in college in the field of agriculture or horticulture or similar career driven areas. To see students from the inner city areas and from other areas, but more so the inner city areas, going into those fields. That is a definite continuum of me being motivated, to continue to do the things I do. (#4)

The next section will explore how the personal attributes, character traits, and motivations of the innovative educators outlined above combine with behaviors and skills that allow them to actualize their goals and vision within their organizations and communities.

**Category 2 – recognizing and shaping opportunity.** A study by Dyer et al. (2008) in relation to disruptive innovators in the private sector is relevant to the findings of this study. Dyer et al. defined an innovative entrepreneur as the founder of a new venture offering a unique value proposition relative to the consumer. The study identified four common behavior patterns shared by the entrepreneurs: (a) questioning, (b) observing, (c) experimenting, and (d) idea networking. Furthermore, Dyer et al. demonstrated that these characteristics contribute to an innovative entrepreneur's ability to recognize and capitalize on opportunities in the external environment.
The relationship between individual entrepreneurs and the opportunities they discover and exploit is the core of the study of entrepreneurship (Shane & Venkataraman, 2000.) However, the concept that opportunities are in a sense fully formed in the external environment just waiting for an innovator to recognize and exploit, has been challenged by more recent scholarship. Sarason et al. (2005) encourage a more nuanced look at the relationship between the innovator and opportunity. According to Sarason et al. the relationship between innovator and opportunity is dynamic, with the innovator creating, or shaping, the opportunity just as much as they are discovering it. An examination of the themes from the major category recognizing and shaping opportunity, will highlight this finding.

**Proactive opportunity seekers.** The educators in this study described a process of observing trends and shifts within their areas of focus and then turning these opportunities into new CCE programs. One of the agriculture oriented educators describes the process they followed by stating that, “Within agriculture there was this emerging need or trend within the county for extension programming around fresh market vegetables, and in particular high tunnel or greenhouse vegetables among the older Mennonites here in this county” (#1). The same educator goes further, discussing how the shifts in the external environment were also aligned with personal interest.

So there are these demographic shifts and they were finding us as they were getting into this type of agriculture and have a need for programming from extension. It happened to be a personal interest and passion of mine that took me there and propelled me to make contacts and identify needs and build program around those needs. (#1)
In another example from agriculture, the educator talks about significant growth in the dairy industry and the opportunity this created for a new program.

So, the one thing is that dairy food manufacturing job numbers went from 9,000 to like 14,000 within like 6 years. So it was tremendous growth . . . .So my role, when I first entered this role, my first month all I did was try to focus on what the areas of concern were that were preventing the industry from growing further, and one of them was workforce development. (#5)

This educator went on to explain the process they followed to shape their response to the opportunity:

I strategically looked at a map and said okay where should these programs be placed? And one of them, you know Genesee County, they have three new manufacturers and one expanding manufacturer. So obviously that’s an area that we should be training people to work in the food industry.

In another example the educator talked about applying for and receiving a federal Sustainable Agriculture Research and Education (SARE) grant that allowed them to conduct market research to further explore the opportunity they had already identified.

So the next thing we did was we got a SARE grant and we surveyed 200 consumers. And we basically asked them do you buy local meat and if why not why don’t you buy local meat? Do you buy in bulk, if not why don’t you buy in bulk? And then we surveyed 40 producers in the area and we asked do you sell quarters and halves and if not what do you need? (#??)

Although simplistic at first glance, the educators demonstrated a commitment to basic market research, reaching out to the consumers of their developing programs to ask
what was needed and then respond. Here is how that issue was addressed by one individual who realized that the target audience, commercial agriculture, needed something different from CCE.

Farmers said we don’t need help with production we need help with marketing. So I quickly shifted into whatever I could do to help farmers with marketing. So that was, you know, everything from supporting the farmers market, looking at new marketing channels, you know whatever, around Ag marketing. (#7)

The data suggests that the process of creating programs with DI characteristics is more complex than simply identifying opportunities. The educators are very proactive and highly engaged in their communities. One of the educators described this by stating that “You have to be part of the environment, you can’t do this program from your office and then just send out a flyer and think it’s going to work” (#3). Another educator expressed a similar sentiment, taking it a step further to suggest that they enter the community engagement process actively looking for opportunities for CCE by stating that, “I think part of it is being engaged in the community and being a, shaping things you know, so really what I’m doing is shaping a role for Extension” (#7).

Another educator described how the United States is falling behind in the world rankings in science competency, and that this situation provided motivation for the innovation, noting that, “We find ourselves in an evolution as a country 17th according to studies, behind developing countries in science, technology and engineering (#4)”. In this case the educators innovation was both technological and educational, actually introducing a new approach to hydroponics technology that would help elevate the
effectiveness of hands on science education designed for use in the school and 4-H setting.

I came up with a technology called NDFT hydroponics technology. NDFT stands for nutrient drip flow technology. And in doing that we produce, in the case of a head of lettuce in record time. Three to 4 weeks as opposed to producing it in the soil, 8 to 10 weeks. (#4)

The educators working with urban youth in New York City and Binghamton shared similar views regarding the special needs of urban youth. Here is how one of the youth educators described the need and how their approach to youth programming could address the issue of providing young people with a voice.

I think our young people in so many different arenas are not respected, from the school, at home, you know it’s just do what I say because parents are in control. Where do they have a place where they are validated, where they can actually speak and we can move on the things they are talking about? (#8)

**Attracting new resources.** A strong theme that emerged from the data was the correlation between the innovative programs and external funding sources. Eight of the nine educators built and sustained their programs from non-traditional funding streams. Based on the interview data only two of the nine educators positions are funded through core local, state, or federal extension resources. The external funding took a number of forms, including competitive grants, a legislative initiative from State government, and fee for service. One of the educators talked about how their position is completely tied to external funding stating “My job doesn’t really even exist at this nonprofit. Meaning
there’s no core dollars. So my salary every year for the 8 years that I’ve been here is entirely grant supported” (#6).

Another educator discussed how the program was supported by annual appropriations directly from the New York State Senate and the level of accountability this created for the program.

So, you know my position, the program is funded through New York State. And it’s actually a good thing, it really is because we have that interaction with State based Agencies, because of where our funding comes from. So they want to see us, like for example our State Legislator, Cathy Young, Senator Cathy Young, she wants to see us once a year to know what we’re doing. And you know when we go to Albany, you know we work with the Commissioner (NYS Commissioner of Agriculture) and then the people who put money behind us we have to go talk to them about what we’re doing and then they might say you need to talk to the commissioner about this, the commissioner’s office about you’re efforts. So it is really a good thing to have that State visibility. (#5)

Another educator makes a direct connection between effective program development and grant funding.

I have been hugely active in applying for grants and you know I think if you don’t have an idea that you can support with a grant you know you’re just basically biding your time . . . if you’re writing a grant it forces you to think through from A to Z how you’re going to carry something out so I feel like grants in some ways they force you to come up with a title. They force you to come up with the elevator pitch. They force you to write the whole work plan, the timeline, how
you’re going to carry it out. And, you know we should be doing that all the time for what we do. I think that way when things get carried out they are more successful and there’s less risk of failure. (#7)

The educators in this study demonstrated the ability to identify program opportunities and needs that are intertwined with funding opportunities. Here is how the process was described by one educator:

. . . there was a committee that was formed basically to look at beautification and so I was on that and that evolved into a county-wide committee. Again I kept saying the city staff aren’t able to do this you need a dedicated program and they bought it. So again, that is probably one of our better funded programs we get about 100,000 a year just to do beautification. (#7)

In one case, the innovative program is supported almost entirely by a fee for service model. The educator makes a direct connection between this fact and a high level of accountability and responsiveness to the needs of the consumers of the program.

I mean, and we haven’t gone down that topic yet but we are over 90% sustained by individuals, as in parents or community members basically choosing to use our services. So in other words not grants or fundraising. So that means if we really don’t understand our people then they are not going to be our people . . . .If we don’t understand that then you know, well we certainly wouldn’t grow the way we’ve been growing. (#6)

This comment is an excellent segue into the final theme from this section.

**Responding to the consumer.** The educators demonstrated a high level of awareness and responsiveness to the needs of the target audiences as the programs
developed and grew. The educators were not only able to identify opportunities and get something started, they demonstrated the ability to sustain and expand the program initiatives for a number of years. This section highlights similar approaches the educators utilized to respond to new audiences, and how these efforts contribute to sustaining and growing the programs. The first example demonstrates a keen sensitivity to the culture of the target audience.

