

# An effectual leadership perspective for developing rural entrepreneurial ecosystems

Morgan P. Miles  · Mark Morrison

Accepted: 23 November 2018 / Published online: 5 December 2018  
© Springer Science+Business Media, LLC, part of Springer Nature 2018

**Abstract** This study articulates the importance of an entrepreneurial method approach to leadership, relevant contextual issues, and policy implications for developing entrepreneurial ecosystems in a rural context. The entrepreneurial method is proposed as the foundations of a new leadership style to facilitate the creation and success of rural entrepreneurial ecosystems. The contextual issues that make rural entrepreneurial ecosystems unique include the critical need for entrepreneurial leadership in their creation and development; the role of entrepreneurial social infrastructure in enabling and supporting development; the need to leverage networks and virtual platforms to access markets, knowledge, and funding; the scarcity of and need to develop enterprising individuals; the role of institutions and supportive governance; and the importance of natural capital.

**Keywords** Entrepreneurial method · Effectuation · Rural entrepreneurship · Entrepreneurial ecosystems

**JEL classifications** L26 · L22 · L29

---

This paper is largely drawn from the paper *The Elements of Entrepreneurial Ecosystems in Regional Areas and Options for Their Development* written by the authors and presented at the Startups and Regional Ecosystems Challenge at the Sustainable Economic Growth for Regional Australia (SEGRA) Conference, Albany, Western Australia, 24–26 October 2016.

---

M. P. Miles (✉) · M. Morrison  
Charles Sturt University, Bathurst, Australia  
e-mail: mmiles@csu.edu.au

## 1 Introduction

There is no consensus on one definition of entrepreneurial ecosystems that offers a consistent set of objectives, the scale of analysis, attributes, actors, or processes (Malecki 2018). Spigel (2017) suggests, and Spigel and Harrison (2018: 153) note, that there may be confusion “about the exact mixture of elements constituting an entrepreneurial ecosystem.” For this manuscript, we adopt Audretsch and Belitski’s (2017: 1031) definition that entrepreneurial ecosystems are

We define systems of entrepreneurship (further ecosystem) as institutional and organizational as well as other systemic factors that interact and influence the identification and commercialization of entrepreneurial opportunities. Systems of entrepreneurship are geographically bounded, e.g., Austin, Texas, Cambridge and Oxford in England, Boston area in Massachusetts, Aalto in Finland serve as an example of cities with thriving entrepreneurial ecosystems. Indeed regulation, institutions and norms, infrastructure, city amenities, access to finance and demand vary largely between regions and cities where new ideas and knowledge reside...

Audretsch and Belitski’s (2017) definition is a useful conceptualization when considering rural entrepreneurial ecosystems as it includes all forms and stages of organizations from start-ups to the strategic renewal of corporations, is grounded on place, and importantly takes into account the entrepreneurial process of

opportunity identification and exploitation (Shane and Venkataraman 2000).

Rural entrepreneurship and the ecosystems that support it have long been recognized as a practical path for rural development but also as distinct from urban entrepreneurial ecosystems (Acs and Malecki 2003; Fortunato 2014; Markley et al. 2015). Pato and Teixeira (2016: 6) define rural areas as follows:

...rural spaces extend over regions and areas presenting a variety of activities and landscapes that comprise natural countryside, farmland, villages, small towns, regional centers and industrialized rural areas and incorporate a wide range of activities like farming, commerce, services and small and medium industries.

Given their context, rural entrepreneurs face unique challenges relating to geographical, social, institutional, and market access conditions, often resulting in constraints on entrepreneurship and economic growth (Hoy and Vaught 1980; Wortman 1990; Markley et al. 2015). In contrast to urban ecosystems, which according to Dubini (1989) are more likely to be “munificent” environments for entrepreneurship, rural ecosystems tend to be “sparse” environments for entrepreneurship. Rural ecosystems are often characterized by fewer resources such as infrastructure and human capital; less access to finance, government support programs, and information spillovers; more costly access to large markets; less diversity of economic activity; and less access to the benefits from immigrant entrepreneurship (Dubini 1989; Bosma and Sternberg 2014). Consequently, the type of entrepreneurship found in rural ecosystems is less likely to be opportunity-driven (Bosma and Sternberg 2014) and is more likely to be necessity-driven (Dubini 1989; Bosma and Sternberg 2014). We propose that these challenges faced by rural entrepreneurs can sometimes be ameliorated by leaders employing Sarasvathy and Venkataraman’s (2011) entrepreneurial method (e.g., Adhikar et al. 2018). We use the creation of North Carolina’s Research Triangle Science Park (RTP) as an example of how critical leadership is in creating an entrepreneurial ecosystem (Link 1995; Link and Scott 2003; Leyden and Link, 2013).

Link’s (1995) discussion of the establishment of the RTP is consistent with the views of Roundy (2017a: 238) that the leaders of “Small Town” entrepreneurial ecosystems whose areas are missing some of the key

components found in urban ecosystems have options to “bolster these deficiencies” and may need to be “entrepreneurial in the way they attract, view and utilize resources.” For example, Link (1995: 14–15) notes that prominent North Carolinian John L. Ponzer states that

Romeo Guest and I were having a drink one afternoon before a Carolina Power and Light Company meeting at the [Richmond County] Country Club [in Rockingham in the early 1950s]. We were discussing some infrared heating tests being conducted at Duke University. I distinctly remember making the following remark: “With all the technical know-how and research at N.C. State Schools of Engineering and Textiles plus Duke’s Engineering School it appears that they would find a way to dray a string that had been immersed in a starch solution (textile warp) as few things are impossible these days with research.” Romeo replied: “I agree and I am glad to know your feelings as I have been giving some thought to a similar idea. We need a Research Center to help the textile boys.” We then discussed the possibilities of a joint venture by Duke and State. We also discussed the possibilities of including Carolina and Wake Forest [Wake Forest University, now located in Winston-Salem, was originally located in Wake Forest, North Carolina]. We finally agreed that Duke, Carolina, and State offered the greatest potential and could be called the Research Triangle Center.

Link (1995: 15) clarifies this by stating that

The Triangle idea was simple, the three universities would act as a magnet to attract research companies into the area, and this, in turn, would lead to the development of new industries throughout the state.

Leadership like that of Romeo Guest in the creation of the RTP that creates opportunities for rural communities to pursue economic development through entrepreneurship can be conceptualized as an application of Sarasvathy and Venkataraman’s (2011) entrepreneurial method—an alternative paradigm to the scientific method and based on the application of Sarasvathy’s (2001) effectual approach to the pursuit of attractive opportunities.

This adaptive, opportunity-seeking effectual style of leadership proposed employs Sarasvathy and

Venkataraman's (2011) entrepreneurial method, which we term effectual leadership (EL). EL suggests that leadership follows a process where the enterprising leader(s) use an effectual approach to create or discover attractive opportunities by proactively leveraging innovation and risk (Shane and Venkataraman 2000; Sarasvathy 2001; Sarasvathy and Venkataraman 2011). EL occurs when leaders first consider their "means" such as (1) who they are, (2) what do they know, and (3) who do they know (Sarasvathy 2001). Then, EL processes help rural community leaders recognize, assess, and exploit contingencies and create partnerships to shape the community's future to constructively pursue opportunities. For EL to be legitimate, ethical safeguards must be in place to inhibit self-serving behavior or conflicts of interest through an open process of strategic conversations that transparently operates in the collective interest of all stakeholders (e.g., Miles et al. 2006; Miles et al. 2016).

In most rural contexts, EL will be a form of distributed leadership through a collective social process that involves not a single leader but a "group or network of interacting individuals" with expertise "distributed across the many, not the few" (Bolden 2011: 257). It seeks to stimulate the process and create a conducive environment for what Johannisson and Nilsson (1989) describe as community entrepreneurship, which involves "inspiring and assisting individuals and communities to start their own businesses and take control of their own destiny" (McKeever et al. 2015: 59). In the context of developing rural entrepreneurial ecosystems, especially those areas that are depleted, the use of EL will often be motivated by a commitment to place (McKeever et al. 2015). Consequently, EL can share some of the characteristics of servant leadership, such as entrepreneurs acting for the benefit of the community, particularly where their focus is the establishment of community-owned enterprises or supporting the growth of other businesses (Roundy 2017a; Sendjaya and Sarros 2002). However, the methods of EL need not always follow the principles of servant leadership (e.g., serve others first). EL, as applied to rural entrepreneurial ecosystem development, is illustrated in Fig. 1 and discussed throughout the remainder of the paper.