I think the increased reception to our programming is that it is culturally sensitive . . . so for me what has that meant? It has meant learning about the people that I am working with, in a sense the people that I serve, learning about their cultures and internalizing their preferred ways of communication. (#1)

For another educator the key to program expansion is tied to how the program is presented to the key decision makers.

My strategy from the get go was not just to look for individual teachers but to look from the top down. So the superintendent, the top dog, is bought into it in. Then automatically the principle has to buy into because he’s the principles boss. And then automatically the science teachers buy into it because the principle is his or her boss. (#4)

In another example the key is the development of a strategic partnership:

I worked with the economic development agency out in Western NY and we put together a 2-week boot camp so that they could learn some of the skills that they would be required to have if they went into processing. Some people got hired out of that program. We had 25 people go through our first cohort and I think eight of them got hired out by companies. (#5)
In one example the original program design was so successful that the consumer, in this case the parents of school aged youth, pleaded with the educator to create additional programming options for their younger children.

In fact probably one of our most successful programs now is our forest pre-school program, you know with sign-ups already for next fall and winter and even next spring, which is crazy even for us, and it was as far as our summer camp models it was the first camp to fill up and close out, there are just people starving to get their younger children into these things. (#6)

In another case the response to the program is leading to expansion within the first target market, as well as into other parts of New York State.

We’re at the point, with a waiting list of six, Monica and my assistant on the project are both like we have to open another freezer in Ithaca. So once the co-op forms then hopefully the co-op will open a second freezer. I think it will. (#9)

Finally, the educators raised the issue of effective marketing as a key to the ability to sustain and grow the innovative programs.

And I think, you know we have definitely improved the marketing. It’s mainly done in house but the staff have some talent for putting together brochures and flyers and all that sort of stuff so yeah it’s definitely stepped up a notch. And much more, I see primitives and children’s garden, you know the rest of Extension needs to come along with that. (#7)

The same educator expands this concept further to identify the importance of creating a brand for the program that goes beyond the programs affiliation with Extension.
I feel like one of the things that makes these programs successful is they do have a specific focus. They have a brand that’s been established. So the Meat Locker is a brand, Citizen Pruner is a brand, Master Composter’s, Ithaca Children’s Garden, Primitive Pursuits is. So these are new brands that get attention and, whereas if you kind of do the same old thing and you don’t package your program effectively and market it effectively, you’re not going to get any new results. (#7) Another educator discussed the importance of effective marketing at the beginning of a new project.

. . . the biggest challenge in reality is you have to support this with a massive sort of PR campaign. We did lots of events. The fund raising, which seemed like a curse, I was like they didn’t even fully fund me I can’t even put my freezers together. It was actually a secret blessing because we did so much fund raising that eventually everybody in Ithaca had heard about this stupid meat locker because they’re looking for money! But everybody heard of us and we had fun events, tasting events with like hog butchering demonstrations. (#9)

The first two categories of the preliminary theory, the ecology of innovation in CCE, described the traits and characteristics of the educators themselves, and how they combine these attributes with the ability to recognize and shape opportunities into exciting new programs over time. The third major category, organizational dynamics, takes a look at how the broader organizational context of CE influences this process.

**Category 3 – organizational dynamics.** The final category of the preliminary theory focuses on the broader organizational context surrounding the innovative educators and how this context impacts on the innovation process. Eight of the nine
interview subjects identified organizational supports, particularly the support and autonomy provided to them by supervisors, as important to their success and ability to be innovative and creative. In addition to the supportive aspects of the culture, a smaller number of educators identified challenges from the broader CCE organization. The challenges described are not surprising when viewed through the lens of DI. DI’s are often poorly aligned with the organizations dominant culture and are often perceived as a poor fit from a financial or program perspective (Christensen et al., 2006). This final section of the chapter begins with a look at the role of supportive leadership.

**Supportive leadership.** The existence of supportive organizational leaders was identified by many of the interview subjects. One educator gives credit to leadership for allowing them to continue to expand into an emerging area by stating, “. . . that part of my job responsibilities was expanding and growing and became dominant over the other parts that I was doing and the leadership here at that time were supportive of that and saw that it was an emerging need and an interest of mine, and I was responding to it” (#1). Having the clear support of the executive director was perceived by several educators as a key to their success. Here is how one of the educators described the role played by the executive director.

I think he has a vision, I think he is very open minded and he is like, you know, how can we create interesting stuff, how can we leverage it, I think he lets things happen that he sees are going in a good direction. He could have in those first few years once he came in and sort of was like I don’t understand you guys, said this didn’t go the way that things are supposed to go, like you didn’t go through the normal channels . . . (#6)
Another educator mentioned the executive director’s ability to provide support by demonstrating flexibility and allowing the program to develop.

... so there is growth and needs and me being there with an interest and wanting to be there and then the third part was supportive leadership. So at the time when all of this was building the Executive Director here in Yates County was I think a real flexible person in terms of wanting to see what direction the industry was going and supporting the kind of programming we were developing ... (#1)

The ability of the executive director to create an environment supportive of innovation was mentioned as by another educator who stated that, “I think all credit goes to Vicki (Executive Director) really for creating an environment where we all feel very supported and collaborative ... she’s always encouraging us to stretch and she’s right in there helping” (#2).

Another educator describes how they have felt consistently supported by a variety of different leaders over a long career.

First of all I feel really fortunate within this organization. That’s probably why I’ve been able to be here for so long. That regardless of who the director has been, and I don’t know what this is about but I’ve always felt, everybody that I’ve worked with, it feels like ever since I got here, has given me the latitude to do it the way I thought I needed to do it, you know. (#3)

Another educator points to the broader support for innovation within the culture of Cornell University as key to their success, suggesting that without this level of support they likely would have gone into private industry.
I was always coming up with innovative things within the University, the first fish farm in New York City, I was the co-owner of that fish farm. The University gave me public sanctions and blessings to do that in New York City. They could have just said well maybe that could be a conflict of interest but they said we want guys like you within the University that showcase these new types of technology.

Although a supportive environment was clearly a key component in the development of innovation from the perspective of the educators, there were also signs that the innovative programs were pushing the envelope in ways that created tension and additional obstacles in some instances as the next section will demonstrate.

**Challenging the existing culture.** One of the signs of a social sector DI, as identified by Christensen (1997) is that aspects of the innovation may not fit well with the established organizational culture. This characteristic of DI was not a huge factor in the data, but it did show up. One of the innovative programs had been around for 15 years yet the educator stated that, “I think we still confuse people here and maybe that’s just because we are still the young whipper snappers after 15 years . . .” (#6).

The same educator described a degree of frustration with the feeling that the innovative program has not been fully embraced by the more traditional programs, even though from their perspective there is strong alignment with the historic mission of the organization.

. . . I have personally been trying to do a lot of research into the history of 4-H and the history of Cornell Cooperative Extension because I think what we’re doing actually fits really well with like what was there and so I feel like maybe there is a case for us to make you know, like to that end. (#6)
In a similar vein, another youth educator describes how 4-H professionals working through more traditional approaches have openly questioned the program’s fit by telling her, “Not here so much but when I go to other places and other colleagues say well that’s not 4-H!” (#8).

Finally, there are several examples from the data where the innovative programs have come under scrutiny by CCE administrative leaders at Cornell. Several of the educators discussed how their programs have been flagged by CCE administration from the perspective of mission fit and risk management. Here is how it was described by one educator:

But the other risk is really, has been quite honestly keep running up against P.W. Wood (CCE Insurance provider) and our insurance policy. We have found that what the campus considers education in recent years, this wasn’t so much of an issue before but in recent years we have been taking to the carpet on things like community beautification. (#7)

Another educator describes a similar situation in the following way:

We had trouble with our insurance company at Extension. They don’t like when we own things and they have a rigid vision of what our mission is so they felt this was outside the mission, which it’s really not. My job is to create markets, to create and facilitate markets for farmers. (#9)

According to one of the innovators the issue is a difference in perspective about what it takes to get an educational program up and running.

. . . there is a huge development phase that may not seem like it’s Extension work but how are you going to get an educational program functioning until you get the
infrastructure in place to make it function? And so it’s been an interesting battle in recent years. (#7)

Although the educators experienced a great deal of support for entrepreneurial approaches to their work, the data did also discover some amount of tension with the broader organizational culture of CCE. The tension between DI and dominant, long standing organizational practices and methods, and how innovators navigate these issues, will be explored in Chapter 5. The findings from this study suggest that it is critical to think about the role that organizational leaders can play in this process, and how they can provide space for innovation to grow as unencumbered as possible from dominant approaches, programs, and business models.

The preliminary theory, the ecology of innovation in CCE, and its main categories have been explored and substantiated by the analysis of the interview data. There are clear limitations to the interpretation of the research with a sample of size of nine innovative educators. However, the data suggests that these innovative educators in CCE have compelling similarities to one another, as well as with existing research on innovative entrepreneurs in the private and nonprofit sectors.

The innovative educators in this study exhibited a complex and dynamic relationship with a key facet of entrepreneurship and innovation, the ability to recognize and capitalize on opportunities. The data suggests that the educators have the ability to analyze trends and scan the program environment, and that they do this with program development in mind. Moreover, the data suggests that the educators are very proactive and actively engaged in the process of developing the innovation. They are shaping the opportunity as much as they are identifying it. Moreover, the data reveals that a
significant component of the shaping process is based on their own world view, vision, and areas of interest.

Finally, the data suggests that the broader organizational context has been largely supportive of their efforts, in particular as it relates to leaders that encourage and support experimentation and innovation. However, as might be expected with programs that align with characteristics of DI, the educators have also experienced challenges with the more traditional and dominant organizational culture. The final chapter will explore the preliminary theory and its major categories within the context of the study’s goal of identifying programmatic innovation in CCE that aligns with characteristics of DI. The final chapter will review the major categories of the preliminary theory and apply the results to the challenges facing CE and the broader nonprofit sector. The presentation of a theoretical model that illustrates the dynamic relationships between the educators, their organizational context, and the broader community they are working within, will set the stage for this analysis.
Chapter 5: Discussion

Introduction

The goal of the study was to identify CCE programs that align with major tenets of DI theory and look for the building blocks that have facilitated the development and persistence of these innovative Extension programs. Three research questions guided the study:

1. What current CCE programs will a panel of CCE administrative and programmatic leaders identify as having characteristics that align with core elements of disruptive innovation theory?

2. Which of the identified innovative CCE programs demonstrate the strongest alignment with disruptive innovation theory based on interviews with the lead program architects?

3. What common themes will emerge from the data that can be developed into a working model of the building blocks of disruptive innovation in CCE?

The first phase of the research process involved the identification of CCE programs that align with major tenets of DI. A core group of CCE state level administrative and programmatic leaders were engaged in a focus group discussion that asked them to identify existing CCE programs, and the architects of the programs, that share characteristics of social sector DI. This process led to the identification of 26 programs. The characteristics of DI in the social sector are:

1. DIs create social change through scaling and replication.
2. DI$s meet a need that was not being served previously.

3. DI$s meet customer needs in a simpler and more economical fashion, appealing to customers that currently have more services available to them than what they are actually demanding.

4. The overall level of performance of the DI may actually fall short of existing standards; however, the DI hits the mark from the perspective of the customer.

5. DI$s attract new resources, volunteers, or collaborators in ways that may at first be perceived as threatening or unappealing to both competitors and the host organization.

6. DI$s are often poorly aligned with the organizations dominant culture. The DI is likely to be perceived by some as a poor fit from a financial or program perspective and may be pushed to the fringes of the organization (Christensen et al., 2006).

The second phase of the research process led to the narrowing of the research focus to nine programs that demonstrated the strongest alignment with the major tenets of DI theory. The primary architects of the nine innovative programs were interviewed and the resulting data was analyzed following grounded theory methodology. The coding and analysis process led to the development of a preliminary theory of how programs with DI characteristics take shape in CCE. The preliminary theory, *the ecology of innovation in CCE*, has three major categories, *CCE innovator profile, recognizing and shaping opportunity*, and *organizational dynamics*.

The final chapter of the study will explore the major categories and sub-categories, connecting them to relevant findings in the research literature, and consider
the broader implications and recommendations for CE leadership. The chapter will conclude with a discussion of the limitations of the study and recommendations for further research.

Implications of Findings

The data from the interviews with the innovators led to the development of the preliminary theory, *the ecology of innovation in CCE*, with three main categories:

- CCE innovator profile
- Recognizing and shaping opportunity
- Organizational dynamics

Figure 5.1 provides a visual portrayal of the three main categories and how they interact. Figure 5.1 illustrates the core finding of this study, that the innovation process begins with and is driven by the thoughts and actions of an innovative educator. In this study, the actions of the educators were largely supported by the broader organization, allowing the innovation process to advance. The use of the term ecology is intentional and descriptive of how the elements of the core category connect and interact over time. A helpful analogy to explain the relationships outlined in Figure 5.1, and the dynamic role played by the innovative educators, is to make a comparison to the biological sciences. The innovative educator can be favorably compared to the role of a keystone species in an ecological system.
Figure 5.1. The Ecology of Innovation in CCE.

The term keystone species is a biological concept that describes a plant or animal that plays a dominant role in the functioning of a particular ecosystem (Munscher, 2013). In the absence of the keystone species, the ecosystem would be altered in dramatic ways, and may even cease to exist (Munscher, 2013). The data from this study suggests that the nine innovative CCE educators are the dominant actors driving the innovative process within an overall ecological framework that compares favorably to the role that a keystone species plays in the natural world.

There are many highly interconnected factors that influence how a keystone species interacts and advances its goals within a biological system. This is also true in the organizational context of this study. However, the evidence suggests that the innovative educators are the key force driving the process forward. The chapter explores
the major categories and sub-categories of the ecology of innovation in CCE, and explain how they interact over time to contribute to the development of innovation. The first two major categories, CCE innovator profile and recognizing and shaping opportunity, are explored together to emphasize their co-evolutionary characteristics. These two categories interact in a dynamic way that pushes the innovation process forward.

**CCE innovator profile, and recognizing and shaping opportunity.** The innovative educators profiled in this study were not independent actors without direction or oversight. They were all hired by organizational leaders with expectations for program direction and impact, outlined in job descriptions and annual plans of work. Moreover, the interviews revealed complex relationships and collaborations between the innovators and external opportunities. In addition, the data revealed complex relationships, both supportive and sometimes challenging, with internal organizational forces. The educators were not acting alone. However, the data indicates that the driving force in the development of the innovative programs was this group of nine diverse educators who share many personality traits and behaviors.

The educators describe their attitudes and behaviors in ways that align very closely with research on innovative entrepreneurs from both the private and social sectors. As with other studies, the innovators are willing to take risks, are confident self-starters, and express high levels of intrinsic motivation to change the world in a positive way (Dyer et al., 2008; Lukes & Stephan, 2012; Sarason et al., 2003; Vasakarla, 2008). Moreover, the educators demonstrate the ability to capitalize on these attributes and build successful programs that reflect key characteristics of social sector DI. The following social sector DI characteristics were particularly evident in the research findings:
1. Addressing a need that was not being served previously.

2. Attracting new resources, volunteers, or collaborators.

3. Developing a program that was not well aligned with the organization's current dominant culture.

The educators combine personal characteristics common to entrepreneurship, defined by the major category *CCE innovator profile*, with the ability to engage proactively and forcefully with the external environment. The major category *recognizing and shaping opportunity* describes the dynamic and proactive approaches the educators employ in the development and evolution of innovation. The data revealed an ongoing process of utilizing personal values and vision as a lens to look for opportunities for CCE in the wider world. The relationship between the educators' world views and values, and the recognition of opportunity, is a symbiotic, concurrent process that favors action over passive observation.

Sarason et al. (2006) posit that entrepreneurship is a social undertaking that is best understood by looking at the relationship between the innovator and the opportunity as a two-way, dynamic, co-evolutionary process. Sarason et al. suggest that entrepreneurs are better understood as agents of change acting within social and economic systems. The innovators create and shape opportunities just as much as they discover them. The findings from this study strongly reflect this perspective.

Sarason et al. (2006) applied structuration theory to the innovation process to better understand the nature of the relationship between entrepreneurs and opportunity recognition. Giddens (1984), developed structuration theory to address a perceived shortcoming in social theory. In Giddens' view the role of the human actor had been
underestimated in the study of social processes. Giddens proposed structuration theory as a way to conceptualize how actors create and influence social systems while at the same time being influenced and bound by the social systems they inhabit (Giddens, 1984).