## 2 Purpose

First and foremost, rural entrepreneurial ecosystems are *place-based* (Audretsch 2015), similar to the nineteenth century frontier entrepreneurial ecosystems where wealth was primarily based on the exploitation and processing of natural capital endowments such as row cropping, logging, or mining (Miller and Acs 2017). However, effective opportunity exploitation now also requires access to knowledge, technology, and markets (Jenson et al. 2016). Thus, the purpose of this study is to articulate how EL is a useful approach for community leaders to develop rural entrepreneurial ecosystems. In doing so, Stam's (2015) model of entrepreneurial ecosystems is used as our conceptual foundation and adapted to reflect the diversity and challenges of a rural context better.

## 3 A conceptual model of rural entrepreneurial ecosystem development

Stam (2015) argues that the factors that make up an entrepreneurial ecosystem remain mostly the same at all levels of analysis, from a national level to a metro/urban area, to a rural region. While Stam's (2015) typology offers a generalized model of entrepreneurial ecosystems, five additional contextual differences must be considered when attempting to employ it in a rural context. First, Stam (2015) understates an important condition required for a rural entrepreneurial ecosystem to facilitate productive entrepreneurship—that of effective entrepreneurial leadership (Markley et al. 2015; McKeever et al. 2015). Rural communities need the impetus of EL to foster their emerging entrepreneurial ecosystem (Adhikar et al. 2018). Rather than being a systemic factor, as in Stam's (2015) urban-centric model, leadership in rural entrepreneurial ecosystems is typically the stimulus required to drive the establishment and growth of the ecosystem.

Second, Stam's (2015) framework conditions are exogenous to market demand, although he does describe it as "more or less" exogenous, suggesting it may not always be exogenous. Market demand in rural economies is often systemic and must be created or developed, often through market creation initiatives (Darroch and Miles 2011), as well as having a local or framework aspect. Thus, we consider that for rural entrepreneurial

### Effectual leadership processes applied to rural ecosystem development



**Fig. 1** Effectual leadership processes applied to rural ecosystem development. 1: Adapted from Sarasvathy (2001), Sarasvathy and Venkataraman (2011), and Shane and Venkataraman (2000)

ecosystems, demand is both a framework and a systemic condition through access to external markets.

Third, for entrepreneurship to occur in any context, there always must be an *enterprising individual* (Shane and Venkataraman 2000). That is, the entrepreneurial actor who sees opportunities either as (1) Kirznerian—by recognizing the opportunity to move inefficient markets towards general equilibrium through innovation that makes the business more efficient, effective, and profitable or (2) Schumpeterian—by recognizing opportunities to disrupt the existing market equilibrium through innovation and the process of “creative destruction” and then taking the personal initiative to do so (Campos et al. 2017).

Lichtenstein and Lyons (2001: 4) argue that, “A region’s supply of entrepreneurs cannot be taken for granted” while Lichtenstein et al. (2004: 15) contend that a fundamental shortcoming of enterprise development in the USA is that “no-one in the community is responsible for the community’s supply of entrepreneurs.” Lichtenstein and colleagues (Lichtenstein and Lyons 2001, 2006; Lichtenstein et al. 2004) emphasize the need for an entrepreneurial pipeline that seeks to influence the quantity and quality of entrepreneurs in the community. Development of these entrepreneurial pipelines is crucial for rural areas. While Stam (2015) incorporates various framework conditions such as culture and demand that encourage entrepreneurial activity, he does not explicitly

include this most essential actor in the entrepreneurial ecosystem. Consequently, in rural contexts, focused efforts are often required to stimulate latent entrepreneurship through developing personal initiative, encouraging a positive culture for starting businesses, and creating processes that support the creation of start-ups, thereby building the number of active entrepreneurs (e.g., Campos et al. 2017).

Fourth, Stam (2015) fails to incorporate what it is often the most distinct factor in rural regions, that of regional *natural capital endowments* (Wortman 1990; Emery and Flora 2006). These include (1) sub-soil assets, (2) soil-based capitals, (3) natural and heritage areas, and (4) geographic remoteness or proximity (Hamilton et al. 2005).

Fifth, the nature of social capital and networks are different in rural contexts. In rural communities, network size is much smaller than in urban areas, while network depth is typically much greater than in urban areas. While this may seem to be indicative of higher social capital in rural areas, it may have negative consequences for communities' willingness and ability to change and develop. According to Flora and Flora (1993) and Flora et al. (1997), in rural areas, the higher density of network ties and role homogeneity (i.e., when community members interact across a variety of settings) can limit symbolic diversity and lead to the development of hierarchical social capital rather than quality networks and effective resource mobilization. In rural contexts, social embeddedness is more nuanced than in an urban context, and the social dimension of a supportive entrepreneurial ecosystem cannot be considered solely in terms of network size. Hence, we reconceptualize the systemic condition of networks for rural ecosystems as *entrepreneurial social infrastructure*.

A proposed model presented in Fig. 2 adapts Stam's (2015) work to reflect better the factors necessary for the development of a rural entrepreneurial ecosystem by explicitly including natural capital and enterprising individuals and emphasizing the critical role of effectual entrepreneurial leadership in driving ecosystem development. Also, through leveraging networks and digital communication, education, marketing, and funding platforms, rural entrepreneurs can effectually access external sources of finance, knowledge, and market demand.

Hence, because they can be influenced through EL in our model of rural ecosystems, one of Stam's (2015) framework conditions, demand, and three of Stam's (2015) systemic conditions, networks, knowledge, and

finance are reconceptualized as systemic—network-accessible conditions. These framework and systemic conditions can lead to outcomes such as viable businesses and jobs and can be influenced by a range of development activities that are described later in the paper. This model seeks to clarify the role and importance of EL to the establishment and viability of rural entrepreneurial ecosystems, through the implementation of activities that influence systemic conditions within the entrepreneurial ecosystem. A summary of the three main activities related to EL is presented in the first column of the model—involving coordination, support for existing businesses, and support for start-ups. In this model, these EL activities are the driving force behind improved ecosystem outcomes. Completing these activities influences the development of the *systemic—local* and the *systemic—externally accessed* ecosystem conditions which are shown in the second column. Improvements in these systemic conditions in turn influence outcomes listed in the third column such as more businesses, jobs growth, income, quality of life, and place identity. Moreover, as these outcomes develop—such as more local businesses and quality entrepreneurs who have strong external connections and are more able to support newly developing businesses—they often have a recursive and reinforcing effect on the systemic conditions in the model.

#### 4 Entrepreneurial method leadership and the creation of rural entrepreneurial ecosystems

An example of an implicitly entrepreneurial method leadership approach to ecosystem development is how North Carolina's Research Triangle Park (RTP) was created. Following Fischer et al. (2017: 1726), we acknowledge that “in organizational research, studying processes is important.” To attempt to post hoc describe the process of the creation of the RTP, we draw examples from Link and colleagues' published work (Link 1995; Link and Scott 2003; Leyden and Link 2013). In the 1950s, the state was suffering from a rapidly declining industrial base, increasing poverty rates and restricting economic opportunities (Audretsch 2015). As discussed by Link (1995) and Link and Scott (2003), the transition of an economy dependent on tobacco and textiles to the creation of the largest science research park in the USA started by the efforts of North Carolina's state treasurer Brandon P. Hodges, Robert