Applying structuration theory to the innovation and entrepreneurial process allows for a shift in perspective. Through the lens of structuration theory, the researcher can see the relationship between the innovator and the opportunity as co-evolutionary (Sarason et al., 2006). In other words, it becomes clear that opportunities are not sitting fully formed somewhere in the wider world awaiting discovery. According to Sarason et al. (2006), a more realistic perspective is that opportunities emerge at the point when the innovator defines them as opportunities, thus launching the innovation process.

The results of this study align very closely with the structuration perspective. In every case the educators talk about how they identify an opportunity and then develop an approach to address it. Organizational leaders seem to be quick to support the direction they move in, and to some extent the expectations have been delineated in their job expectations, but the specifics of the program approaches originate largely from the creative thinking, personal interests, and motivations of the educators. The innovators in this study hold strongly held personal visions for their work. They are on a mission. Furthermore, the personal motivations influence the lens they utilize to scan the environment for opportunities that are then developed into innovative programs.

The significance of this finding is that it suggests that like DI in the private sector, DI in the social sector is often driven by the dreams, visions, values, and personal creativity of individuals. The innovative programs and strategies explored in this study were not produced by the organization in the classic sense. Moreover, the programs were
not destined to emerge at some point due to a particularly well structured job description or established pathway that the educator simply had to follow. However, the organizational dynamics surrounding the educators and their programs were influential and relevant to the development of innovation, as the next section explores.

Organizational dynamics. Franz and Cox (2012) suggest that CE is largely failing to create and support DI, citing an organizational culture that supports the status quo over innovation. The results of this study offer a hopeful counter narrative to this perspective, at least within CCE. The educators profiled in this study indicate that their success has been enhanced and supported by organizational leaders that encourage entrepreneurial approaches and provide the freedom and autonomy they need to take risks. The role of the surrounding organization in the innovation process, including both positive and restrictive elements, describes organizational dynamics, the third and final major category of the ecology of innovation in CCE.

Supportive leadership. The educators feel supported by the organization, and appreciate the latitude they are afforded to experiment, take risks, and learn from their mistakes. In most instances, the educators cite the executive director, or another direct supervisor, as key to their entrepreneurial process. They credit leadership for creating a supportive culture and for supporting them personally. Moreover, the educators describe organizational settings where they are provided with significant latitude and freedom with leaders who are supportive but not prescriptive.

The study did not attempt to determine if there were any common characteristics among the leaders providing supervision to the innovative educators working in the nine settings. An exploration of leadership style within CE settings that are producing
innovation would be an interesting and valuable element to include in future studies of this nature. Although the significance of leadership style is unclear from this data the study did reveal a related and noteworthy finding that deserves further investigation.

Several of the educators describe how they felt largely free from the bureaucratic structures of CCE, and cite this condition as advantageous to their ability to explore new territory.

Interestingly, although all nine educators are working directly in community settings, five are employees of Cornell University, not a county-based CCE association. Furthermore, three of the innovators are employed by the CCE Tompkins County Association, based in Ithaca and in the backyard of the University. The fourth association employee holds a statewide leadership role supported by external grant funding, and therefore functioning more like a statewide specialist than a county Extension employee. The educators and CE settings examined in this study do not align with the culture of risk aversion and maintenance of the status quo cited by a number of CE scholars (Franz & Cox, 2012; McDowell, 2001; Morse, 2009). Furthermore, the importance of breaking free from the established organizational culture tracks with key aspects of Christensen’s original DI work.

Christensen (1997) discovered that managers trying to push DI forward in established organizations with a dominant product, approach, or business model have two paths from which to choose. The first option is to be aggressive and push for the adoption of the new innovation within the established organizational culture and attempt to overcome organizational inertia and dedication to the current dominant product,
service, or business plan. Christensen (1997) found that this approach was rarely successful.

The second option proposed by Christensen (1997) is to create a distinct organizational unit with the freedom to nurture and grow the DI outside of the constraints of the existing core business model. According to Christensen, the successful launching of a DI is more about action then careful planning, a non-linear process that involves pushing the product forward through experimentation and learning on the fly (Christensen, 1997; Assink, 2009). It is difficult to create and sustain this kind of non-linear, organic process in an established organization like CE, however the educators profiled in this study seemed to be doing just that.

In one case the educator was indeed part of a distinct and new organizational unit with funding directly from State government to support an effort to support workforce development in the dairy industry. In the case of the educators from the New York City Extension Office, the three staff are Cornell University employees operating more like a special unit of the University, somewhat at a distance from the overall organizational culture and bureaucracy of CCE. The three educators from the CCE Tompkins Association all indicated that they perceive CCE Tompkins as unique in comparison to the overall CCE system. They attribute this uniqueness to the influence of the current Executive Director, the proximity to the resources of Cornell, and the overall progressiveness of the Ithaca community. The final two educators profiled were regional and statewide in their scope and also somewhat removed from the CCE county-based association structure.
Although the organizational units the educators in this study are working in were not intentionally set up as innovation zones, they do appear to be providing the kind of support and protection from the dominant culture that Christensen (1997) proposed as key to the development of DI. Christensen proposed that that DI is more likely to develop and survive if the innovators are protected from the mainstream of the organizations dominant culture and traditional business model. Although the sample size in this study is small, and further research is needed to confirm the trend, the key condition that seems to be creating the separation from the dominant CCE culture in this study is the source of funding supporting the innovative educators.

The vast majority of CCE educators are positioned within a county, or multi-county, CCE association with core base funding from county government. Here is how one of the innovative educators in this study described the CCE Association structure in relation to innovation adoption and risk taking:

... the county-based Extension system is, it’s a very big ship and a large ship is very slow to steer in any direction. So I think my concern, not that I am entitled to have one but all of these 57 counties are probably under too much influence from a fairly top heavy bureaucracy and each one of the counties has an executive director who logically is most interested in the perpetuation of that county association. (#1)

In this study only four of the nine educators were employed by a CCE association, with the other five working directly for Cornell University in community-based Extension roles. In addition, three of the four educators who were employed by a CCE Association were part of the CCE Tompkins Association, which clearly seems to have developed an organizational culture more supportive of risk taking, experimentation, and
development of funding streams beyond the core government support through aggressive grant writing. Finally, the fourth CCE Association employee from this study is working more as a statewide expert in a youth at risk oriented program, supported 100% by federal grant resources. The implications of this finding are discussed further in the recommendations section.

In addition, the findings raise the question of how well these educators would fare, or even how long they would remain in CCE, if they found themselves in a more constraining environment that did not outwardly support and encourage their entrepreneurial spirit. There are clues in the interview data that suggest that an overly bureaucratic, risk averse climate would likely result in the exiting of the innovators from CCE. One of the educators stated that they never expected to work for Extension in the first place due to a perceived lack of relevance and ingenuity on the part of the organization.

Another educator suggested that they would have likely left their position and entered private business if they had not been allowed to develop and pursue a technological innovation in agricultural education that has significant private sector applicability. One interviewee has recently announced that she is leaving her position in Extension to go back into private industry. Whether or not the organizational culture of CE contributes to the departure of innovative educators was not the focus of this study but it is an important component that should be explored by future research.

**Barriers to innovation.** In addition to support, several educators discussed resistance to their approaches from the standpoint of mission fit and risk management concerns, as well as a lack of receptivity from colleagues involved in more traditional
program approaches. Christensen (1997) found that long standing organizations with a history of success are very reluctant to move away from time tested markets and products, tending to focus on incremental improvements to existing products over DI. These characteristics are proving to be transferable to the social sector and align closely with the opinions of scholars who have criticized CE for a lack of risk taking and aversion to change (Franz & Cox, 2012; McDowell, 2001). In this study the innovative educators have successfully navigated the organizational barriers, finding ways to sustain the programs and in some cases successfully integrate them into the organizational core. The next section discusses what the preliminary theory, the ecology of innovation in CCE, offers to the broader challenges facing the national CE program.

**Limitations of the Study**

The study was limited by time and scale. The opportunity to interview a broader group of program architects may have added significant information to the data set, or reinforced the preliminary theory. In addition, the innovators were identified by a relatively small group of CCE statewide leaders who work on the Cornell campus, removed from day to day interaction with the field-based educators. The decision to utilize a focus group of campus based Extension personnel to identify the initial set of innovation programs was intentional and designed to take advantage of their role as stewards of the entire CCE statewide program, with the authority to manage and evaluate the success of the overall system. However, this approach also created the opportunity for significant subjectivity and the potential for individual bias to be reflected in the list of 26 programs identified through the focus group process.
A future study following this basic design might consider an additional step to in the process of identifying innovation in a large and decentralized program like CCE that has the potential to broaden the pool of potential candidates for the more in-depth interview phase of the research process. The identification of innovation could be initiated with a broader survey of the larger organization, asking survey participants to identify programs they believe align with the characteristics of social sector DI. The programs that emerged from this process with the most statistical weight could then be brought to the focus group for further discussion and refinement.

Finally, with a longer research window, or with the assistance of additional researchers, the interview phase could have been extended to allow for additional interviews, beyond the core program architects. In addition to interviews, the data collection process could also include review of program literature, resources and evaluation reports. The research results and preliminary theory may have taken on more complexity and layers with the insight and perspective of additional interviews and document analysis.

**Recommendations**

Franz and Cox (2012) provide the researcher with an introduction to DI theory by suggesting that CE could benefit greatly by developing an organizational culture that embraces DI. The questions and challenges posed by Franz and Cox (2012) provided significant motivation for this study. Franz and Cox offered the following list of CE barriers that they believed were preventing CE from adopting and embracing DI.

1. CE tends to support the status quo over innovation.
2. CE has a tendency to create highly bureaucratic structures that do not support rapid change.

3. CE has adopted an entitlement mentality when it comes to traditional core government funding sources. This tendency has inhibited innovation and the creation of a sense of urgency.

4. CE suffers from a lack of diversity in both staffing and customers.

5. CE follows an expert model paradigm rather than a more collaborative approach to program development that includes strong input from existing and potential clientele (Franz & Cox, 2012).

The results of this study have bearing on the concerns raised by Franz and Cox (2012) and significant implications for CE. The implications and recommendations are presented as statements of opportunity that flow from the observations in the Franz and Cox article. The recommendations target CE leaders and administrators at all levels of the organization. If implemented by organizational leaders the actions have the potential to identify, support, and enhance the efforts of existing entrepreneurial staff and create an environment that supports their work. Moreover, embracing these recommendations has the potential to contribute to a major transformation of the overall organizational culture of CE. Just as the three major categories of the preliminary theory are highly integrated, so are the three recommendations presented here. The potential impact of these recommendations will be greatest if all three strategies are pursued in unison.

**Establishing innovation zones.** This recommendation relates directly to CE’s bureaucratic structures and tendency to support the status quo over innovation. Assink (2006) call this the adoption barrier. The adoption barrier describes the tendency for
businesses and organizations to limit themselves to incremental innovation. An organization's long term success often leads to the development of risk averse behavior and an unwillingness to break out of strategies and patterns that have served the entity very well for a long time (Assink, 2006). Importantly, although the educators from this study do encounter internal organizational challenges and bureaucratic oppression, they have found ways to work through these challenges to keep the program moving forward.

The common denominator is that the educators find themselves working in environments within the overall CCE structure that provide support for risk taking and experimentation. As Christensen (1997) suggested, the creation of distinct organizational units, protected in a sense from the dominant culture, is an effective way to overcome organizational barriers to change and innovation. Christensen suggests that DI is unlikely to survive in an established firm without the existence of an intentional process that protects the innovation from dominant business practices that are ingrained in the organization.

Organizational leaders in CE, and in other social sector settings, have the ability to create their own versions of Christensen’s (1997) distinct units, or innovation zones, and in the process replicate the supportive environments in which the educators in this study are working. There are at least two important reasons for doing this. The results of this study indicate that there are entrepreneurial educators working right now in CE with the ability to create and sustain programs that align with major characteristics of DI. If CE leaders can identify the educators that fit the CCE innovator profile through a methodology similar to the process from this study they can take steps to ensure that they receive the support and freedom they need to innovate effectively.
Furthermore, in order to support their work and learn from their approaches, CE leaders should consider creating communities of practice that bring these individuals into closer contact with top management teams and with each other. The specific roles and functions of these groups would be variable depending on specific circumstances, however the key concept is that organizational leaders should be engaging on a regular basis with their innovative staff who are also working at the point of service delivery. A clear and compelling result of this study is that the innovations originated at the point of delivery, not from the upper echelon of the organizational hierarchy.

A second reason for identifying the innovators and creating innovation zones that support their work is to identify existing and emergent programs that should be studied more closely to determine if there is potential for scaling them up on a regional, statewide, or national basis. This study revealed that DI in CE will likely be highly idiosyncratic, largely emerging from the creative mind of an individual educator. CE leaders should do all they can to learn about these programs, both to protect them from the current dominant paradigm that may be unsupportive or even hostile towards them, and to determine if they have the potential to be replicated and brought to a larger scale. Taking an innovation to a larger scale is the primary missing link from this study that could lead to a fully realized DI. There does not appear at this time to be any effective mechanism for CCE to identify programs that look like DI, study them, and consider ways to replicated them on a broad scale, replacing program models that are no longer as effective.

Assink (2006) suggested that older, established organizations like CE tend to develop organizational cultures that demand allegiance to rules and procedures that
ultimately frustrate creativity. Extension directors at all levels must find ways to push back against this reality. A key part of this process is the identification and exploration of emergent and established innovation, including gathering input from program participants about what they like about the programs. The programs can then be examined from a non-threatening perspective of learning and exploration, as opposed to a perspective of audit, program review, or risk management. This approach has the potential to begin to transform the organizational culture by encouraging wider adoption of an entrepreneurial mindset and recognition for the innovators who are pushing against organizational norms.

**Establishing market based centers of excellence.** This recommendation addresses the concern raised by Franz and Cox (2012) that CE has adopted an entitlement mentality when it comes to traditional core government funding sources. The entitlement orientation can stifle creativity and inhibit the sense of urgency that drives the innovation process (Franz and Cox, 2012; Morse, 2009). The results of this study suggest that grants and other forms of external funding may be a critical step in the innovation process for CE. Eight of the nine educators built and sustained their programs from non-traditional funding streams. Only two of the nine educator positions were supported mainly through core local, state or federal extension resources. The external funding took a number of forms, including competitive grants, a legislative initiative from State government, and fee for service.

As pointed to by several of the educators in this study, writing a grant requires the educator or CE unit to develop a detailed business plan, or logic model. Furthermore, grants and contracts and other forms of competitive funding almost always require some degree of market research to establish the program need, a delivery strategy that
addresses how the intervention will be designed, and a budget detailing how the funds will be utilized. Additional research should be conducted to see if the correlation between innovation and non-traditional funding sources can be further substantiated. However, the data from this study is significant and suggests another pathway for active experimentation.

CE leaders should experiment with approaches that embrace the reality that significant new funding streams will almost certainly come from competitive sources. The model would be an alternative to the effort to continue to offer the same levels of traditional and core CE programs with a shrinking pool of core government funds. In this model, core government funds would be directed to teams of experienced Extension professionals, working on a regional, or statewide initiative with the understanding that their main responsibility is to expand the initiative with competitive funding. In this way, the core government funds can be utilized to provide stability for a core team within one of CE’s main program areas, freeing them to pursue competitive funds to extend the impact and providing the flexibility they need to adapt more quickly to changing circumstances within their field of interest.

An approach similar to this has worked well within the agriculture program area in New York State. Federal funds have been combined with contributions from local Extension offices to create highly effective teams of regionally focused agriculture educators. The initial investment has paid off as the agriculture teams have consistently increased the percentage of the overall program budgets from competitive grants and contracts. The challenge of this model is to ensure that administrative support functions are maintained and increased along with program expansion to prevent innovative
educators from becoming frustrated by ever increasing levels of administrative management, taking time away from program implementation.

**Embracing a collaborative paradigm leads to increased diversity.** The third recommendation addresses the final two barriers to DI adoption in CE suggested by Franz and Cox (2012). Franz and Cox expressed concern about a lack of cultural diversity in CE staff and clientele that is not reflective of changing demographic trends, and that CE continues to embrace an expert model paradigm in program development and delivery which may be limiting its effectiveness in the information age of the 21st century. The results from this study suggest that these two challenges are linked. The educators in this study have embraced a more collaborative approach to program development. In addition to embracing a collaborative paradigm, they were reaching new and diverse clientele.

In every example the program designs were not based on previous CE programming successes. The programs may have been related to previous programming successes but they all had new and unique elements that were enhanced by input from the target audiences. The results of this study indicate that this is a key step in reaching new and underserved audiences. According to the data, the youth programs in New York City and Binghamton are reaching high percentages of urban based African American and Latino youth. Moreover, the CCE Tompkins Primitive Pursuits and Ithaca Children’s Garden programs are reaching youth that the more traditional 4-H programs are not.