### Model of Rural Entrepreneurial Ecosystem Development

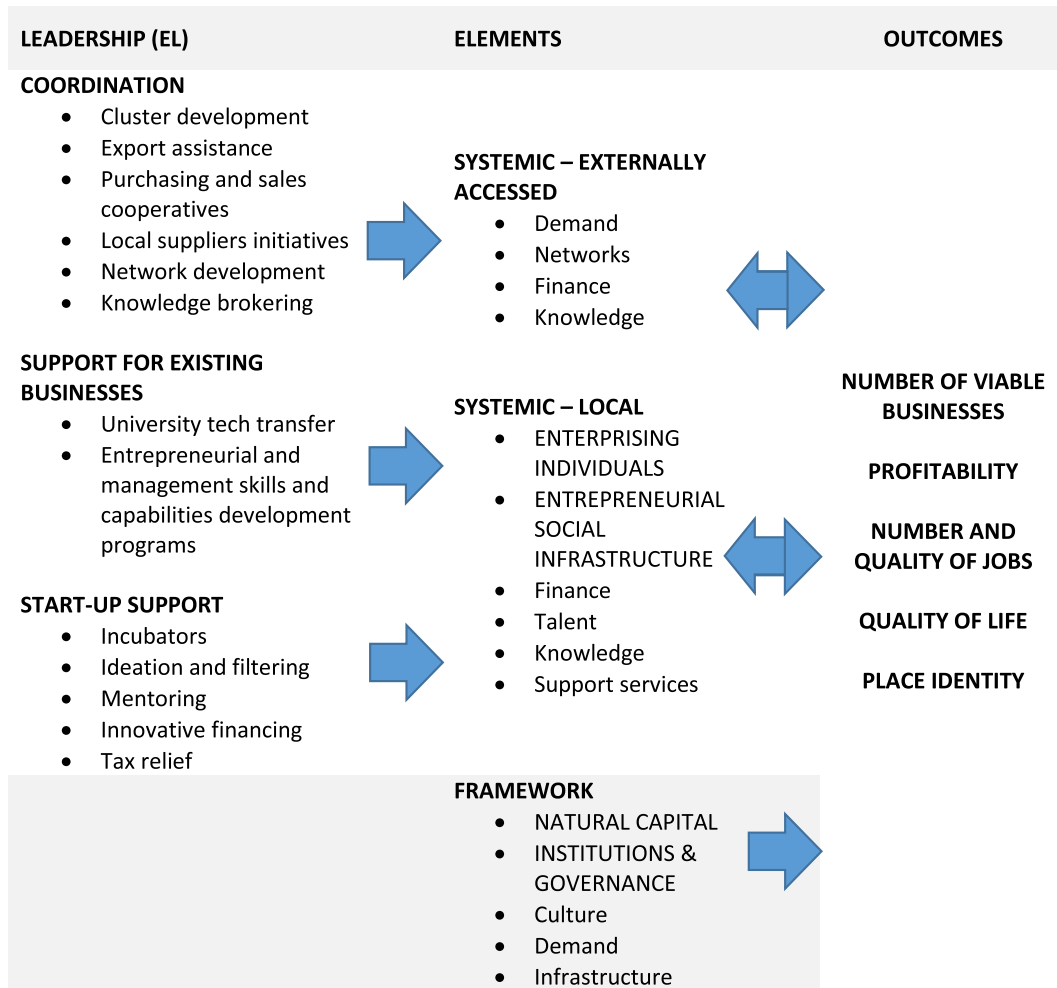


Fig. 2 Model of rural entrepreneurial ecosystem development

Haines, president of Wachovia Bank and Trust, and most critically, Romeo Guest, a local building developer who all were concerned about the state’s bleak economic prospects. Over time, these three leaders were able to convince the state’s governor to bring the three major universities in the state together with a land development group to attract R&D departments of large corporations to move to central North Carolina.

To do this, these three community leaders first considered their means that included (1) who they were—a banker, a bureaucrat, and a real estate developer; (2) what they knew—they were located in the political, education, and geographic center of North Carolina with good transportation infrastructure, relatively cheap real estate, three excellent research universities, and strong

social, environmental, financial, and political community capitals—all factors considered useful for attracting businesses and Federal Government investment to the region; and (3) who they knew—most of the prominent political, community, and corporate leaders (Emery and Flora 2006; Link 1995; Link and Scott 2003). The EL processes as post hoc applied to the case of the creation of the RTP is illustrated in Table 1. These three leaders convinced the Governor of North Carolina to ask the president of N.C. State University, Dr. Bostian, to write an “an objective assessment of the idea of a research park in North Carolina” (Link 1995: 19).

Romeo Guest then met with the remaining two university presidents, Dr. Grey of the University of North Carolina and Dr. Edens, president of Duke University, to

**Table 1** Illustrating EL using the example of the establishment of the Research Triangle Park<sup>a</sup>

Effectual leadership <sup>b</sup>	Romeo Guest—Prominent contractor, real estate developer	Brandon Hodges—State of North Carolina Treasurer and Prominent Political Leader	Robert Haines—President of the state's largest and most powerful bank – Wachovia Bank and Trust
Who they were and why they have adopted a leadership position	He was a contractor and developer who saw that corporations were locating R&D facilities around MIT, Harvard and the University of Virginia. He likely saw this as an attractive entrepreneurial opportunity that he could exploit through his social and business networks as Link (1995: 13) notes: "He thought that if he could be involved in helping a company locate a site and move to North Carolina he would have an inside track on buildings its facility (Harper 1991). It had always been Guest's practice not to bid on construction contracts. If he did not receive a non-competitive contract, he simply would not bid."	A powerful and connected politician who was concerned about the economic situation of the state	The most powerful and politically connected banker in the state who could see as the state prospered so would his bank.
What do I know	The value of networking and building consensus to gain advantage through profitable partnership	Economics, the state's economic situation, and what incentives the government could provide to business who did locate to the state	Banking, economic development, and power
Whom do I know	Politicians, business leaders, and university leaders. Everyone that mattered in North Carolina at that time	All of the state's top executives including the Governor	Politicians, business leaders, and university leaders. Everyone that mattered in North Carolina at that time

<sup>a</sup> All examples are drawn from Link (1995), Link and Scott (2003) and Leyden and Link (2013)

<sup>b</sup> Sarasvathy (2001)

seek their support. Guest was able to create a partnership between the three universities effectually and then leverage the networks of the banker, the politician to lobby for the establishment of a formal governance organization, the Research Triangle Development Council chaired by Robert Haines, president of Wachovia Bank and Trust, which evolved to become an organization charged with developing the infrastructure of the RTP (Link 1995). However, creating these partnerships was not always straightforward. According to Bauer (2014: 56), university administrators were concerned about being at the "beck and call" of industries, and William Carmichael, UNC-Chapel Hill administrator at one point responded that Guest and the other RTP proponents wanted "the professors here and all of us to be the prostitutes and you're going to be the pimp." Resolving these concerns required government officials to act as liaisons between business leaders and the three universities. Thus, Guest and other business leaders were able to leverage the relationships that were

available to achieve tri-partisan support for the RTP between business, government, and universities.

By 1959, Chemstrand corporation announced plans to relocate to the RTP due to "the proximity of three major universities and ... the overall quality of life" in the area (Link 1995: 79). Subsequently, in 1965, a major federal research institution, the Environmental Health Science Center, announced it would locate at the RTP, and this then was leveraged to attract other major organizations resulting in more than 34,000 R&D jobs (Link 1995). From the beginning, the park's leadership simply tried to create a new future based on their community's capital strengths, their knowledge, and their networks. However, they also acted entrepreneurially to develop their community capitals and to create a more business-friendly environment in the RTP. Governor Hodges to attract corporations to the North Carolina and its RTP enacted legislation that (1) reduced corporate taxes, (2) funded construction of what become US Interstate 40 to enhance access to the park (US Interstate 40), and (3)

formed a state development bank to provide subsidized corporate finance (Bauer 2014). Since the establishment of the RTP, entrepreneurial leaders have continued to promote and extend opportunities to others within the region, including nascent entrepreneurs, innovated with organizational models to ensure government support for specific industry sectors, and developed innovative strategies to attract finance from both inside and outside the region (Lowe and Feldman 2017).

Stam (2015: 1766) suggested that leadership requires a “set of ‘visible’ entrepreneurial leaders who are committed to the region” and “provide direction and role models for the entrepreneurship ecosystem.” Stam (2015: 1761) suggested that this involves a “privatization” of entrepreneurship policy, in which entrepreneurs themselves become the “central players (leaders) and the role of government is decreased to more of a feeder of the ecosystem than as a ‘leader.’”

In practice, leadership is expressed in the development of an entrepreneurship ecosystem in a number of ways. Leadership is needed to develop: (1) networks, (2) support programs (e.g., business support programs, incubators etc.), (3) infrastructure, and (4) an entrepreneurial culture (Haines 2016). Further, leadership can work with businesses to access external demand through assisting in developing regional or international exporting capacity, including through assistance in participating in the digital economy, assistance in accessing supply chains, helping businesses work together in sales cooperatives, and helping to develop export-focused business clusters. In rural entrepreneurial ecosystems where people are often more dispersed, EL is required to assist with the coordination and marshaling of resources. Typically, this involves making businesses aware of what resources and capabilities are available, the opportunities that can jointly be pursued, and how to exploit them.

However, in many rural areas, leadership is a resource in short supply—there are often few large organizations, entrepreneurs, or other stakeholders with the capabilities to lead the process of entrepreneurial ecosystem development. Therefore, in a rural context, government, universities, and research institutions often are needed to lead efforts to develop the framework and systemic conditions of their entrepreneurial ecosystems, which implies the need for a model of distributed leadership. This form of distributed leadership model needs to have representatives from businesses and multiple

other organizations and agencies working together to support and oversee the development of the ecosystem is consistent with the views of Isenberg (2011). Isenberg (2011: 12) recommends that such a group develop and oversee a team of “entrepreneurial enablers” who will work to develop the ecosystem:

Leaders need to create a brand new team of what I call “entrepreneurship enablers.” They should not be “owned” by the government, by a university, or by an incubator or support organization, but by representatives of all. They should be a S.W.A.T. team empowered to succeed and resourced with everything needed to do so, and with effective professional supervision.

Thus, despite the calls of Stam (2015) for ecosystem development to be entrepreneur-led, there is a role for government to play, and it is evident that successful entrepreneurial ecosystems typically have enjoyed substantial government/public investment in both urban and rural communities (Lerner 2010). In rural communities, this need is arguably greater. In the USA, there are examples of place-based rural entrepreneurship support organizations that are effective (Markley et al. 2015). For example, in 2001, the state of Kansas strategically launched a program based on Sirolli’s (1999) enterprise development model in several rural communities, which led to the more widespread adoption of entrepreneurship as a rural development strategy. Markley et al. (2015: 587) described their “Entrepreneurial Communities Framework” as being a framework for building the capitals necessary to “create an entrepreneur development system.” An important emphasis within this framework is “relational” forms of support, which include the building of networks, social capital, and connections between key entrepreneurial actors for knowledge sharing, including with universities and other stakeholders (Fortunato 2014).

In Markley et al.’s (2015) description of the implementation of this framework in rural communities in Kansas, it is apparent that policymakers embraced an EL approach to development. This involved working with other key stakeholders including existing business, university, and community leaders. Thus, it is evident that policymakers can play an important role leveraging EL in developing entrepreneurial ecosystems in rural areas. As Mason and Brown (2014: 13) noted, “entrepreneurial ecosystems do not emerge just anywhere” but need



leadership in helping communities to develop their ecosystems, echoing van de Ven (1993: 218) who noted:

...studies show that the process of innovation and entrepreneurship consists of an accretion of numerous institutional, resource and proprietary events involving many actors who transcend boundaries of many public and private sector organizations.

A challenge when developing entrepreneurial ecosystems is to develop a critical mass of entrepreneurs and resources necessary to support innovation development (van de Ven 1993). Mason and Brown (2014: 19) noted that “developing entrepreneurship ecosystems has to be a blend of ‘top-down’ and ‘bottom-up’ approaches.” Though it is likely that government support will be needed in the development phase, once ecosystems reach critical mass, they may become more self-sustaining (Mason and Brown 2014; Brown and Mason 2017).

Universities are sometimes able to serve as an effectual leader in the creation of an entrepreneurial ecosystem because of their “enhanced capability for intelligence, monitoring, and negotiation with other institutional spheres, especially industry and government” and their ability to form “cross-organizational and cross-institutional entities” (Etzkowitz et al. 2000: 317, 316). In this context where there is an increasingly complex “mixed system of market forces and government initiatives,” there is also the emergence of new network partnerships including “interface specialists often located in the non-profit sector” (Etzkowitz et al. 2000: 329, 327). A university’s willingness to engage with the region and its problems often serves as a social and cultural catalyst that creates both entrepreneurial capabilities and efficacy through education, management, and technical outreach (Audretsch et al. 2015; Rice et al. 2014; Stam 2015).

In the RTP, it is apparent that a collection of entrepreneurs, government officials, and university faculties cooperated to support the development of the rural entrepreneurial ecosystems, suggesting the use of a distributed leadership form of EL. This suggests that the use of EL will typically but not always be a form of distributed leadership, and leaders may have to work alone or with only a few like-minded people at least to start the process of entrepreneurial rural development. In such cases, Roundy (2017a) recommends identifying

leaders with legitimacy who can act as “local champions” and help to prioritize entrepreneurship among citizens and government.

Also, there is limited evidence in all three cases examined that at a community level, the leadership style used as part of EL is consistent with servant leadership, in that the primary intent is to enhance the community’s economic development (Miles et al. 2016). However, it is not evident that EL can be considered a form of servant leadership. Sendjaya and Sarros (2002) suggest that servant leadership exists where the motive of the leader is to benefit others first through altruistic behavior. In the three cases examined, the leadership actors included government officials in North Carolina whose job was to act in the public’s interest and entrepreneurs who economically benefited through either property development or entrepreneurial support programs. Certainly, there are cases where entrepreneurs have used EL to stimulate the development of an entrepreneurial ecosystem for primarily altruistic motives (McKeever et al. 2015; Roundy 2017b).

It is essential to understand if and how both the framework and systemic conditions of rural entrepreneurial ecosystems differ from their urban counterparts, and how they can be developed in a rural context.

## 5 Framework conditions

### 5.1 Natural capital

Natural capital is an important source of comparative advantage for many rural communities and is often the *raison d’être* in the development of frontier rural entrepreneurial ecosystems (while Miller and Acs 2017 discussed nineteenth century entrepreneurial ecosystems, the contemporary example of the private sector space industry exhibits the same sort of frontier rent-seeking). The portfolio of natural capital varies tremendously within and between regions. For example, in many rural regions, a large proportion of all economic activity is based on extracting, managing, harvesting, or adding value to natural resources. Likewise, remoteness can be a comparative advantage for a rural community in attracting or developing some types of business or government initiatives such as toxic waste processing sites, maximum security prisons, and nuclear testing. Recognizing the types of natural capital in a region,

the industries that have developed because of it, and how these can be further developed is typically an important starting point for the development of rural entrepreneurial ecosystems employing EL.

## 5.2 Institutions and governance

Government and other formal institutions play a central role in the development of rural entrepreneurial ecosystems (Méndez-Picazo et al. 2012). Institutions impact the ecosystem through policies that shape market structures, property rights (e.g., intellectual property), access to information, infrastructure, quality of life issues such as education and healthcare, government taxation, economic development, and the activities of universities and research and technology organizations (Van Lente et al. 2003; Chunhathiyon and Intarakumnerd 2014). Indeed Pato and Teixeira (2016: 10) noted that “there is evidence many regions lag behind entrepreneurially, not only because of their physical disadvantages but also because of inadequate governance bodies and the sociocultural traits of their institutional framework, which impede effective entrepreneurial activity.” Furthermore, Pato and Teixeira (2016: 10) go on to contend that “weak governance, allied to sociocultural barriers and the lack of previous entrepreneurial role models, is one of the most important institutional barriers that hinder rural entrepreneurship.”

Government policy and institutions are critical in the development of rural ecosystems by facilitating strategic partnerships with industry both within and outside the region, research institutions, and universities that provide support through R&D, technology transfer, and commercialization, as well as through providing access to funding, and capacity building initiatives.

Effective rural governance enables the community to more effectively lobby for resources for infrastructure and access to government programs and initiatives (Pato and Teixeira 2016). Through networking and collaboration and utilizing rural communities’ political capital, EL can increase the likelihood of more favorable outcomes (Markley et al. 2015). For rural communities, this process can help to develop natural capital endowments, create and maintain infrastructure, provide increased access to business support programs and initiatives, and obtain access to financial capital.

## 5.3 Culture

The concept of the cultural capital in a region is important as one of a portfolio of factors influencing entrepreneurial activity (Fortunato and Alter 2015). This raises the question of how does the culture of a community promote entrepreneurship, particularly in a rural context? A study by Woodside et al. (2016: 157) of 28 nations extends McClelland’s (1961) seminal work on the relationship between culture and entrepreneurship by finding that entrepreneurship is positively linked to cultures that support “individual initiative and some amount of positive risk-taking.” Likewise, work in West Africa found that “teaching personal initiative” and a “proactive mindset” were more effective in enhancing sales and profits than traditional training programs that focused on building capabilities in small businesses (Campos et al. 2017: 1287).