The effective engagement with Amish and Mennonite vegetable farmers in the Finger Lakes region is attributed by the educator in large part to a very intentional and organic evolution in the educational strategies that reflects the realities, culture, and
lifestyle characteristics of those audiences. As with all three recommendations, further research will indicate whether or not these findings hold up or are strengthened further with more evidence. However the results from this study indicate that collaborative approaches to program design may be key to bringing new audiences to CE programs.

**Recommendations for future research.** The research methodology utilized for this study could easily be replicated by Extension researchers in other states. If similar results are discovered in other CE systems it would obviously add validity to these findings. In addition, additional research might increase the momentum for organizational change efforts designed to increase CE’s adaptability and capability to support DI and the innovative Extension personnel that lie behind the innovation process. Another logical step would be to test the applicability of the findings from this study to the broader nonprofit section. One approach would be to attempt a similar research design within a large nonprofit organization with multiple locations and branches, or across a number of nonprofit organizations within a geographical region.

In addition to continuing to explore the DI process within Extension and the nonprofit sector, the results from this study suggest that more work should be done to better understand the nature of entrepreneurship in the social sector. The similarities between the findings from this study and the work of Sarason et al. (2006) suggests that the field would benefit from additional efforts to better understand the dynamic relationship between the innovator and the process they utilize to recognize and shape opportunities in the external environment. The results from this study suggest that there is much more to learn about how this process works and what organizations can do to identify, develop, and support social sector entrepreneurs.
Conclusion

The study explored the applicability of DI theory to the challenges facing CE. Cornell Cooperative Extension (CCE), the New York State branch of CE, served as the broad research setting. The study was designed to contribute to a national dialogue regarding the challenges of relevancy and sustainability facing CE. The study was designed to contribute to a growing research base that is exploring the applicability of DI theory in the nonprofit, government, and higher education sectors.

Problem statement. CE has contributed significantly to economic, agricultural, and community development in the United States for more than 100 years. However, the organization's future viability is threatened by shifting funding patterns and the impact of online learning platforms on all facets of education. Furthermore, CE has been identified by scholars as change averse, supportive of the status quo, and committed to an outdated expert model approach to education (Franz & Cox, 2012; McDowell, 2001; Morse, 2009). Franz and Cox (2012) suggested that an embrace of the major tenets of DI theory could help CE address current challenges and patterns of behavior, leading to greater innovation and adoption of new opportunities. This study explored the applicability of DI theory to the change management challenges facing CE, and to further extend the exploration of DI theory in the nonprofit, government, and higher education sectors.

Theoretical rationale. Christensen (1997) introduced the theory of DI in a study of the rapidly evolving disk drive industry. Christensen’s research uncovered a pattern of behavior among large and successful firms that were failing to recognize and adapt to emerging disruptive technologies threatening their position in the marketplace. The patterns, and consequences of the behavior of the established companies, and the behind
the introduction of the disruptive technologies, grew into what is now referred to as DI theory. Christensen and other scholars have expanded on the original work.

DI theory is now applied to business model innovations (Chesbrough, 2009), the influence of leadership in the DI process (Lucas and Goh, 2009), and as a framework for exploring organizational change and innovation in the nonprofit sector (Franz & Cox, 2012; Weerawardena & Mort, 2012). The broad definition of DI offered by Assink (2006) epitomizes the evolution of the theory. Assink described DI as “a successfully exploited new product, process, or concept that significantly transforms the demand and needs of an existing market or industry, disrupts its former key players and creates whole new business practices or markets with significant societal impact” (p. 218).

**Review of the literature.** The ability of an organization to respond to and adopt DI is grounded in scholarship from the field of entrepreneurship, broad organizational change theories, and efforts to understand how organizational learning and leadership approaches impact the innovation process. Empirical studies in these fields uncovered a link between innovation and learning organizations. Specifically, the research indicates that organizations with intentional organizational practices, trainings, and human resource strategies designed to build and sustain a learning organization culture, are more likely to produce innovation (Hurley & Hult, 1998; Ismail, 2005; Lopez et al., 2006; Mieres et al., 2012).

The practices, although varied in many ways, were carefully designed, intentional, and focused on the growth and development of individual employees. In addition, the literature reveals a correlation between open and participatory decision making process and the development of a learning organization culture (Prugsamatz, 2010; Raj&
Srivastava, 2013). Finally, the studies as a whole were not conclusive regarding the role of leadership in the innovation process, in particular studies related to transformational leadership style and the development of innovation (Jaskyte, 2004; Jaskyte, 2011; Rijal, 2010). Overall, the literature review helped to refine and focus the research questions and select an appropriate methodology for the study.

**Research design methodology.** The study utilized qualitative methodology, specifically grounded theory, to identify nine examples of CCE programs that align with major tenets of DI theory. There were three phases to the research process. First, Cornell University based CCE leadership staff were engaged in a focus group process to identify existing CCE educators who have provided leadership for programs that align with characteristics of social sector DI. The focus group process created a list of 26 staff and programs. The list was reduced to nine programs that the researcher believed were most closely aligned with DI. The final phase of the process, face to face interviews with the nine program architects, resulted in approximately 300 pages of transcript data.

**Findings and discussion.** The interview data was subjected to a three stage coding process to determine if there was a DI profile, or working model, of the building blocks of DI in CCE. The coding process resulted in a preliminary theory, *the ecology of innovation in CCE*, with three major categories: *CCE innovator profile, recognizing and shaping opportunity*, and *organizational dynamics*.

The first two categories, *CCE innovator profile, and recognizing and shaping opportunities*, describe the personality traits, attributes, and skills of the innovative educators. The educators are innovative, creative professionals who share many characteristics of innovative entrepreneurs identified in the research literature. They
combine entrepreneurial tendencies with the ability to identify, imagine, shape, and successfully implement new programs based on opportunities they identify in the external environment.

The third category, organizational dynamics, describes the organizational supports, conditions, and structures surrounding the innovators and their programs. The educators consistently cite supportive organizational structures and leaders that encourage entrepreneurial approaches and risk taking. Several of the educators express concern and frustration with what they describe as a lack of support from the broader organizational culture of CCE, and believe that their position of relative freedom and autonomy is not the norm for the overall CCE system.

**Discussion.** The data indicates that innovation in CCE begins with individual educators and evolves as they interact in a dynamic way with their organizations, and with the external environment. The preliminary theory, the ecology of innovation in CCE, refers to the relationships between the educators, the broader organization, and the participants in the programs, and how these dynamics are interrelated and evolving over time. The educators display attitudes and behaviors that align closely with research on innovative entrepreneurs from both the private and social sectors, including the willingness to accept risk and a strong intrinsic motivation to change the world in a positive way (Dyer et al., 2008; Lukes & Stephan, 2012; Sarason et al., 2003; Vasakarla, 2008).

Moreover, the educators demonstrate the ability to capitalize on these attributes and build successful programs reflecting the characteristics of social sector DI. The following three characteristics were particularly evident in the research findings:
1. Addressing a need that was not being served previously.

2. Attracting new resources, volunteers, or collaborators.

3. Developing a program that was not well aligned with the organizations current
dominant culture (Christensen et al., 2006).

The preliminary theory suggests that the relationship between the entrepreneurial
educators and the way they think about and approach opportunities is a symbiotic,
concurrent process, favoring action over passive observation. Sarason et al. (2006)
propose that entrepreneurship is a social undertaking that is best understood by looking at
the relationship between the innovator and the opportunity as a two way, dynamic, co-
evolutionary process. Sarason et al. portray entrepreneurs as agents of change who create
and shape opportunities just as much as they discover them. The results of this study
align with the perspective of Sarason et al. that opportunity emerges, and the innovation
process begins, when the innovator identifies something as an opportunity (Sarason et al.,
2006).

The educators and CE settings examined in this study do not align with the culture
of risk aversion and maintenance of the status quo cited by a number of CE scholars
(Franz & Cox, 2012; McDowell, 2001; Morse, 2009). The innovative educators in this
study appear to have found their way to positions and cultures within the broader
organization that support innovative, entrepreneurial approaches to Extension work. The
importance of breaking free from the established organizational culture tracks with key
aspects of Christensen’s original DI work.