Lee et al. (2004: 887) found there is a “close and positive relationship between entrepreneurship and creativity in a region.” Others such as Kibler et al. (2014) found the social legitimacy of entrepreneurship to be critical for both the formation of entrepreneurial intentions and the translation of intentions into behaviors in a region.

When a rural community perceives that entrepreneurship is socially legitimate, community members are more likely to pursue entrepreneurial initiatives (Lafuente et al. 2007; Vaillant and Lafuente 2007). However, in many rural communities, entrepreneurship is not well understood or respected and consequently, there are lower rates of entrepreneurial activity. In such contexts, EL is needed to shape a more entrepreneurial culture. This can be achieved by demonstrating public support for entrepreneurship through regular local government, and business chamber-supported events and encouraging entrepreneurship in a range of contexts that are relevant to rural settings.

## 5.4 Demand

Access to markets, lead users, major customers, and value chain partners are often considered constraining conditions for productive rural entrepreneurship. Consequently, an EL perspective considers demand both as a framework and systemic element in a rural entrepreneurial ecosystem. Given limited demand within a rural region, economic growth can only occur if businesses can successfully market outside their own region.

The lack of close geographic proximity to markets by rural entrepreneurs sometimes leads to systemic externally generated market creation initiatives where the entrepreneur creates a new market or even a new industry. For example, David Walsh's Museum of Old and New Art generated an entirely new art tourism market in Tasmania (Lehman et al. 2014; Fillis et al. 2016). Likewise, a Tasmanian produce grower working with a Sydney specialty retailer created a new "cool climate" broccoli market in mainland Australia by coordinating throughout their value chain (Lewis et al. 2014). Market creation initiatives are one way for rural communities to ameliorate the lack of market access through the use of effectuation and entrepreneurial marketing (Sarasvathy and Venkataraman 2011; Miles et al. 2016).

### 5.5 Infrastructure

The relationship between entrepreneurship and infrastructure is a topic of considerable academic and public policy interest (van de Ven 1993; Audretsch et al. 2015). The infrastructure of an entrepreneurial ecosystem is the portfolio of public goods that supports and facilitates small business and entrepreneurship initiatives within the entrepreneurial ecosystem. The components of the ecosystem's infrastructure are dependent upon the objectives of the ecosystem. Highways, rail assets, and ports are traditional public investments in infrastructure development when the objective is to support an industrial economy, while public investment in universities, research institutions, high-speed broadband, and telecommunications are infrastructure items required for high-technology start-ups (Audretsch et al. 2015).

## 6 Systemic conditions

### 6.1 Enterprising individuals

Shane and Venkataraman (2000) consider that entrepreneurship is the nexus of the enterprising individual and attractive opportunities. The willingness to proactively accept and attempt to manage risks while employing innovation to either exploit market inefficiencies and changes in demand or exploit new technology to disrupt markets is not universally distributed within the population (Venkataraman 1997). The intentional act of business creation or strategic renewal that either leverages innovation to become more efficient and effective or

commercializes innovation to disrupt markets and create new product markets requires not only willingness but entrepreneurial competencies such as the ability to recognize or create attractive opportunities and build an organization to productively exploit them (Morris et al. 2013). Without an enterprising individual, no entrepreneurial action would occur (Campos et al. 2017).

While the number of entrepreneurs matters for rural ecosystems, the capabilities of entrepreneurs also matter. Lichtenstein and Lyons (2001, 2006) and Morris et al. (2015) highlight the importance of an entrepreneurial ecosystem having a diverse portfolio of business at all stages of development and capability. Lichtenstein and Lyons (2001, 2006) highlight the importance of transforming entrepreneurs so that there are qualitative changes in their effectiveness. Such transformations enable entrepreneurs to provide higher value commercial offerings within markets more effectively and to move into different stages within the pipeline. Lichtenstein and Lyons (2001: 8) suggest that "the process of building these skills is not a matter of passively 'acquiring' information, receiving services, or adopting the latest business practices...becoming more skillful often involves significant, qualitative, and sometimes difficult changes in behaviors, capabilities, and personal identities—in other words, a transformation." Lichtenstein and Lyons (2001, 2006) recommend the use of an "Entrepreneurial Development System" that identifies the key actors for development and their functions in building entrepreneurial capability in other entrepreneurs and the community.

The challenge for rural areas is, therefore, to stimulate some of the latent enterprising individuals to engage in entrepreneurial initiatives and to support existing entrepreneurs. Training programs in entrepreneurship and business skills, start-up business boot camps, localized mentoring, developing networks for nascent entrepreneurs, accelerators, and business incubators can all help increase the rate and effectiveness of entrepreneurship within a community (Haines 2016; Campos et al. 2017).

### 6.2 Entrepreneurial social infrastructure

An important theme in the entrepreneurship literature is that economic behavior is embedded in social structure (Flora and Flora 1993, Flora et al. 1997, Pato and Teixeira 2016). Social networks have many potential benefits including providing access to resources such

as knowledge, finance, support, employees, and customers. Networks, in particular, have been linked to successful entrepreneurial activity, with social capital facilitating the interactions within the networks (Audretsch and Keilbach 2004). Social interactions help build trust and create norms for exchanges which reduce the transaction costs associated with business activity and leverage the efficiency of other forms of capital (Flora et al. 1997), as well as enhancing ecosystem actor coordination and cooperation (Putnam 1993). Sarasvathy and Venkataraman (2011) contend that networks are fundamental dimensions of the entrepreneurial method.

However, Flora and Flora (1993) clarify that not all social capital is supportive of entrepreneurship, and in some cases, it may block economic development. They described cases where leadership seeking to encourage development was ineffective despite seemingly high levels of social capital because of control by a power elite. Consequently, Flora and Flora (1993) proposed the concept of *entrepreneurial social infrastructure* to show when and what elements of social capital will be supportive of entrepreneurship in rural communities. Their concept has three components: (1) symbolic diversity, (2) resource mobilization, and (3) quality of linkages. Symbolic diversity is a community orientation towards inclusiveness that is tolerant of members expressing their views even if they are contrary to the “accepted” perspective. It also means that the community is committed to a process which is not controlled by vested interests. Resource mobilization reflects a willingness to distribute a range of different resources equitably and take risks with them, as well as a willingness to invest as a community and as individuals. Quality linkages are those that are inclusive and diverse so that multiple voices are heard, and both horizontal within a network and vertical linkages with external networks. Flora et al. (1997) found that some but not all indicators of the three *entrepreneurial social infrastructure* components were associated with improved rural entrepreneurial development, suggesting that there is some support for the importance of *entrepreneurial social infrastructure* in enabling the development of rural entrepreneurial ecosystems.

In developing entrepreneurial social infrastructure, a common challenge for rural areas is that the networks present are typically smaller than networks within larger urban ecosystems, even though the network density (as represented by the number of connections or ties

between people divided by the number of people in an area) may be higher (Roundy 2017a). Roundy (2017a: 247) recommends that some of the challenges faced in rural ecosystems in networking can be ameliorated through technology and that rural entrepreneurs can “bolster limitations in the size of their local networks by forming connections with individuals and firms not necessarily geographically close,” a recommendation consistent with Flora and Flora (1993) who recommend developing networks both horizontally and vertically. This strategy can be supported and encouraged through the use of EL.

### 6.3 Finance

Financial capital includes efficient access to sources of short, intermediate, and long-term debt and informal and formal equity. There is at least the perception in many rural areas that local access to short-term and intermediate-term debt and all forms of equity is constraining entrepreneurship and small business (Adhikar et al. 2018). Also, due to geographic proximity to urban centers, rural entrepreneurial ecosystems typically have insufficient access to informal equity from business angels who tend to invest close to where they live, and venture capital funds or corporate venturing initiatives (e.g., see Harrison et al. 2010). These financial capital limitations in rural ecosystems can significantly constrain business growth and development.