The results align very well with Christensen’s (1997) finding that innovation is
more likely to develop and survive if the innovators are protected from the mainstream of
the organizations dominant culture and traditional business model. Although the educators in this study appear to fit with this core concept of DI theory, several educators did describe resistance to their approaches from the standpoint of mission fit and risk management concerns, as well as a lack of receptivity from colleagues involved in more traditional program approaches. Christensen found that long standing organizations with a history of success are very reluctant to move away from time tested markets and products, tending to focus on incremental improvements to existing products over DI. The final section discusses these issues in greater depth in the context of organizational leadership.

Leaders in CE and in the broader social sector face a difficult challenge. Organizations with a long history of success struggle to resist the tendency to focus on incremental improvements to existing approaches. Leaders are faced with the challenge of balancing the drive for innovation without abandoning the organizations mission and core values. The reviews of the literature for this study did not provide clarity regarding the role of organizational leaders in the innovation process. However, the research on DI and other major organizational change theories all point to leadership as a key cog in the process. Moreover, the results of this study reveal that the innovators felt supported by the leader they work with on a day to day basis, even if they felt some resistance to change from the broader organizational culture.

Overcoming the inertia that keeps organizations like CE on the same old path requires deliberate and courageous action on the part of leaders. Moreover, the actions needed to create and sustain change often run counter to their current beliefs about what it means to be an effective leader. The work of Porter O’Grady and Malloch (2011), and
Wheatley (2006), argues that the need for a new leadership paradigm runs deeper than simply responding more effectively to the rapid pace of technological change in the 21st century. Porter O’Grady and Malloch, and Wheatley, connect the need for a new leadership model to revolutionary discoveries in quantum physics that are changing the way we view the world.

Quantum physics is based on the concept of holism: the understanding that all parts of the organization are inexorably linked, resulting in an incredibly complex system that is deeply connected to the surrounding environment (Porter O’Grady & Malloch, 2011; Wheately, 2006). The consequence of this shift in thinking are enormous for individuals and organizations, and highly relevant to the findings of this study. Specifically, the top down, heavily bureaucratic approaches to management and organizational change that dominated the 20th century are proving to be ineffective in a world that is more competitive, diverse, and constantly transformed by technological innovation (Porter O’Grady & Malloch, 2011).

Moreover, as the innovators from this study demonstrate, organizational change and innovation are increasingly likely to emerge and be driven from the point of service delivery, not from the top of the organization. (Porter O’Grady & Malloch, 2011). The effective executive leader in this context seeks to build processes that create organizational trust and integrity and promote synergy around the mission, vision, purpose, and strategic goals (Senge, 2006). Senge (2006) described this approach as systems thinking: a framework that allows the leader to observe the larger system and the interrelationships among the parts instead of just focusing on isolated components.
Senge’s (2006) concept of systems thinking is a powerful framework for 21st century leadership. A system thinking approach can help leaders develop the ability to temporarily step away from the chaos of their surroundings, objectively examine their mental models, and look for the patterns and opportunities that emerge when you approach a problem from a higher elevation view. Adopting this broader, more holistic perspective, what Porter O’Grady and Malloch (2011) call quantum leadership, can lead to re-framing and the discovery of new courses of action, including disruptive innovation.
References


Appendix A

Cornell University IRB Approval

Institutional Review Board for Human Participants

NOTICE OF EXPEDITED APPROVAL

To: Andrew Turner
From: Carol Devine, IRB Chairperson
Protocol ID#: 1502005323
Protocol Title: Dissertation Research fo St. John Fisher College Ed. D. Program in Executive Leadership
Approval Date: April 23, 2015
Expiration Date: April 22, 2016

Cornell University’s Institutional Review Board for Human Participants (IRB) has reviewed and approved the inclusion of human participants in the research activities described in the protocol referenced above. This approval shall remain in effect until April 22, 2016.

The following personnel are approved to perform research activities on this protocol:

° Andrew Turner

This approval by the IRB means that human participants can be included in this research. However, there may be additional university and local policies that apply before research activities can begin under this protocol. It is the investigator’s responsibility to ensure these requirements are also met.

Please note the following important conditions of approval for this study:

1. All consent forms, records of study participation, and other consent materials must be held by the investigator for five years after the close of the study.
2. Investigators must submit to the IRB any proposed amendment to the study protocol, consent forms, interviews, recruiting strategies, and other materials. Investigators may not use these materials with human participants until receipt of written IRB approval for the amendment. For information about study amendment procedures and access to the Amendments application form, please refer to the IRB website: http://www.irb.cornell.edu/forms.
3. Investigators must promptly report to the IRB any unexpected events involving human participants. The definition of prompt reporting depends upon the seriousness of the unexpected event. For guidance
Appendix B

St. John Fisher IRB Approval Letter

April 1, 2015

Andrew Turner
St. John Fisher College

Dear Mr. Turner:

Thank you for submitting your research proposal to the Institutional Review Board.

I am pleased to inform you that the Board has approved your Expedited Review project, “Identifying the Building Blocks of Disruptive Innovation in Cornell Cooperative Extension: A Qualitative Inquiry.”

Following federal guidelines, research related records should be maintained in a secure area for three years following the completion of the project at which time they may be destroyed.

Should you have any questions about this process or your responsibilities, please contact me at irb@sjfc.edu.

Sincerely,

Eileen Lynd-Balta

Eileen Lynd-Balta, Ph.D.
Chair, Institutional Review Board

ELB:jdr
Appendix C

St. John Fisher Informed Consent Form

Title of Study: The Building Blocks of Disruptive Innovation in Cooperative Extension: A Qualitative Inquiry.

Name of Researcher: Andrew S. Turner

Faculty Supervisor: Dr. C. Michael Robinson - 315-498-7237(o) or 585-738-3567(c) crobinson@sjfc.edu

Purpose of Study: To identify current Cornell Cooperative Extension programs that align with criteria of a social sector disruptive innovation and to explore through qualitative methods the building blocks that are supporting the development of these innovative programs.

Location of Study: Cornell University and NYS communities.

Risks and Benefits: There are no obvious risks. The benefits include calling greater attention to an organizational success. The results of the study may support program improvement and replication.

Confidentiality: The participants in the study will not be confidential, however any statement made during an interview that the interviewee would like to remain confidential for any reason will remain confidential in the reporting of the data.

Your Rights: As a research participant, you have the right to:
1. Have the purpose of the study, and any risks and benefits, explained to you prior to your participation.

2. Withdraw from participation at any time without penalty.

3. Refuse to answer a particular question without penalty.

4. Be informed of the results of the study.

I have read the above, received a copy of this form, and I agree to participate in this study.

___________________  __________________ _________________
Print Name (Participant)  Signature   Date

___________________  __________________ _________________
Print Name (Researcher)  Signature   Date

If you have any further questions regarding this study, or experience any physical discomfort due to participation in this study, please contact the researcher, Andrew S. Turner at the following email and/or phone number:

607-255-9820

Ast04374@sjfc.edu

The researcher will refer you to appropriate Health and Wellness support that is available to you. The Institutional Review Board (IRB) of St. John Fisher College has reviewed
this project. For any concerns regarding confidentiality, please call Jill Rathbun 585-385-8012. She will direct your call to a member of the IRB at St. John Fisher College.
Appendix D

Interview Questions for Phase Two of Data Collection

1. Please describe the target audience for the program. What were the main factors that led you to focus on this audience?

2. Do you feel the program is appealing to this target audience or customer? If so, why?

3. Has this program brought new resources, volunteers, or collaborators to the Association? If so please describe.

4. Has the program created any unforeseen challenges? If so, please describe.

5. How well is the program connected to other Association major program efforts?
Appendix E

Interview Guide for Program Architects

Context

At this point you have identified your innovators. You are trying to create a comfortable, relaxed environment that will help them feel at ease and willing to share their story. The details of the program are important but equally important is to learn about them. How did they do this? What were the driving factors? What is the organizational context that inhibited and/or supported the development of the program? How do they view risk? What sort of person are they? What drives them?

Questions

1. Tell me about your career. How did you end up in the position you have now?
2. How did this program/approach/innovation get started?
3. Can you talk about how you decided to approach it this way? What were there driving factors?
4. Tell be about the target audience. Was this a new audience and/or really new approach for the organization? What factors led to identifying this target audience?
5. Thinking about the target audience again. What are the main factors driving their participation? What do you think they like about this approach?
6. Tell me about any major challenges or obstacles you encountered early on as you began developing this? How did you overcome them?
7. Talk about any major risks in the approach you have taken with this program/innovation? What kept you up at night early on?
8. How would you describe your own orientation towards risk?