Again, this suggests a role for EL to develop both digital and network approaches for entrepreneurs to access finance in rural areas, such as by establishing links to sector-specific networks of informal equity investors, digital financial platforms including crowdfunding, and nearby business angel groups (Lowe and Feldman 2017; Roundy 2017a). The challenge for the leadership of rural entrepreneurial ecosystems will be to coordinate and support entrepreneurs by providing entrepreneurial competency programs to help them develop fundable businesses that are attractive investments to both local and external sources of finance.

### 6.4 Human capital

Human capital is the notion that specific capacities, qualities, knowledge, and skills which people possess have an economic value (Corona et al. 2006; Clarysse et al. 2014). This type of capital has repeatedly been



associated with entrepreneurial success (Unger et al. 2011). Specifically, human capital has been positively linked with discovering, creating, and exploiting opportunities, acquiring financial resources and launching ventures, accumulating new knowledge and the process of evaluating potential ventures by venture capitalists (Marvel et al. 2014). Attributes of human capital linked with entrepreneurial activity in the literature include work experience, education, and entrepreneurial experience and psychological attributes such as achievement orientation and locus of control (Marvel et al. 2014).

A lack of human capital can constrain business growth in rural ecosystems where the population is more sparse. This can include access to staff with managerial and technical skills as well as access to unskilled labor. For rural ecosystems, there are several options for addressing skills shortages, including improving information availability about jobs (e.g., through online rural jobs sites), encouraging in-migration of skilled migrants, or working with universities and other vocational education providers to directly identify and build capabilities. Universities are recognized for their ability to contribute to rural ecosystems by building entrepreneurial, managerial, and technical talent (Etzkowitz et al. 2000; Mazzarol 2014; Stam 2015).

Universities can also build talent in rural ecosystems in other ways. For example, they can play a role in developing new entrepreneurs and businesses (Theodoraki et al. 2018), as well as supporting capacity building of entrepreneurs and their employees through economic gardening programs. Interestingly, while this role is recognized in the literature, in reality, the role is often not achieved. A challenge for universities is knowing which form of support is most useful for supporting entrepreneurial ecosystems (e.g., Mian et al. 2016; Pauwels et al. 2016; Phan et al. 2016), with many universities focusing on supporting start-ups rather than support of existing small-medium enterprises. Nonetheless, it is apparent that many universities are seeking to be more involved in supporting entrepreneurs (Mehlhorn et al. 2015).

## 6.5 Knowledge

Etzkowitz et al. (2000: 329) place universities “central” to regional development, particularly for “less favored rural, declining regions.” Audretsch et al. (2015: 222) found that universities and research institutions are the foundations of an ecosystem’s knowledge

infrastructure. Likewise, Rice et al. (2014), in a case study of six mature university entrepreneurship programs in top business schools, found that universities are often a critical factor in the creation and operation of entrepreneurial ecosystems.

Unfortunately, while much of the literature suggests that universities are critical to ecosystems (e.g., Etzkowitz et al. 2000), not all rural areas have local access to universities and research institutions. While digital learning, technology transfer platforms, and external networking can ameliorate this deficiency to some extent, geographic proximity to a local research university is a distinct advantage.

Furthermore, not all universities are useful in the role of engaging with and supporting the development of businesses. For example, Brown (2016: 200) noted that Scottish innovation policy relies on universities to meet the needs of SMEs, “despite the overwhelming evidence from past experiences suggesting that universities may not necessarily be the most desirable actors for this role,” citing problems with growing enterprises beyond start-ups, and the mismatch between business knowledge needs and the knowledge produced by research at Scottish universities. This situation is not unique to Scotland. For example, Mazzarol (2014: 4) stated that

...there is a need to enhance the overall level of *innovation* within Australia’s SME sector...” (emphasis added) and that “...this suggests a potential disconnect between the small business community and the higher education sector in Australia” concluding that “...most of Australia’s universities have only limited engagement with entrepreneurship programs that work closely with industry.

That this is a problem that occurs in multiple countries suggests a need for government-supported programs to encourage increased engagement between universities and SMEs, particularly for support of SMEs based in rural ecosystems where the transactional costs of engaging with and accessing the knowledge resources of universities are typically higher.

## 6.6 Support services

Internationally, there is increasing interest in business incubation and accelerators (Mian et al. 2016; Miles et al. 2016). Incubators provide working space and often advisory and support services (Hathaway 2016). Many



of these are non-profit entities or funded by government. There are also business accelerators that focus on start-ups (Hathaway 2016), which typically involve intensive 3–6-month programs and are supported by seed capital provided to the start-ups in return for equity in the start-up. Participants in these accelerators are generally co-located and receive access to technology, mentoring and support, knowledge, and networks. Start-ups in accelerators are typically globally scalable and have a tech focus. At the end of the acceleration process, participants make a pitch to fund the next stage of their business. It is expected that most proposed businesses will fail, but a small number will succeed. In rural areas where there are smaller numbers of businesses and limited access to technical resources, there are likely to be fewer suitable locations for accelerator programs.

While accelerator programs may not be suited to many rural ecosystems, the development of existing businesses through an economic gardening approach which leverages rural business support groups may have more widespread utility in a rural context (Barrios and Barrios 2004; Fortunato 2014; Edward Lowe Foundation 2015; Mazzarol et al. 2017). Economic gardening is often based on traditional enterprise programs such as a publicly funded business advisory service or university-based management and technical assistance centers (Barrios and Barrios 2004; Edward Lowe Foundation 2015) and has been an effective and efficient tool to stimulate entrepreneurship and small business development, including in rural areas (Chrisman et al. 1985, 1987; Cumming and Fischer 2012). These programs help businesses improve their value proposition and a range of processes related to marketing, export expansion, human resource management, negotiations, planning, and other business processes such as lean management so that they compete more effectively. Economic gardening programs share many similarities with Entrepreneurial Development Systems recommended by Lichtenstein and Lyons (2001, 2006) with their emphasis on developing skills and capabilities among entrepreneurs.

## 7 Conclusions

The primary contribution of this paper is the proposition of a new model of rural entrepreneurial ecosystem development based on a specific style of community leadership—that of EL. EL requires that the rural

community's leaders commit to a “means first” approach to development by employing effectual logic to leverage their community's capitals to exploit attractive opportunities to advance the region's entrepreneurial ecosystem. That suggests that rural leaders learn from the process that created North Carolina's Research Triangle Science Park, where community leaders first considered where they and their community were, who they were, and whom they knew (their systemic and framework conditions). Then, they leveraged these to create mutually beneficial partnerships that exploit opportunities, intentional, or serendipitous while managing their downside risks by proactively and innovatively using all ethical and legal means at their disposal.

EL can also be used to identify and address framework constraints, and systemic conditions often found to be problematic in rural ecosystems, such as a lack of infrastructure, access to finance, and human capital. In rural communities where leadership capacity is often less available, the operationalization of EL may require combined efforts from government, universities, and the private sector.

Enterprising leaders in rural regions seeking to create or develop an entrepreneurial ecosystem may find this method a useful approach to strategic leadership. While the entrepreneurial method has been applied to other social problems including international development practices (Bonney et al. 2013) and social services problems (Verreynne et al. 2013), to the authors' knowledge, this is the first time it has been conceptualized as a leadership style for the development of rural ecosystems.

**Publisher's Note** Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

## References

- Acs, Z. J. & Malecki, E. J. (2003). Entrepreneurship in rural America: the big picture. *Federal Reserve Bank of Kansas City*.
- Adhikar, R., Bonney, L., Woods, M., Clark, S., Coates, L., Harwood, A., Eversole, R., & Miles, M. P. (2018). Applying a community entrepreneurship development framework to rural regional development. *Small Enterprise Research*. <https://doi.org/10.1080/13215906.2018.1522274>.
- Audretsch, D. B. (2015). *Everything in its place: Entrepreneurship and the strategic management of cities, regions, and states*.

- Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780199351251.001.0001>.
- Audretsch, D. B., & Belitski, M. (2017). Entrepreneurial ecosystems in cities: establishing the framework conditions. *The Journal of Technology Transfer*, 42(5), 1030–1051.
- Audretsch, D. B., & Keilbach, M. (2004). Does entrepreneurship capital matter? *Entrepreneurship Theory and Practice*, 28(5), 419–429.
- Audretsch, D. B., Heger, D., & Veith, T. (2015). Infrastructure and entrepreneurship. *Small Business Economics*, 44(2), 219–230.
- Barrios, S., & Barrios, D. (2004). Reconsidering economic development: the prospects for economic gardening. *Public Administration Quarterly*, 1, 70–101.
- Bauer, J. R. (2014). *Sunbelt growing pains: Urban environmentalism in North Carolina's Research Triangle, 1950-2000*. Doctoral dissertation, Houston, TX: The University of Houston.
- Bolden, R. (2011). Distributed leadership in organizations: a review of theory and research. *International Journal of Management Reviews*, 13, 251–269.
- Bonney, L., Collins, R., Miles, M. P., & Verreynne, M.-L. (2013). A note on entrepreneurship as an alternative logic to address food security in the developing world. *Journal of Developmental Entrepreneurship*, 18(03). <https://doi.org/10.1142/S1084946713500167>.
- Bosma, N., & Sternberg, R. (2014). Entrepreneurship as an urban event? Empirical evidence from European cities. *Regional Studies*, 48(6), 1016–1033.
- Brown, R. (2016). Mission impossible? Entrepreneurial universities and peripheral regional innovation systems. *Industry and Innovation*, 23(2), 189–205.
- Brown, R., & Mason, C. (2017). Looking inside the spiky bits: a critical review and conceptualization of entrepreneurial ecosystems. *Small Business Economics*, 49(1), 11–30.
- Campos, F. M. F., Goldstein, M., Iacovone, L., Johnson, H. C., McKenzie, D., & Mensmann, M. (2017). Teaching personal initiative beats traditional training in boosting small business in West Africa. *Science*, 357, 1287–1290.
- Chrisman, J. J., Nelson, B., Hoy, F., & Robinson, R. (1985). The impact of SBDC consulting activities. *Journal of Small Business Management*, 23(3), 1–10.
- Chrisman, J. J., Hoy, F., & Robinson, R. (1987). New venture development: the costs and benefits of public sector assistance. *Journal of Business Venturing*, 2(4), 315–328.
- Chunhavyuthyanon, M., & Intarakumnerd, P. (2014). The role of intermediaries in sectoral innovation system: the case of Thailand's food industry. *International Journal of Technology Management & Sustainable Development*, 13(1), 15–36.
- Clarysse, B., Wright, M., Bruneel, J., & Mahajan, A. (2014). Creating value in ecosystems: crossing the chasm between knowledge and business ecosystems. *Research Policy*, 43(7), 1164–1176.
- Corona, L., Doutriaux, J., & Mian, S. (2006). *Building knowledge regions in North America: emerging technology innovation poles*. Edward Elgar Publishing.
- Cumming, D. J., & Fischer, E. (2012). Publicly funded business advisory services and entrepreneurial outcomes. *Research Policy*, 41(2), 467–481.
- Darroch, J., & Miles, M. P. (2011). A research note on market creation in the pharmaceutical industry. *Journal of Business Research*, 64(7), 723–727.
- Dubini, P. (1989). The influence of motivations and environment on business start-ups: some hints for public policies. *Journal of Business Venturing*, 4, 11–26.
- Edward Lowe Foundation (2015). *Economic gardening: an entrepreneur-oriented approach to economic prosperity*, [www.edwardlowe.org](http://www.edwardlowe.org).
- Emery, M., & Flora, C. (2006). Spiralling-up: mapping community transformation with community capitals framework. *Community Development*, 37(1), 19–35.
- Etzkowitz, H., Webster, A., Gebhardt, C., & Cantisano Terra, B. (2000). The future of the university and the university of the future: evolution of the ivory tower to the entrepreneurial paradigm. *Research Policy*, 29, 313–330.
- Fillis, I., Lehman, K., & Miles, M. P. (2016). The Museum of old and new art: leveraging entrepreneurial marketing to create a unique arts and vacation venture. *Journal of Vacation Marketing*, 23(1), 85–96.
- Fischer, T., Dietz, J., & Antonakis, J. (2017). Leadership process models: a review and synthesis. *Journal of Management*, 43(6), 1726–1753.
- Flora, C. B., & Flora, J. L. (1993). Entrepreneurial social infrastructure: a necessary ingredient. *Annals of the American Academy of Political and Social Science*, 529, 48–58.
- Flora, J. L., Sharp, J., & Flora, C. (1997). Entrepreneurial social infrastructure and locally initiated economic development in the nonmetropolitan United States. *The Sociological Quarterly*, 38, 623–645.
- Fortunato, M. (2014). Supporting rural entrepreneurship: a review of conceptual developments from research to practice. *Community Development*, 45(4), 387–408.
- Fortunato, M. W., & Alter, T. (2015). Community entrepreneurship development: an introduction. *Community Development*, 46(5), 444–455.
- Haines, T. (2016). Developing a start-up and innovation ecosystem in regional Australia. *Technology Innovation Management Review*, 6(6), 24–32.
- Hamilton, K., Ruta, G., Bolt, K., Markandya, A., Pedrosogalinato, S., Silva, P., Ordoubadi, M., Lange, G. & Tajibaeva, L. (2005). *Where is the wealth of nations? Measuring capital for the 21st century*. Washington DC: World Bank. <http://documents.worldbank.org/curated/en/>.
- Harrison, R., Mason, C., & Robson, P. (2010). Determinants of long-distance investing by business angels in the UK. *Entrepreneurship and Regional Development*, 22(2), 113–137.
- Hathaway, I. (2016). *Accelerating growth: startup accelerator programs in the United States*, Brookings Institute Advanced Industries Series 81.
- Hoy, F., & Vaught, B. (1980). The rural entrepreneur: a study in frustration. *Journal of Small Business Management*, 18(1), 19–24.
- Isenberg, D. J. (2011). The entrepreneurship ecosystem strategy as a new paradigm for economic policy: Principles for cultivating entrepreneurship. *Babson Entrepreneurship Ecosystem Project*. <http://entrepreneurial-revolution.com/2011/05/11/the-entrepreneurship-ecosystem-strategy-as-a-new-paradigm-for-economic-policy-principles-for-cultivating-entrepreneurship>.