9. How would you describe CCE’s overall orientation to risk and innovation?

10. Can you describe the main factors that you feel are allowing this work to carry on? What are the main factors helping to sustain this approach?

11. How do you think this program/approach/innovation is perceived by your peers and the larger organization?

12. Are there elements of this approach/innovation that you think could be applied more broadly in CCE or Cooperative Extension in other States? What do you think the barriers might be to expanding this approach more widely?

13. Can you talk about what your motivations are to do the work you do?

14. Where do you see this program in five years?

15. Please share any additional information about the program and your experience implementing it that you feel I should be aware of.
# Appendix F

## Focus Group Participants

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Celeste Carmichael</td>
<td>Program Development and Accountability Specialist</td>
</tr>
<tr>
<td>Adam Davis</td>
<td>4-H Extension Support Specialist</td>
</tr>
<tr>
<td>Kimberly Fleming</td>
<td>Professional Development and Volunteer Specialist</td>
</tr>
<tr>
<td>Katherine Bunting-Howarth</td>
<td>Director, New York Sea Grant Institute</td>
</tr>
<tr>
<td>Kimberly Kopko</td>
<td>Associate Director, Extension and Outreach, College of Human Ecology</td>
</tr>
<tr>
<td>Peter Landre</td>
<td>State Extension Specialist</td>
</tr>
<tr>
<td>Alexa Maille</td>
<td>4-H STEM State Specialist</td>
</tr>
<tr>
<td>Paul O’Connor</td>
<td>Assistant Director, State Extension Specialist</td>
</tr>
<tr>
<td>Jamila Walida Simon</td>
<td>4-H Civic Engagement State Specialist</td>
</tr>
<tr>
<td>Jennifer Tiffany</td>
<td>Director, Cornell University Cooperative Extension, New York City</td>
</tr>
</tbody>
</table>
Appendix G

Complete List of Programs Identified During Focus Group Sessions

(Bold indicates the program was mentioned at least twice)

1. **Finger Lakes Region High Tunnel Work with Amish and Mennonite Farmers** – Judson Reid.
2. Western New York Drone Application with Field Crops – Mike Stanyard.
6. **New York City Hydroponics Project at Food and Finance High School** – Philson Warner.
7. Cornell PROSPER Program in Livingston, Schuyler and Tompkins Counties – Multiple Educators.
8. NYS Sea Grant Teacher Training – Helen Domsky.
9. NYS Sea Grant Crude Oil Project – Susan Christopherson.
10. The Innovation in large CCE Associations (Jefferson, Madison/Oneida, Suffolk and Tompkins).
11. Double Up Food Coupon Harvest NY Program in Western NY – Cheryl Thayer.
14. NY Small Farms Program at Cornell, Beginning Farmer Online Training.
15. New York City and Broome County Approaches to 4-H Youth Development,
   Engaging with Urban Teens – June Mead, Jackie Davis Manigaulte and
   Lucinda Benjamin.


19. Primitive Pursuits – CCE Tompkins County.


21. Taste NY Store in Dutchess County – CCE Dutchess.

22. Master Forest Owner Program (statewide) – Peter Smallidge.


24. Rural Youth Services Program – CCE Tompkins.

25. Smart Girls/Smart Clothes – Charlotte Coffman.

26. CCE Summer Internship Program – Statewide Program Initiated on Campus.
### Appendix H

List of CCE Program Architects Interviewed for Phase Three

<table>
<thead>
<tr>
<th>Educator Name</th>
<th>Program Name and Location</th>
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<tbody>
<tr>
<td>Lucinda Benjamin</td>
<td>Innovative 4-H Programming in New York City</td>
</tr>
<tr>
<td>Tim Drake</td>
<td>4-H Primitive Pursuits, Tompkins County</td>
</tr>
<tr>
<td>Matt LeRoix</td>
<td>Meat Locker/Meat Suite, Tompkins County</td>
</tr>
<tr>
<td>Jackie Davis-Manigaulte</td>
<td>Innovative 4-H Programming in New York City</td>
</tr>
<tr>
<td>June Mead</td>
<td>Innovative 4-H Programming, Broome County</td>
</tr>
<tr>
<td>Judson Reid</td>
<td>Ag Programming Amish/Mennonite Farmers, Finger Lakes</td>
</tr>
<tr>
<td>Monica Roth</td>
<td>Ithaca Children’s Garden, Tompkins</td>
</tr>
<tr>
<td>Philson Warner</td>
<td>Aquaculture/Hydroponics, New York City</td>
</tr>
<tr>
<td>Tristan Zuber</td>
<td>Dairy Workforce Development, Western, NY</td>
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**Appendix I**  
**Complete List of Codes by Transcript – Phase One of Data Analysis**

<table>
<thead>
<tr>
<th>Initial Codes from Transcript #1</th>
<th>Initial Codes from Transcript #2</th>
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<tbody>
<tr>
<td>Emerging Needs</td>
<td>Gratitude</td>
</tr>
<tr>
<td>Supportive Leadership</td>
<td>Worked in Industry</td>
</tr>
<tr>
<td>Fortunate Series of Events</td>
<td>Visioning</td>
</tr>
<tr>
<td>Opportunity Emerges</td>
<td>Supportive People</td>
</tr>
<tr>
<td>Pursuing and Interest and Passion</td>
<td>Responding to Demographic Change</td>
</tr>
<tr>
<td>Programming hast to be High Quality</td>
<td>Giving Back</td>
</tr>
<tr>
<td>Cultural Sensitivity</td>
<td>Development of CYFAR</td>
</tr>
<tr>
<td>Education Based on Relationships</td>
<td>Supportive Leadership</td>
</tr>
<tr>
<td>Freedom to Make Mistakes</td>
<td>I’m a Risk Taker</td>
</tr>
<tr>
<td>Real People, Real Families</td>
<td>When in Doubt say yes</td>
</tr>
<tr>
<td>I am more of a Risk Taker</td>
<td>Yearning for Connection</td>
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<tr>
<td>Risk Aversion and CCE</td>
<td>Youth Needs</td>
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<tr>
<td>A Resource Statewide and Nationally</td>
<td>High expectations and reciprocity</td>
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<tr>
<td>I like Helping People</td>
<td>A Real partnership</td>
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<tr>
<td></td>
<td>Funding Challenges</td>
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<tr>
<td></td>
<td>Institutionalizing and Expanding</td>
</tr>
<tr>
<td></td>
<td>Personal Motivation</td>
</tr>
</tbody>
</table>


Initial Codes Transcript #3

Always Wanted to do Youth Work
Benefit Low Income Children
Holistic Approach
Work with Parents and Communities
I Loved the Mission
Credibility
Broaden Their Perspective
Never Been a 9-5 Operation
Can’t be Everything to Everybody
They Didn’t Want to Leave
Teens as Teachers Model
Youth Leadership
Mandela
You have to be Part of the Environment
Being Part of Key Groups
They Have to See you as Valuable
Getting Out of the Office
Can’t Be All Things to All People
Transition Planning
I Bring a Lot of Cache
Comfort with Risk
Caring Environment

Initial Codes Transcript #4

U.S. Falling Behind
Hydroponics Can Help
Importance of Experiential Learning
Experience Abroad
Taking it to the Next Level
Instant Gratification
Has to be the Real Stuff
Getting Teacher Buy-In
Importance of Custodial Staff
Lab Innovation
Open to Change and Taking Chances
Supportive Environment
Protecting the Integrity of the Technology
Motivating Student Success
Resources Needed for Expansion
Support from Elected Officials
Vision
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Initial Codes Transcript #7
Responding to Shifting Needs
Recognizing and Shaping Opportunities
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Drawing Families In
Program Growth
Innovation leads to Innovation
Internal Challenges
What the Consumers Like
Addressing and Attracting Diversity
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Initial Codes Transcript #9
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Applying the Concept to Meat
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Initial Codes Transcript #8
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Growth of the Model
Science Coming Alive
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What Brings the Youth Back to the Program
Positive Youth Development
You Have to Hold Up a Mirror
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Transcript #9 Continued
Risk Aversion
An Experiment that Might Fail
Living on the Edge
Innovation in CCE More Broadly
Spinning off the Meat Locker
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Big Picture Motivation
Internal Challenges to Innovation
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Results of Cycle Two Coding Process

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<td>Innovation leads to innovation</td>
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<td>Internal challenges with risk management</td>
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