- Jenson, I., Leith, P., Doyle, R., West, J., & Miles, M. P. (2016). The root cause of innovation system problems: formative measures and causal configurations. *Journal of Business Research*, 69(11), 5292–5298.
- Johannisson, B., & Nilsson, A. (1989). Community entrepreneurs networking for local development. *Entrepreneurship and Regional Development*, 1, 3–19.
- Kibler, E., Kautonen, T., & Fink, M. (2014). Regional social legitimacy of entrepreneurship: implications for entrepreneurial intention and start-up behaviour. *Regional Studies*, 48(6), 995–1015.
- Lafuente, E., Vaillant, Y., & Rialp, J. (2007). Regional differences in the influence of role models: comparing the entrepreneurial process of rural Catalonia. *Regional Studies*, 41(6), 779–796.
- Lee, S. Y., Florida, R., & Acs, Z. (2004). Creativity and entrepreneurship: a regional analysis of new firm formation. *Regional Studies*, 38(8), 879–891.
- Lehman, K., Fillis, I., & Miles, M. P. (2014). The art of entrepreneurial market creation. *Journal of Research in Marketing and Entrepreneurship*, 16(2), 163–182.
- Lerner, J. (2010). The future of public efforts to boost entrepreneurship and venture capital. *Small Business Economics*, 35(3), 255–264.
- Lewis, G., Miles, M. P., Crispin, S., Bonney, L., Woods, M., Fei, J., & Ayala, S. (2014). Branding as innovation within agri-business value chains. *Journal of Research in Marketing and Entrepreneurship*, 16(2), 146–162.
- Leyden, D. P., & Link, A. N. (2013). Collective entrepreneurship: the strategic management of the research triangle park. In D. B. Audretsch & M. Walshok (Eds.), *Creating competitiveness: entrepreneurship and innovation policies for growth* (pp. 176–185).
- Lichtenstein, G. A., & Lyons, T. S. (2001). The entrepreneurial development system: transforming business talent and community economies. *Economic Development Quarterly*, 15, 3–20.
- Lichtenstein, G. A., & Lyons, T. S. (2006). Managing the community's pipeline of entrepreneurs and enterprises: a new way of thinking about business assets. *Economic Development Quarterly*, 20, 377–386.
- Lichtenstein, G. A., Lyons, T. S., & Kutzhanova, N. (2004). Building entrepreneurial communities: the appropriate role of enterprise development activities. *Journal of the Community Development Society*, 35(1), 5–24.
- Link, A. N. (1995). *A generosity of spirit: the early history of the research Triangle Park*. Research Triangle Park: The Research Triangle Foundation of North Carolina.
- Link, A. N., & Scott, J. T. (2003). The growth of research Triangle Park. *Small Business Economics*, 20(2), 167–175.
- Lowe, N. J., & Feldman, M. P. (2017). Institutional life within an entrepreneurial region. *Geography Compass*, 11(3). <https://doi.org/10.1111/gec3.12306>.
- Malecki, E. J. (2018). Entrepreneurship and entrepreneurial ecosystems. *Geography Compass*, 12(3). <https://doi.org/10.1111/gec3.12359>.
- Markley, D., Lyons, T., & Macke, D. (2015). Creating entrepreneurial communities: building community capacity for ecosystem development. *Community Development*, 46(5), 580–598.
- Marvel, M. R., Davis, J., & Sproul, C. (2014). Human capital and entrepreneurship research: a critical review and future directions. *Entrepreneurship Theory and Practice*, 38, 599–626.
- Mason, C., & Brown, R. (2014). *Entrepreneurial ecosystems and growth-oriented entrepreneurship*. Paris: Final Report to OECD.
- Mazzarol, T. (2014). *How do Australia's universities engage with entrepreneurship and small business?* CEMI discussion paper series, DP 1401, Centre for Entrepreneurial Management and Innovation, [www.cemi.com.au](http://www.cemi.com.au).
- Mazzarol, T., Clark, D., & Redbound, S. (2017). Economic gardening: what it is and what it does for the generation of jobs and economic growth. In M. P. Miles, M. Battisti, M. Terziowski, & A. Lau (Eds.), *Economic Gardening: Entrepreneurship, innovation and small business ecosystems in regional, rural and international development*.
- McClelland, D. C. (1961). *The achieving society*. Princeton: Van Nostrand.
- McKeever, E., Jack, S., & Anderson, A. (2015). Embedded entrepreneurship in the creative reconstruction of place. *Journal of Business Venturing*, 30(1), 50–65.
- Mehlhorn, J. E., Bonney, L., Fraser, N., & Miles, M. P. (2015). Benchmarking entrepreneurship education in the U.S. Australia, and New Zealand University agriculture programs. *Journal of Developmental Entrepreneurship*. <https://doi.org/10.1142/S108494671550017X>.
- Méndez-Picazo, M., Galindo-Martín, M., & Ribeiro-Soriano, D. (2012). Governance, entrepreneurship, and economic growth. *Entrepreneurship & Regional Development*, 24(9–10), 865–877.
- Mian, S., Lamine, W., & Fayolle, A. (2016). Technology business incubation: an overview of the state of knowledge. *Technovation*, 50, 1–12.
- Miles, M. P., Munilla, L., & Darroch, J. (2006). The role of strategic conversations with stakeholders in the formation of corporate social responsibility strategy. *Journal of Business Ethics*, 69, 195–205.
- Miles, M. P., Lewis, G., Hall-Phillips, A., Morrish, S., Gilmore, A., & Kasouf, C. (2016). The influence of entrepreneurial marketing processes and entrepreneurial self-efficacy on community vulnerability, risk, and resilience. *Journal of Strategic Marketing*, 24(1), 34–46.
- Miller, D. J., & Acs, Z. (2017). The campus as entrepreneurial ecosystem: the University of Chicago. *Small Business Economics*, 49(1), 75–95.
- Morris, M. H., Webb, J. W., Fu, J., & Singhal, S. (2013). A competency-based perspective on entrepreneurship education: conceptual and empirical insights. *Journal of Small Business Management*, 51(3), 352–369.
- Morris, M. H., Neumeier, X., & Kuratko, D. F. (2015). A portfolio perspective on entrepreneurship and economic development. *Small Business Economics*, 45(4), 713–728.
- Pato, M. L., & Teixeira, A. A. C. (2016). Twenty years of rural entrepreneurship: a bibliometric survey. *Sociologia Ruralis*, 56(1), 3–28.
- Pauwels, C., Clarysse, B., Wright, M., & Van Hove, J. (2016). Understanding a new generation incubation model: the accelerator. *Technovation*, 50, 13–24.
- Phan, P. H., Main, S., & Lamine, W. (2016). *Technology entrepreneurship and business incubation: Theory, practice, lessons learned*. New Jersey: Imperial College Press.

- Putnam, R. D. (1993). The prosperous community: social capital and public life. *American Prospect*, 13, 35–42.
- Rice, M., Fetters, M. L., & Green, P. (2014). University-based entrepreneurship ecosystems: a global study of six educational institutions. *International Journal of Entrepreneurship and Innovation Management*, 18(5/6), 481–501.
- Roundy, P. T. (2017a). “Small town” entrepreneurial ecosystems: implications for developed and emerging economies. *Journal of Entrepreneurship in Emerging Economies*, 9(3), 238–262.
- Roundy, P. T. (2017b). Social entrepreneurship and entrepreneurial ecosystems: complementary or disjoint phenomena? *International Journal of Social Economics*, 44(9), 1252–1267.
- Sarasvathy, S. D. (2001). Causation and effectuation: toward a theoretical shift from economic inevitability to entrepreneurial contingency. *The Academy of Management Review*, 26(2), 243–264.
- Sarasvathy, S. D., & Venkataraman, S. (2011). Entrepreneurship as method: open questions for an entrepreneurial future. *Entrepreneurship Theory and Practice*, 35(1), 113–135.
- Sendjaya, S., & Sarros, J. C. (2002). Servant leadership: its origin, development, and application in organizations. *Journal of Leadership & Organizational Studies*, 9(2), 57–64.
- Shane, S., & Venkataraman, S. (2000). The promise of entrepreneurship as a field of research. *Academy of Management Review*, 25(1), 217–226.
- Sirolli, E. (1999). *Ripples from the Zambezi: Passion, entrepreneurship, and the rebirth of local economies*. New Society Publishers.
- Spigel, B. (2017). The relational organization of entrepreneurial ecosystems. *Entrepreneurship Theory and Practice*, 41(1), 49–72.
- Spigel, B., & Harrison, R. (2018). Toward a process theory of entrepreneurial ecosystems. *Strategic Entrepreneurship Journal*, 12(1), 151–168.
- Stam, E. (2015). Entrepreneurial ecosystems and regional policy: a sympathetic critique. *European Planning Studies*, 23(9), 1759–1769.
- Theodoraki, C., Messeghem, K., & Rice, M. P. (2018). A social capital approach to the development of sustainable entrepreneurial ecosystems: an explorative study. *Small Business Economics*, 51, 153–170.
- Unger, J. M., Rauch, A., Frese, M., & Rosenbusch, N. (2011). Human capital and entrepreneurial success: a meta-analytical review. *Journal of Business Venturing*, 26(3), 341–358.
- Vaillant, Y., & Lafuente, E. (2007). Do different institutional frameworks condition the influence of local fear of failure and entrepreneurial examples over entrepreneurial activity? *Entrepreneurship and Regional Development*, 19(4), 313–337.
- Van de Ven, A. H. (1993). The development of an infrastructure for entrepreneurship. *Journal of Business Venturing*, 8(3), 211–230.
- Van Lente, H., Hekkert, M., Smits, R., & Van Waveren, L. (2003). Roles of systemic intermediaries in transition processes. *International Journal of Innovation Management*, 7(3), 247–279.
- Venkataraman, S. (1997). The distinctive domain of entrepreneurship research. *Advances in Entrepreneurship, Firm Emergence and Growth*, 3(1), 119–138.
- Verreyne, M.-L., Miles, M. P., & Harris, C. (2013). A short note on entrepreneurship as method: a social enterprise perspective. *International Entrepreneurship and Management Journal*, 9(1), 113–128.
- Woodside, A. G., Bernal, P. M., & Coduras, A. (2016). The general theory of culture, entrepreneurship, innovation, and quality-of-life: comparing nurturing versus thwarting enterprise start-ups in BRIC, Denmark, Germany, and the United States. *Industrial Marketing Management*, 53, 136–159.
- Wortman, M. S. (1990). Rural entrepreneurship research: an integration into the entrepreneurship field. *Agribusiness (1986–1998)*, 6(4), 329.

Reproduced with permission of copyright owner. Further reproduction prohibited without permission.